the period 1966 through 1990, CTR members contributed over $18.2 million toward the funding of these Special Projects. United States v. Philip Morris, No. 1:99-CV-2496, Answer of CTR at 9 (D.D.C. Oct. 30, 2000); McAllister WD, 159:8-164:5; DXA0630917-1033 at 1024 (US 75927).

507. CTR provided funding to Special Projects recipients via checks processed through the interstate banking system and delivered via the United States Mail. McAllister PD, United States v. Philip Morris, 5/24/02, 98:3-99:2, 102:13-22, 103:7-19.

508. According to Harmon McAllister, CTR's 30(b)(6) witness on the subject of mailings, CTR mailed its Annual Reports through the United States mails. Id. at 65:11-66:21.

V. DEFENDANTS DEVISED AND EXECUTED A SCHEME TO DEFRAUD CONSUMERS AND POTENTIAL CONSUMERS OF CIGARETTES IN MOST, BUT NOT ALL, OF THE AREAS ALLEGED BY THE GOVERNMENT

A. Defendants Have Falsely Denied, Distorted and Minimized the Significant Adverse Health Consequences of Smoking for Decades

509. Cigarette smoking causes disease, suffering, and death. Despite internal recognition of this fact, Defendants have publicly denied, distorted, and minimized the hazards of smoking for decades. The scientific and medical community's knowledge of the relationship of smoking and disease evolved through the 1950s and achieved consensus in 1964. However, even after 1964, Defendants continued to deny both the existence of such consensus and the overwhelming evidence on which it was based.

1. Cigarette Smoking Causes Disease

510. Cigarette smoking and exposure to secondhand smoke (also known as environmental tobacco smoke or "ETS") kills nearly 440,000 Americans every year. The annual number of deaths due to cigarette smoking is substantially greater than the combined annual number of deaths due to

illegal drug use, alcohol consumption, automobile accidents, fires, homicides, suicides, and AIDS. Approximately one out of every five deaths that occur in the United States is caused by cigarette smoking. TLT0960104-0112 at 0104 (US 87047) (Centers for Disease Control and Prevention, Smoking-Attributable Mortality and Years of Potential Life Lost -- United States, 1994, MMWR, 46(20) (1997)); VXA1000001-0604 (US 77217) (Thun M., Myers D., Day-Lally C., Namboodiri M., Calle E., Flanders W.D., Adams S., Heath Jr. C., Age and the Exposure-Response Relationships Between Cigarette Smoking and Premature Death in Cancer Prevention Study II, Chapter 5, Smoking and Tobacco Control Monograph 8: Changes in Cigarette-Related Disease Risks and Their Implications for Prevention and Control, National Institutes for Health – National Cancer Institute, p. 383-476 (1997)); TLT0930001-0949 (US 88621) (2004 Surgeon General Report).

511. Cigarette smoke contains carbon monoxide, nitrogen oxides, cyanide, benzopyrenes, radioactive polonium, arsenic, aldehydes, nitrosamines, numerous toxins, and other human carcinogens. Samet WD, 22:15-23:10. Carcinogens and toxins are absorbed into the bloodstream when cigarette smoke is inhaled. Samet WD, 23:11-24:3.

512. Cigarette smoking causes lung cancer. VXA1601844-2232 at 1986 (US 64057) (1964 Surgeon General Report). Lung cancer kills 160,000 Americans each year, and 90% of all lung cancer cases are caused by cigarette smoking. The five-year survival rate for lung cancer is only 14%. Samet WD, 71:18-22, 80:1-3; Carmona WD, 1:18-21.

513. The risk of developing lung cancer increases with an increase in smoking. Individuals smoking ten to twenty cigarettes per day have a ten-fold increased risk and individuals smoking forty or more cigarettes per day -- two packs and over -- have more than a twenty-fold increased risk of

developing lung cancer. This rate of risk is referred to as "relative risk." Samet WD, 64:17-67:19; (no bates) (US 17141).

514. Cigarette smoking, including exposure to secondhand smoke, causes cardiovascular disease, including myocardial infarction (commonly known as "heart attack"), coronary heart disease ("CHD") and atherosclerosis. CHD refers to diseases which affect the blood vessels of the heart. CHD can cause a deprivation of oxygen to the heart, and thus, cause heart attacks. Atherosclerosis refers to the development of plaque on the arteries, which contributes to the blocking of blood flow to the heart. Samet WD, 107:18-118:21; (no bates) (US 17165); (no bates) (US 17158); (no bates) (US 17134); (no bates) (US 17159); (no bates) (US 17160); (no bates) (US 17204).

515. Cigarette smoking causes chronic obstructive pulmonary disease ("COPD"). Samet WD, 81:4-90:21.

516. COPD, previously referred to as "emphysema" or "chronic bronchitis," was found to be causally related to smoking in 1964. Id. at 81:10-83:14; VXA1601844-2232 at 1986 (US 64057) (1964 Surgeon General Report).

517. Cigarette smoking causes bladder cancer. Samet WD, 90:22-91:4; 97:5-98:17; (no bates) (US 17103).

518. Cigarette smoking causes cerebrovascular disease. Samet WD, 118:21-120:18, 121:15-122:14.

519. Cigarette smoking causes esophageal cancer. Id. at 90:22-91:4, 94:5-95:13. Cigarette smoking causes kidney cancer. Id. at 90:22-91:4, 98:18-101:4.

520. Cigarette smoking causes laryngeal cancer. Id. at 91:5-92:21.

521. Cigarette smoking causes oral cancer. Id. at 92:22-94:4.

522. Cigarette smoking causes pancreatic cancer. Id. at 90:22-91:4, 95:14-97:4.

523. Cigarette smoking causes peptic ulcer disease. Id. at 125:10-127:3.

524. Cigarette smoking causes aortic aneurysm. Id. at 122:15-125:9.

525. Cigarette smoking causes cataracts. Id. at 127:4-128:8.

526. Cigarette smoking causes low bone density in post-menopausal women. Id. at 128:9-129:22.

527. Cigarette smoking causes reduced fertility. Id. at 130:12-131:23.

528. Cigarette smoking causes adverse reproductive outcomes, including pre-mature rupture of the membranes, placenta previa, placental abruption, pre-term delivery and shortened gestation, fetal growth restriction and low birth weight. Id. at 130:20-132:9.

529. Cigarette smoking causes acute myeloid leukemia. Id. at 101:5-102:23.

530. Cigarette smoking causes stomach cancer. Id. at 103:1-104:9.

531. Cigarette smoking causes uterine and cervical cancer. Id. at 104:10-105:15.

532. Cigarette smoking causes liver cancer. Id. at 105:16-106:9.

533. Cigarette smoking causes diminished health status. Id. at 132:15-135:20.

2. Scientific Research on Lung Cancer up to December 1953

a. Scientists Investigating the Rise in the Incidence of Lung Cancer Linked Smoking and Disease before 1953

534. Dr. Allan M. Brandt was accepted as an expert in the history of science and medicine without objection from Defendants. Brandt TT, 9/27/04, 642:19-643:3.

535. Dr. Brandt is the Amalie Moses Kass Professor of the History of Medicine at Harvard Medical School and Professor of the History of Science at Harvard University, where he is the chair

of the Department of the History of Science. Brandt WD, 1:3-6. Dr. Brandt has published extensively in the field of the history of science and medicine for a period of almost three decades. He received a Pulitzer Prize nomination for one of his works, and, during the past decade, has published more than 15 peer-reviewed essays and articles on the history of cigarette smoking. Id. at 3:17-15:3.

536. In the course of his historical investigation of tobacco, Dr. Brandt has reviewed and analyzed the archival materials from the 1964 Surgeon General's Advisory Committee at the National Archives, and numerous additional archival collections, including those of Harvard University (William Cochran); the Countway Library at Harvard Medical School (J. McKeen Cattell), the University of Maine (C.C. Little); Washington University, St. Louis (Evarts Graham); the Wisconsin Historical Society (Bruce Barton, John W. Hill, Robert Lasch, M.V. O'Shea); the Alan Mason Chesney Medical Archives at the Johns Hopkins Medical Institutions (Lewis Robbins); University of Washington, Seattle (Warren Magnuson); the Library of Congress (Edward Bernays, Harvey Wiley); Yale University (Chester Bliss, Lester Savage); Duke University (the John W. Hartman Center for Sales, Advertising and Marketing History); the Smithsonian (NC Ayer Collection, The Warshaw Collection of Business Americana); the National Library of Medicine (Stanhope Bayne-Jones); and the National Archives (The Surgeon General's Advisory Committee). He has also reviewed internal documents of Defendants, including correspondence, reports, and memoranda on tobacco industry activities and programs. Id. at 26:14-28:13.

537. Much of the Government's evidence relating to the history of scientific research on lung cancer relies on Dr. Brandt's testimony. Defendants did not call any expert witnesses or present any testimony in this area.

538. By the middle of the twentieth century, physicians and public health officials in the United States had widely noted an alarming increase in the number of cases of lung cancer. Virtually unknown as a cause of death in 1900, by 1935 there were an estimated 4,000 deaths annually attributed to lung cancer. A decade later, the estimate of deaths attributed to lung cancer had nearly tripled. VXA1601844-2232 at 1986 (US 64057) (1964 Surgeon General Report); Brandt WD, 31:16-32:1.

539. The rise in lung cancer had followed the dramatic increase in cigarette consumption which began early in the twentieth century. Annual per capita consumption of cigarettes in 1900 stood at approximately forty-nine cigarettes; by 1930, annual per capita consumption was over 1,300; by 1950, it was over 3,000. Even though the increases in lung cancer cases and deaths substantially lagged behind the increase in cigarette use, the apparent association led to considerable speculation about what, if any, relationship existed between the two. VXA1601844-2232 at 1895-1898 (US 64057) (1964 Surgeon General Report); Brandt WD, 32:2-17; Samet TT, 9/29/04, 01031:13-01033:25.

540. The dangers of smoking, including its connection to lung cancer, began to attract the more concerted attention of scientists in the 1920s, when researchers began to focus on the specific health consequences of smoking. Brandt WD, 32:18-34:13.

541. As early as 1928, researchers conducting a large field study associated heavy smoking with cancer. 2060544267-4274 (US 39010) (Lombard, Herbert L. and Carl R. Doering, Cancer Studies in Massachusetts: Habits, Characteristics and Environment of Individuals With and Without Cancer, New England Journal of Medicine, 196.10: 481-487 (1928)); Brandt WD, 33:14-34:13.

542. In 1931, Frederick L. Hoffman, a well-known statistician for the Prudential Insurance Company, linked smoking with cancer, although the research left him with lingering methodological questions about representativeness, sample size, and the construction of control groups. VXA2510202-0219 (US 63597) (Hoffman, Frederick L., Cancer and Smoking Habits, Annals of Surgery, 93: 50-67 (1931)); Brandt WD, 33:21-34:4.

543. In 1938, a population biologist and biometrician from Johns Hopkins, Raymond Pearl, published one of the first significant statistical analyses of the health impact of smoking. Pearl's conclusion was that individuals who smoked could expect shorter lives. 503285883-5884 (US 20714) (Pearl, Raymond, Tobacco Smoking and Longevity, Science, 87:2253 (1938)); Brandt WD, 34:5-13.

544. Early research efforts led to publication in Germany in 1939 of the first case control study that showed the connection between smoking and lung cancer. VXA2510202-0219 (US 63597) (Hoffman, Frederick L., Cancer and Smoking Habits, Annals of Surgery, 93:67 (1931)); VXA251-0239 (US 63595) (F. H. Muller, Abuse of Tobacco and Carcinoma of the Lungs, Journal of the American Medical Association (translation of the original from Zeitschrift fur Krebsforschung, Berlin) (1939)); Brandt WD, 34:5-36:7.

545. In the 1930s, chest surgeons such as Alton Oschner and Richard Overholt published observations that the patients they saw with advanced lung malignancies were typically smokers. Oschner and another surgeon, DeBakey concluded that: "In our opinion the increase in smoking with the universal custom of inhaling is probably a responsible factor, as the inhaled smoke, constantly repeated over a long period of time, undoubtedly is a source of chronic irritation to the bronchial mucosa." 85868807-8823 at 8807 (US 63596) (Oschner, Alton, DeBakey, Michael,

Primary Pulmonary Malignancy, Surgery, Gynecology and Obstetrics, 68:435-45 (1939)); Brandt WD, 34:14-36:7.

546. By the end of the 1940s, more evidence linking smoking to disease began to appear. Beginning in 1948, under the auspices of the Medical Research Council, a unit of the recently created National Health Service in the United Kingdom, Bradford Hill and Sir Richard Doll conducted a study to investigate the rising incidence of lung cancer. Following World War I, Hill had become one of the most distinguished medical statisticians in Great Britain. Doll, a physician, also possessed sophisticated training in statistics and epidemiologic methods. They realized that questions concerning the causality of systemic chronic diseases would not readily succumb to experimental laboratory investigation (unlike the study of infectious disease where specific causality was important). TIMN0145510-5519 at 5510, 5518 (US 62855) (Doll, Richard, and A. Bradford Hill, Smoking and Carcinoma of the Lung: Preliminary Report, British Medical Journal (1950)); Brandt WD, 32:18-34:13; 40:19-44:2.

547. From their data from lung cancer patients and a control group in late 1948 and early 1949, it became clear to Doll and Hill that cigarettes were the crucial factor in the rise of lung cancer. With data on almost 650 lung cancer patients, they concluded that "smoking is an important factor in the cause of carcinoma of the lung." The findings were impressive: among the 647 lung cancer patients in Doll and Hill's study, all 647 were smokers. They waited to publicize their results, however, until they had data on 1400 lung cancer patients, which further strengthened their conclusions. TIMN0145510-5519 (US 62855) (Doll & Hill, Smoking and Carcinoma), supra; Brandt WD, 42:1-44:2.

548. In the early 1950s, Doll and Hill understood that some critics might dismiss findings linking smoking to disease as "merely" statistical -- which is precisely what Defendants did. As a result, Doll and Hill meticulously described the specific criteria that they required before an "association" could be identified as a genuine causal relationship. First, they worked to eliminate the possibility of bias in the selection of patients and controls, as well as in reporting and recording their histories. Second, they emphasized the significance of a clear temporal relationship between exposure and subsequent development of disease. Finally, they sought to rule out any other factors that might distinguish controls from patients with disease. This explicit search for possible "confounders" and their elimination marked a critical aspect of their arrival at a causal conclusion. They insisted on carefully addressing all possible criticisms and all alternative explanations for their findings. In this respect, Doll and Hill expressed a strong commitment to inductive science, hypothesis-testing, and scientific method:

> Consideration has been given to the possibility that the results could have been produced by the selection of an unsuitable group of control patients, by patients with respiratory disease exaggerating their smoking habits, or by bias on the part of the interviewers. Reasons are given for excluding all these possibilities, and it is concluded that smoking is an important factor in the cause of carcinoma of the lung.

VXA2510117-0126 at 0125 (US 63604) (Doll & Hill, Smoking and Carcinoma of the Lung: Preliminary Report, supra); Brandt WD, 42:10-43:9.

549. Noted historian Charles Webster observed of the first Doll and Hill paper, published in 1950:

> This modest paper is now regarded as a classic. From these findings emerged the realization that smoking has been responsible for as many deaths per annum as were claimed by the great cholera

> epidemics of the nineteenth century. Smoking was thus established as a major cause of preventable disease.

VXA2510301-0310 at 0301 (US 63589) (Webster, Charles, Tobacco Smoking Addiction: A Challenge to the National Health Service, British Journal of Addiction, 79:7 (1984)); Brandt WD, 46:4-47:23.

550. Doll and Hill's work withstood scientific scrutiny. Two years later, in a 1952 follow-up report, Doll and Hill offered additional evidence for sustaining their conclusion, again fully considering alternative explanations:

> The present analysis of nearly 1,500 cases, or more than double the number dealt with in our preliminary report, supports the conclusion then reached and has revealed no alternative explanation -- for example, in the use of petrol lighters.
>
> It has been suggested that subjects with a particular physical constitution may be prone to develop (a) the habit of smoking and (b) carcinoma of the lung, and that the association might therefore be indirect rather than causal (Parnell,1951). We know of no evidence of such a physical constitution characteristic of patients with lung carcinoma. If it does exist we should still have to find some environmental factor to account for the increased incidence of the disease in recent years.

VXA2510127-0142 at 0139 (US 63603) (emphasis in original) (Doll, Richard, and A. Bradford Hill, A Study of the Aetiology of Carcinoma of the Lung, British Medical Journal (1952)); Brandt WD, 43:10-44:2. This alternative explanation for the relationship between smoking and lung cancer came to be labeled the "constitutional hypothesis" by Defendants. See also Section III(C)(1)(¶55), supra.

551. Doll and Hill also sought to confirm the findings of their retrospective study through prospective investigation. They gathered data from 40,000 British physicians who were followed in order to see whether they would develop lung cancer. This study showed over time that heavy

smokers had death rates 24 times higher than those of nonsmokers. Doll and Hill's research continued through June of 2004 when Doll and his colleagues published a fifty year observational study in the British Medical Journal. Brandt WD, 46:1-20; VXA2510001-0005 (US 63612) (Doll, Richard, and A. Bradford Hill, The Mortality of Doctors in Relation to Their Smoking Habits: A Preliminary Report, British Medical Journal (1954));VXA2510006-0021 (US 63611) (Doll, Richard, and A. Bradford Hill, Lung Cancer and Other Causes of Death in Relation to Smoking, British Medical Journal (1956)).

552. Other researchers studied the connection between smoking and lung cancer during the same time period. In 1949, Evarts Graham, a leading surgeon at Barnes Hospital in St. Louis, and Ernst Wynder, a medical student at Washington University, designed and implemented a study to address and directly resolve the persistent and increasingly important questions concerning the possible harms of cigarette smoking. Graham, a nationally known surgeon who had performed the first pneumonectomy, was a heavy smoker himself and skeptical of the cigarette-lung cancer hypothesis.

553. Wynder and Graham collected extensive data on a group of 684 patients with lung cancer located in hospitals throughout the United States. These patients were extensively interviewed about their smoking levels and histories. Histological exams confirmed the diagnosis in all cases. This group was then compared to a "control group" of non-smokers, similar in age and other demographic characteristics. Wynder and Graham explained, "[T]he temptation is strong to incriminate excessive smoking, and in particular cigaret smoking, over a long period as at least one important factor in the striking increase of bronchiogenic carcinoma." They offered four reasons to support this conclusion. First, it was very unusual to find lung cancers among non-smokers. Second,

among patients with lung cancer, cigarette use tended to be high. Third, the distribution of lung cancer among men and women matched the ratio of smoking patterns by gender. And finally, "the enormous increase in the sale of cigarettes in this country approximately parallels the increase in bronchiogenic carcinoma." These results were reported in the Journal of the American Medical Association ("JAMA"), a prestigious, peer reviewed journal, on May 27, 1950. VXA2510109-0116 at 0114 (US 63605) (Wynder, Ernst L., and Evarts A. Graham, Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma: A Study of Six Hundred and Eighty Four Proved Cases, JAMA, 143.4: 329 (1950)); Brandt WD, 32:18-34:13, 37:13-40:15.

554. That 1950 issue of JAMA also included the report of an investigation reaching similar conclusions by scientist Morton Levin and others. In his commentary on research into the connection between cigarettes and lung cancer, Levin compared the current epidemiological research on cigarette smoking to research on the smoking/lung cancer connection done in the preceding twenty years, arguing that the past work was "inconclusive because of lack of adequate samples, lack of random selection, lack of proper controls or failure to age-standardize the data." In the case of the data gathered for his study, careful attention to "excluding bias" had been central. Levin concluded that "in a hospital population, cancer of the lung occurs more than twice as frequently among those who have smoked cigarets [sic] for twenty-five years than among other smokers or nonsmokers of comparable age." VXA2510106-0108 at 0106, 0107 (US 63606) (Levin, Morton L., Hyman Goldstein, and Paul R. Gerhardt, Cancer and Tobacco Smoking; A Preliminary Report, JAMA, 143:4 (1950)); Brandt WD, 39:23-40:18.

555. By the 1950s, animal research was also pointing to the carcinogenicity of cigarettes. Wynder and Graham turned their attention to the question of the "biological plausibility" of their

epidemiological findings. In conducting animal investigations, Wynder reasoned that if tumors could be produced in animals, it would be an important step in confirming the early epidemiologic findings. Noting that smoke condensates, also known as tars, contained benzopyrenes, arsenic and other known carcinogens, he painted the backs of mice to evaluate their effects. Fifty-eight percent of the mice developed cancerous tumors. Wynder concluded that "the suspected human carcinogen has thus been proven to be a carcinogen for a laboratory animal." These findings were reported in Cancer Research in December 1953. The study was often referred to as the Sloan-Kettering study because Wynder was affiliated with the Sloan-Kettering Institute of the Memorial Center for Cancer and Allied Diseases. CW00860130-0144 at 0137 (US 58868) (Wynder, Ernst L., Evarts A. Graham, and Adele B. Croninger, Experimental Production of Carcinoma with Cigarette Tar, Cancer Research, 13.12 (1953)); Brandt WD, 62:13-63:13; Harris WD, 62:4-63:10.

556. By late 1953, there had been at least five published epidemiologic investigations, as well as others, pursuing carcinogenic components in tobacco smoke and its impacts. These researchers' understanding of the link between smoking and lung cancer was markedly more certain than the case studies and preliminary statistical findings concluded earlier in the century. While some of the epidemiological methods were innovative, they were completely consistent with established scientific procedure and process. Epidemiology was not just based on statistics, but also was an interdisciplinary, applied field. The studies had substantially transformed the scientific knowledge base concerning the harms of cigarette use. Unlike earlier anecdotal and clinical assessments, these studies offered new and path-breaking approaches to investigating and resolving causal relationships. Brandt WD, 46:21-47:17.

557. Medical historians would come to view these studies as among the most important contributions to public health and medicine in the twentieth century. They offered a sophisticated scientific methodology for resolving central questions of causality. Id. at 46:21-48:6.

b. By 1953, Defendants Recognized the Need for Concerted Action to Confront Accumulating Evidence of the Serious Consequences of Smoking

558. The studies connecting smoking and lung cancer were receiving attention outside the scientific community by 1953. For example, published reports like a Readers' Digest article titled "Cancer by the Carton" shared the scientific findings in national media, creating public concern. 03358234-8235 (US 46459); Brandt WD, 48:1-18.[11]

559. The "Cancer by the Carton" article, published in 1952 explained:

> A study of 684 cases, made by Ernest L. Wynder and Evarts A. Graham for the American Cancer Society and published in the AMA Journal, May 27, 1950, stated this conclusion: "Excessive and prolonged use of tobacco, especially cigarettes, seems to be an important factor in the induction of bronchiogenic carcinoma."
>
> More recently Wynder, now associated with Memorial Cancer Center in New York, expanded the statement: "The more a person smokes the greater is the risk of developing cancer of the lung, whereas the risk was small in a nonsmoker or a light smoker."

03358234-8235 at 8235 (US 46459).

560. In late 1953, shortly after the Wynder and Graham study was published, tobacco stocks declined. Overall cigarette sales had also declined about 2% in 1952, which was the first time

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[11] While the Court has not relied upon certain portions of Dr. Brandt's testimony, a careful review of all of Dr. Brandt's testimony, the documents he cited, and the documents which Defendants cited to rebut his testimony reveals that many of Defendants' characterizations of both the testimony and individual documents are out of context, unrepresentative, and unfair.

sales had declined since the Great Depression. Harris WD, 63:11-64:12; 01138541-8542 (US 34313).

561. As already discussed, by 1953-1954, tobacco company executives were aware both of the significant scientific studies establishing smoking as a cause of lung cancer and the public attention the studies were receiving. Defendants' executives well understood that this new scientific evidence constituted a full-scale crisis for their respective companies. Brandt WD, 48:19-51:23.

562. As evidence regarding the harms of smoking surfaced, Defendants engaged in advertising campaigns to induce the public to believe that cigarette smoking was actually beneficial to one's health. Some examples of Defendants' advertisements include: Kent Micronite filters, which were supposedly "developed by researchers in atomic energy plants," Kent cigarettes, which claimed "No other cigarette approaches such a degree of health protection and taste satisfaction," and a Chesterfield ad claiming to cite test results that "smoking Chesterfields would have no adverse effects on the throat, sinuses, or affected organs." ADV1100001-0003 at 0002-03 (US 88703); LW02427396-7397 at 7396 (US 74413); ADV1110007-0009 at 0008 (US 88728); ADV1100040-0043 at 0042 (US 88715); Harris WD, 67:11-70:20.

563. While continuing to insist that there was no indication that cigarettes were unsafe, Defendants moved aggressively to market products which they implied were safer. In 1953, Defendant Liggett hired Arthur D. Little, Inc. ("ADL") to test tobacco condensates on mice in an attempt to develop strategies for removing carcinogens, at the same time that it advertised that its filters were "Just What the Doctor Ordered." VXA2611190-1190 (US 63543) (Liggett Advertisement, "Fredric March Says -- This Is It L & M Filters Are Just What the Doctor Ordered").

564. Defendants also developed the Tobacco Industry Research Committee ("TIRC") to sponsor research into "all phases of tobacco use and health" and to handle public relations for the tobacco industry in response to the growing body of scientific knowledge. See extended discussion of TIRC in Section III(C). The first Scientific Director of TIRC, appointed in 1954, was a well-respected geneticist and cancer researcher, Clarence Cook Little. A former president of the University of Maine and the University of Michigan, founder of the Roscoe B. Jackson Memorial Laboratory, and member of the National Academy of Sciences, Little quickly became a steadfast critic of the emerging scientific data linking cigarettes to cancer. Brandt WD, 86:4-88:5.

565. A confidential report of a TIRC meeting held October 19, 1954, made explicit Little's and Defendants' agenda: "[Little] declared that both he and the members of the board were aware of the attacks which had been made on tobacco for over 200 years, and wished to build a foundation of research sufficiently strong to arrest continuing or future attacks." CTRMN007295-7297 at 7295 (US 22900); Brandt WD, 86:4-88:5.

566. Little criticized those whose findings showed harms from tobacco use:

> The right of an individual to determine his own level or threshold of convincibility is unquestioned.
>
> There are and will always be individuals who are convinced without the need of experimental evidence that all tobacco in any form is evil, noxious and toxic. There are individuals with a similar attitude toward alcohol, coffee, and the use of drugs, sera or medicines.
>
> * * *
>
> Such assumptions [that smoking caused cancer] stimulated some investigators to begin an enthusiastic hunt for the "component" or "components" in tobacco smoke that can be blamed for the unproved cause-and-effect relationship as well as for the reported production of

> skin cancer in some experiments with certain strains of laboratory mice.

501773418-3466 at 3428-3429 (US 20686) (emphasis in original); Brandt WD, 86:4-88:5.

567. Little continually called for more research: "In the active and continuing discussions about tobacco use and health, there seems to be nearly complete agreement among scientists on only one point: The need for much more intensive research into the subject." 501773418-3466 at 3425 (US 20686); Brandt WD, 86:4-88:5.

568. Under Little's leadership, the major thrust of TIRC was to emphasize that human cancers were complex processes -- difficult to study and difficult to understand. Little directed TIRC towards what he called "pioneer research." He claimed that studies which focused on cigarettes could "stifle or delay needed research to find the basic origins of lung cancer or cardiovascular diseases, which are most powerful, diversified and deadly enemies to our well-being." 85865874-5946 at 5878 (US 21084); Brandt WD, 86:19-88:5.

569. Little also argued that there were no known carcinogens in tobacco tars (despite Defendants' clear knowledge to the contrary, as addressed in Section V(A)(5)(b)). He repeatedly centered attention on the so-called "constitutional hypothesis," other environmental risks, and the need for more research:

> Too little is known about many factors, including why people smoke or what kind of people become particularly heavy smokers.
>
> * * *
>
> The problem of causation of any type of cancer is complex and difficult to analyze. All research on this so-called constitutional disease is, and must be, painstaking and time-consuming. There is not known today any simple or quick way to answer the question of whether any one factor has a role in causing human lung cancer.

> Despite all the attention given to smoking as an accused factor in human lung cancer, no one has established that cigarette smoke, or any one of its known constituents, is cancer-causing to man [sic].

501773418-3466 at 3422-3423 (US 20686); Brandt WD, 85:10-86:3.

3. Developments Between 1953 and 1964

a. Between 1953 and 1964, the Evidence Demonstrating that Smoking Causes Significant Adverse Health Effects Grew Although No Consensus Had Yet Been Reached

570. During the 1950s, the evidence implicating smoking as a cause of lung cancer continued to grow. The published research employed different methodologies and was reported in well-respected peer reviewed journals. Id. at 66:10-73:10. Such research utilized clinical observation, population studies and laboratory investigation, all of which, alone or in combination, are traditional methods of scientific investigation. Brandt TT, 9/27/04, 643:5-652:11.

571. During the late-1950s, particularly 1957-1959, the scientific and medical evidence was mounting that smoking causes disease. However, there was still ongoing debate amongst respected and independent researchers and public health experts about both the substantive evidence showing causation and about the proper technical terminology to describe the degree of association between smoking and the disease.

572. Even as the evidence mounted demonstrating the causal link between smoking and disease, scientists equivocated on the exact nature of such causation. For example, in 1956, Dr. C.S. Cameron, the Medical and Scientific Director of the American Cancer Society ("ACS"), wrote an article, appearing in The Atlantic, on the history and ongoing research on smoking and lung cancer, which stated:

> Most of the scientists who have given thought and study to the matter appear to agree that an association between cigarette smoking and cancer of the lung does exist. Whether that association is one of cause and effect is as yet unanswered in terms of major scientific opinion. . . . [The American Cancer Society] does not hold that smoking causes cancer of the lung.

(no bates) (JD 000310 at 71, 75) (C.S. Cameron, Lung Cancer and Smoking: What We Really Know, The Atlantic, 197(1):71-75 (Jan. 1956)). Cameron went on to state, however:

> The American Cancer Society, along with a growing body of professional and scientific opinion, has taken this position: Although the complicity of the cigarette in the present prevalence of cancer of the lung has not been proved to the satisfaction of everyone, the weight of evidence against it is so serious as to demand the stewards of the public welfare that they make the evidence known to all.

Id.

573. The debate on causation in the 1950s stemmed from those who believed that a causal judgment required experimental confirmation. Brandt TT, 9/27/04 at 726:13-21. For example, one respected researcher wrote: "proof is lacking and will remain absent until it becomes possible to produce cancer experimentally from some or all of the products contained in cigarette smoke." (no bates) (JD 002521 at 267) (E. Graham, Primary Cancer of the Lung With Special Consideration Of Its Etiology, Bulletin of the New York Academy of Med., 27:261-76 (1951)). As one article explained it, many scientists were skeptical of the epidemiologic evidence:

> There is a history of skepticism toward field-based population studies, in contrast with studies performed in the laboratory . . . the epidemiologic and biostatistical techniques used in the retrospective studies of smoking and lung cancer were relatively new. Skepticism and misunderstanding of this new methodology played an important role in the debate over the health effects of cigarettes.

The article also states:

> [T]he surgeon general and US Public Health Service (PHS) scientists had concluded as early as 1957 that smoking was a cause of lung cancer, indeed, "the principle etiologic factor in the increased incidence of lung cancer." Throughout the 1950s, however, the PHS rejected further tobacco-related public health actions . . . . It was not until pressure mounted from outside the PHS in the early 1960s that more substantive action was taken. Earlier action was not taken because of the way in which PHS scientists (particularly those within the National Institutes of Health) and administrators viewed their roles in relation to science and public health.

(no bates) (JD 004238 at 197) (M. Parascandola, Public Health Then and Now: Cigarettes and the US Public Health Service in the 1950s, Am. J. Pub. Health, 91(2):196-205 (2001)). In this good faith, professional debate, scientists seeking such experimental confirmation did not doubt the causal link between smoking and disease but rather doubted that it had been proven with scientific rigor. Brandt WD, 67:19-68:19.

574. Given this diversity of views amongst respected and independent scientists, the Court does not find, as the Government has argued, that, as of the mid-1950s, a consensus had yet been reached on whether cigarette smoking "caused" -- in the precise scientific meaning of that term -- cancer.

575. In 1956, at the urging of Surgeon General Leroy Burney, a Study Group on smoking and health was organized by the American Cancer Society, the American Heart Association, the National Cancer Institute, and the National Heart Institute. This group of distinguished experts met regularly to assess the character of the scientific evidence relating to tobacco and health. At that time, the Group noted that sixteen studies had been conducted in five countries all showing a statistical association between smoking and lung cancer. Among the studies they summarized, it was demonstrated that: lung cancer occurs five to fifteen times more frequently among smokers than

nonsmokers; on a lifetime basis one of every ten men who smoke more than two packs a day will die of lung cancer; and cessation reduces the probability of developing lung cancer. VXA2510023-0027 (US 63610) (Strong, Frank M., et al., Smoking and Health: Joint Report of the Study Group on Smoking and Health, Science, 125:1129-1133 (1957)); Brandt WD, 69:22-71:7.

576. The Group also noted that the epidemiological findings were supported by animal studies in which malignant neoplasms had been produced by tobacco smoke condensates. Further, human pathological and histological studies added evidence to strengthen the "concept of causal relationship." The authors concluded:

> Thus, every morphologic stage of carcinogenesis, as it is understood at present, has been observed and related to the smoking habit.
>
> The sum total of scientific evidence establishes beyond reasonable doubt that cigarette smoking is a causative factor in the rapidly increasing incidence of human epidermoid carcinoma of the lung.

VXA2510023-0027 at 0023 (US 63610) (Strong, Frank M., et al., Smoking and Health: Joint Report of the Study Group on Smoking and Health, Science, 125:1129-1133 (1957)); Brandt WD, 69:22-71:7.

577. However, the Study Group's judgment that smoking causes disease was not widely accepted. Dr. Michael Shimkin, a PHS researcher and a member of the Study Group, stated the Study Group's report "created no particular stir . . ." and was not widely accepted outside of the group itself. (no bates) (JD 060636) (Shimkin, M.B., In the Middle: 1954-63 – Historical Note, JNCI 62(5)-1295-1317 (May 1979)). Some of the very organizations which had sponsored the Study Group, including the National Heart Institute and the American Heart Association (US 63610 at 1129), did not accept its report as "sufficiently convincing." (no bates) (JD 060636 at 1297)).

Individual scientists within NCI disagreed with the Group's conclusion, and there was definitely no clear consensus at NCI on the issue. Brandt TT, 9/27/04, 712:25-713:5, 715:9-16.

578. In 1957, NCI's Director, John Heller, gathered together the chiefs of four major NCI sections, Drs. Gilliam (Chief of Epidemiology), Hueper (Chief of the Environmental Cancer Section), Shear (NCI's expert on carcinogenesis), and Stewart (NCI's head pathologist) to determine their stance on the issue of whether smoking caused disease. He "received more denials than support." (no bates) (JD 060636 at 1298) (Shimkin, supra). "[T]heir paradigm of cancer research simply did not encompass the epidemiologic method." Id. Thus they "refused to recognize epidemiologic data that were not confirmed in laboratory animals." Id.

579. Because of the dissension within NCI over the causation issue, and its refusal to accept the conclusions of the Study Group, Surgeon General Burney appointed Dr. Lewis Robbins to be NCI's point person to deal with the issue of causation. Brandt TT, 9/27/04, 716:2-15; see also (no bates) (JD 060636 at 1298) (Shimkin, supra) ("[Burney] then ordered a fuller account to be prepared for his signature; this task was assigned to Dr. Lewis Robbins. . . .").

580. Dr. Robbins's first task was to write a brochure for physicians on smoking and lung cancer. Brandt TT, 9/27/04, 720:23-721:5; (no bates) (JD 004252 at 609). As the brochure "went through numerous reviews at the National Cancer Institute throughout the next 16 months" (no bates) (JD 004252 at 609), Dr. Robbins faced internal opposition. Within NCI's Carcinogenesis Branch, Drs. Hueper (Chief of the Environmental Cancer Section), Shear (NCI's expert on carcinogenesis) and Stewart (NCI's head pathologist) all opposed publication because they "disagreed with any emphasis that cigarette smoking induced lung cancer." Id. at 610.

581. In 1961, the editors of The New England Journal of Medicine stated that while:

> the editors of the Journal have on occasion revealed their own suspicion that one side of this controversy is probably the one to which to cleave, it is perhaps not completely judicious for them to offer any extraneous comments at this time that might seem to favor either faction.
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> * * *
>
> It is enough to say that most of the evidence is statistical and demonstrates a close association between heavy cigarette smoking and lung cancer.
>
> * * *
>
> Many conscientious observers believe that there are strong indications in favor of a causal relation in the vast majority of cases. . . . Others remain unconvinced. . . . Each individual must choose his own course, whether to woo the lady nicotine or abjure the filthy weed, while the search for truth continues.

(no bates) (JD 020447).

582. Based on the Study Group's review of existing material, Dr. Robbins's brochure, and subsequent research results, Surgeon General Burney believed in 1959 that the link between smoking and disease was significant and that, as a result, there were important and timely opportunities to prevent disease:

> The Public Health Service believes that the following statements are justified by studies to date.
>
> 1. The weight of evidence at present implicates smoking as the principal etiological factor in the increased incidence of lung cancer.
>
> 2. Cigarette smoking particularly is associated with an increased chance of developing lung cancer.
>
> 3. Stopping cigarette smoking even after long exposure is beneficial.

> 4. No method of treating tobacco or filtering the smoke has been demonstrated to be effective in materially reducing or eliminating the hazard of lung cancer.
>
> 5. The nonsmoker has a lower incidence of lung cancer than the smoker in all controlled studies, whether analyzed in terms of rural areas, urban regions, industrial occupations, or sex.
>
> 6. Persons who have never smoked at all (cigarettes, cigars, or pipe) have the best chance of escaping lung cancer.
>
> 7. Unless the use of tobacco can be made safe, the individual person's risk of lung cancer can best be reduced by elimination of smoking.

VXA2510046-0054 at 0052-0053 (US 63608) (Burney, Leroy E., Smoking and Lung Cancer: A Statement of the Public Health Service, JAMA, 71: 1828-1837 (1959)); Brandt WD, 76:13-77:21.

583. While Dr. Burney believed the link between smoking and disease was significant, his article did not come to a categorical conclusion. The PHS itself labeled Dr. Burney's conclusion "weasel words" that were necessitated by the strong disagreement over the issue within the agency itself. Brandt TT, 9/27/04, 707:4-708:3, 722:1-12; (no bates) (JD 022706 at 1) (Letter from L.C. Robbins, M.D., Chief, Cancer Control Program, to H.S. Diehl, M.D. (July 8, 1960)). The debate over what was proof of a "cause" is unmistakable in the early drafts of the Surgeon General's 1959 statement. To try to reach agreement on how the PHS would describe the evidence and the relationship, a number of drafts were circulated. (no bates) (JD 004252 at 611). Weeks before publication, in a November 1959 draft marked "final," the PHS planned to state that the area was "highly controversial," that there was "no scientific proof" of causation, and that the Surgeon General's article would "admit[] this":

> [W]e feel justified to make a further observation which seems pretty well established. There exists no scientific proof that smoking causes

> lung cancer. Even the Surgeon General's special article admits this. . . . Today we have this "coincidence" of a statistical relationship between smoking and lung cancer. The pathological evidence of the relationship between the two, if not weak, is at least highly controversial.

(no bates) (JD 020373 at 1).

584. The dissent over the issue also led to PHS publication of an editorial opposing the Surgeon General's own article, which was published two weeks later. (no bates) (JD 023196) (at Tab 7); Brandt TT, 9/27/04, 722:13-723:4, 724:9-15 (written because of disagreement within Surgeon General's office and NCI). The editorial criticized Surgeon General Burney's statement on two related grounds. First, it acknowledged disagreement over its conclusion:

> A number of authorities who have examined the same evidence cited by Dr. Burney do not agree with his conclusions.

Second, it pointed out the lack of evidence to support an authoritative position:

> Neither the proponents nor the opponents of the smoking theory have sufficient evidence to warrant the assumption of an all-or-none authoritative position.

(no bates) (JD 000716 at 2104) (Smoking and Lung Cancer, JAMA, 171(15):2104 (1959)). See also Brandt TT, 9/27/04, 722:13-723:30.

585. In addition, outside of the public health community, surgeons and pathologists published clinical reports associating cancer in their patients with their smoking habits. In 1957, Oscar Auerbach and his colleagues first reported in the New England Journal of Medicine on "Changes in the Bronchial Epithelium in Relation to Smoking and Cancer of the Lung." Auerbach's study evaluated patients with confirmed smoking histories who died and were autopsied. In order

to avoid any potential bias, microscopists were kept ignorant of the smoking histories in the 30,000 examinations that they made. Auerbach and his co-authors concluded:

> These findings are fully consistent with the hypothesis that inhalants of one sort or another are important factors in the causation of bronchogenic carcinoma. The findings are also consistent with the theory that cigarette smoking is an important factor in the causation of bronchogenic carcinoma.

Auerbach presented additional confirmatory findings in 1961 and 1979. 682628764-8771 at 8771 (US 54185) (Auerbach, Oscar, et al., Changes in the Bronchial Epithelium in Relation to Smoking and Cancer of the Lung: A Report of Progress, New England Journal of Medicine, 256.3:97-104 (1957)); VXA2511322-1328 (US 63538) (Auerbach, Oscar, E. Cuyler Hammond, and Lawrence Garfinkel, Changes in the Bronchial Epithelium in Relation to Cigarette Smoking, 1955-1960 vs. 1970-1977, New England Journal of Medicine, 300.8:381-386 (1979)); Brandt WD, 63:14-64:11.

586. During the same time period, E. Cuyler Hammond and Daniel Horn conducted a massive epidemiological study of smoking and lung cancer under the auspices of the American Cancer Society. In the Hammond and Horn study, more than 200,000 men were followed prospectively for nearly four years; during this period 12,000 died. The authors found that not only was lung cancer far more prevalent as a cause of death among those who smoked (twenty-four times more than nonsmokers), so too were heart disease and circulatory disease. Hammond and Horn estimated that among smokers, smoking might account for up to 40% of their mortality. VXA2510028-0045 (US 63609) (Hammond, E. Cuyler, and Daniel Horn, Smoking and Death Rates -- Report on Forty-four Months of Follow-up of 187,783 Men, JAMA, 2840-2857 (1958)); Brandt WD, 65:16-66:9.

587. These results were consistent with research being carried on outside the United States. In 1957, the Medical Research Council of Great Britain issued a statement printed in the British Medical Journal and the Lancet which read:

> Evidence from many investigations in different countries indicates that a major part of the increase [in lung cancer] is associated with tobacco smoking, particularly in the form of cigarettes. In the opinion of the Council, the most reasonable interpretation of this evidence is that the relationship is one of direct cause and effect. The identification of several carcinogenic substances in tobacco smoke provides a rational basis for such a causal relationship.

01149261-9264 at 9264 (US 63537); Brandt WD, 75:23-76:12. However, at that point in time, the Medical Research Council was not prepared to reach a categorical conclusion on causation.

588. In January 1959, Jerome Cornfield, who was Assistant Chief of the Biometrics Section at the National Cancer Institute and Chairman of the Department of Biostatistics at Johns Hopkins University, offered a substantive review of the available evidence linking cigarettes to lung cancer. Cornfield and his colleagues carefully considered the range of alternative hypotheses to account for the significant rise in cases of, and deaths from, lung cancer. They concluded:

> The magnitude of the excess lung-cancer risk among cigarette smokers is so great that the results can not be interpreted as arising from an indirect association of cigarette smoking with some other agent or characteristic, since this hypothetical agent would have to be at least as strongly associated with lung cancer as cigarette use; no such agent has been found or suggested. The consistency of all the epidemiologic and experimental evidence also supports the conclusion of a causal relationship with cigarette smoking, while there are serious inconsistencies in reconciling the evidence with other hypotheses which have been advanced. Unquestionably there are areas where more research is necessary, and, of course, no single cause accounts for all lung cancer. The information already available, however, is sufficient for planning and activating public health measures.

This paper also explicitly refuted ongoing critiques by two well-known statisticians, Fisher and Berkson:

> We see nothing inherently contradictory or inconsistent in the suggestion that one agent can be responsible for more than one disease, nor are we lacking in precedents. The Great Fog of London in 1952 increased the death rate for a number of causes, particularly respiratory and coronary disease, but no one has given this as a reason for doubting the causal role of the Fog. Tobacco smoke, too, is a complex substance and consists of many different combustion products. It would be more "incredible" to find that these hundreds of chemical products all had the same effect than to find the contrary. A universe in which cause and effect always have a one-to-one correspondence with each other would be easier to understand, but it obviously is not the kind we inhabit.

VXA2510068-0098 at 0068, 0091 (US 63607) (Cornfield, Jerome, et al., Smoking and Lung Cancer: Recent Evidence and Discussion of Some Questions, Journal of the National Cancer Institute, 22.1:173-203 (1959)); Brandt WD, 71:23-73:10.

589. In 1960, the World Health Organization ("WHO") also issued a statement signaling its agreement with the Surgeon General's and Medical Research Council's conclusions. After conducting a review of the scientific findings, the WHO found a causal link to be the "most reasonable interpretation." Brandt WD, 77:22-78:1; Brandt TT, 9/27/04, 704:12-14.

590. In 1962, yet another thorough and far-reaching assessment of the scientific evidence reached the same conclusions as previous studies. The British Royal College of Physicians, after two years of investigation, stated, "[d]iseases associated with smoking now cause so many deaths that they present one of the most challenging opportunities for preventive medicine today." The report concluded:

> The strong statistical association between smoking, especially of cigarettes, and lung cancer is most simply explained on a causal

> basis. . . . The conclusion that smoking is an important cause of lung cancer implies that if the habit ceased, the death rate from lung cancer would eventually fall to a fraction, perhaps to one fifth or even, among men, to one tenth of the present level. Since the present annual number of deaths attributed to lung cancer before the age of retirement is some 12,000 . . . a large amount of premature shortening of life is at issue.

(no bates) (JD 001007); Brandt WD, 78:2-17.

591. From 1953 to 1964, in articles, speeches, and testimony, the debate continued amongst many of the most respected scientists and organizations in the country:

> 1953: NCI's Director, Dr. John R. Heller, "testified that there has not been any conclusive proof that smoking causes cancer." Brandt TT, 9/28/04, 885:10-13. See also (no bates) (JD 004219 at 1018) (Department of Labor-Federal Security Agency Appropriations for 1954: Hearings Before the Subcomm. of the Comm. on Appropriations, 83rd Cong. 1018 (1953) (testimony of Dr. John Heller: "As you are well aware, the correlation of heavy cigarette smoking has been mentioned in connection with the occurrence of lung cancer, but this has not, to our satisfaction, definitely been established. . . .")).
>
> 1953: Three senior PHS scientists noted the statistical association, but stated "the etiological significance of these associations remains unestablished." (no bates) (JD 000720 at 1256) (D.A. Sadowsky, et al., The Statistical Association Between Smoking and Carcinoma of the Lung, JNCI, 13:1237-58 (Aug. 1952-June 1953)).
>
> 1954: Dr. Hueper, NCI's Chief of the Environmental Cancer Section stated that "causation had not been proven." Brandt TT, 9/27/04, 709:10-19.
>
> 1954: Surgeon General Scheele stated the "not proven" position and the clear need for "much more study." (no bates) (JD 020490 at DMA001 0629) ("Heavy cigarette smoking and the allegation that it causes lung cancer have received much attention lately. There appears to be a statistical correlation between heavy cigarette smoking and the occurrence of lung cancer, however, we do not believe that adequate evidence of a positive causal relationship has been proven. Much more study is required and is now in progress.").

1954: Dr. Jesse Greenstein, Chief of NCI's Biochemistry Laboratory, wrote a biochemistry book which states: "At this time, the etiological significance of the apparent association of lung cancer and smoking remains unestablished." (no bates) (JD 000719 at 167) (Greenstein, J.P., Biochemistry of Cancer: Chapter III -- Extrinsic Factors (Academic Press 2nd ed.) (1954)).

1955: NCI's Chief of Environmental Cancer, Dr. Hueper, lectured that the value of statistical data was "at best circumstantial." (no bates) (JD 000467 at 67, 69) (Cigarettes, Laboratory Tests . . . The Industry . . . Medical Aspects, Consumer Reports, 20(2):56-73 (Feb. 1955) ("Dr. Hueper and some other experts regard the evidence linking lung cancer and cigarette smoking as insufficient or contradictory, and the theory generally as not proven. . . . [A]ccording to Dr. Hueper, a world-renowned authority on environmental carcinogens, 'the cigarette theory is almost entirely based on statistical data having at best circumstantial value and being in part of questionable origin.'")). See also (no bates) (JD 020522 at 173-74) (An Analysis of the Environmental Causes of Lung Cancer, American Pharmaceutical Manufacturers's Ass'n Proceedings of the Mid-Year Meeting at 149-178 (Dec. 6-8, 1954)).

1955: NCI's scientists reported to be "pretty well divided" on the possible causal relationship . (no bates) (JD 000711 at 8) (Edward R. Murrow, Cigarettes Lung Cancer, CBS television broadcast transcript, June 7, 1955). However, by 1957, NCI's Director, Dr. Heller "made it clear that 'only one or two' scientists in the NCI were not in agreement with the PHS [Public Health Service] view on the evidence." (no bates) (JD 004238 at 200).

1956: NCI's Director, Dr. Heller, testified before Congress that it was NCI's view that a cause and effect relationship between smoking and lung cancer had not yet been demonstrated. Brandt TT, 9/28/04, 886:3-9.

1957: Surgeon General Burney testified before Congress that final answers had not been secured, and, without "much more definitive information," a warning campaign should not be commenced. False and Misleading Advertising: Hearing Before the Legal & Mon. Aff. Subcommittee of the Committee on Government Operations, 85th Cong., 133-162 (1957). Surgeon General Burney went on:

> We believe that ["it is confirmed beyond a reasonable doubt that there is a high degree of statistical association between lung cancer and heavy and prolonged cigarette smoking"], and Dr. Heller's group agrees with that. . . . I would like to say again, however, that we do not believe the final answers have been secured and that there is a limit to what a responsible, official Federal agency can or should do before they have all available information. That is why I think we have stopped at a certain point. Using our particular judgment, and that until such time as we have much more definitive information, we should not go all out on a campaign and put stickers on cigarettes and certain other things.

Surgeon General Burney and Dr. Heller of the NCI testified about the agreement between scientists with respect to the role that smoking plays in lung cancer:

> [T]here are many scientists in the Cancer Institute, and many differences of opinion, scientists being scientists. However, I would disagree . . . that there is a wide variation in attitude. Even a particular scientist who believes that air pollution is much more of a factor, for example, than smoking, says, however, that there is no doubt that smoking is incriminated in this process and it is simply a matter of degree. . . . I would say that the consensus in the Cancer Institute -- I can't speak for the entire Public Health Service, but certainly in the Cancer Institute and in the National Institutes of Health -- the consensus is reflected in the statement which the Surgeon General has promulgated. . . . An overwhelming majority [agree]. I would say with the exception of only 1 or 2 who do not agree completely with this viewpoint, but the overwhelming majority of the scientists in the National Institute of Health agree.

(no bates) (JD 11816 at 160). Dr. Heller further explained the agreement among scientists.

> Taking the country as a whole . . . I would say the majority of them concur in this viewpoint. There are certain individuals . . . who do not agree. . . . This is

> characteristic of science in general, where there is a difference of opinion on many subjects. However, when one analyzes it to the utmost, there is not as much difference as one might think on the surface. . . . My best guess is that 75 percent of the physicians or scientists who have knowledge and some competence in this area would concur with this formula.

Id. at 161.

> 1957: NCI's Director, John Heller, told Congress that "elucidat[ing] the basic mechanism involved" was of the greatest importance in the direction of research. (no bates) (JD 000332 at 145) (Advertising (Filter-Tip Cigarettes), Hearings Before a Subcomm. of the Committed. on Government Operations, House of Representatives, 85th Cong. 145 (1957)).
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> 1960: Biometrics Branch Chief, Dr. Harold Dorn, co-reporter for WHO's Technical Report No. 192, "Epidemiology of Cancer of the Lung," stated that "epidemiological studies of a disease such as lung cancer identify general factors that affect the incidence of the disease. The identification of the specific agent responsible for the effect of a general factor (for example, cigarette smoking or air pollution) must usually be made by laboratory or experimental studies. The Study Group recommends that such studies be encouraged. . . . The Study Group also wished to call attention to the fact that existing knowledge of the etiology of lung cancer is already sufficiently well established to justify prophylactic action aimed at reducing exposure to known etiological factors." FED 100017175-7184 at 12-13 (JD 045987).

592. As the debate continued, by the early 1960s, the overwhelming majority of the scientific and medical community had come to believe that smoking was causally linked to disease. For example, in 1962, Dr. Lewis C. Robbins, of NCI, acknowledged that although science could not yet take an "authoritative position" on the issue of causation, the public health stakes were too great to wait for submission of the complex experimental proof required by traditional causation standards. Instead, PHS would send its message to the public based on a less stringent "public health" viewpoint:

> While one may be unable to take an authoritative position concerning proof of a relationship between smoking and lung cancer, there is a public health viewpoint which is of the greatest importance: It appears that there may not be definitive studies concerning this relationship in our lifetime. . . . There comes a time when science can show a high degree of probability but cannot answer the final question: Should this be applied to people? It is here that the practice of preventative medicine must pick up and take the final step.

(no bates) (JD 020481 at 2).

593. In sum, by the early 1960s, the view of the scientific community had reached the conclusion that the evidence supporting a causal relationship between smoking and lung cancer was sufficiently established and recognized -- albeit not to a scientific certainty -- that it was appropriate to warn the public of the dangers it faced.

b. Before 1964, Defendants Internally Recognized the Growing Evidence Demonstrating that Smoking Causes Significant Adverse Health Effects

594. Internal documents reveal that Defendants' knowledge of the potential harm caused by smoking was markedly different from their public denials on the same subject. Defendants specifically recognized the validity of the growing body of scientific evidence that existed in the 1950s.

595. At the same time that Defendants assured the public through their 1953 "Frank Statement" that "there is no proof that cigarette smoking is one of the causes [of cancer]," they documented a large number of known carcinogens contained in cigarette smoke. 86017454-7454 (US 21418).

596. For example, a December 24, 1952 memorandum titled "Report of Progress -- Technical Research Department" contained a "Cancer" section, which noted: "The B&W lab has in

the past made a partial isolation and identification of the aromatic hydrocarbon, benzopyrene, in both smoke and original tobacco from RALEIGH blend cigarettes." The report refers to benzopyrene as a "carcinogenic hydrocarbon." 65020084-0095 at 0092 (US 21388).

597. Beginning in 1954, the BAT Group's major research laboratory performed research into the carcinogenicity of cigarette smoke by conducting skin-painting experiments on mice. As noted at Section V(A)(5)(b)(¶671), infra, this research showed that when compounds in cigarette smoke were painted onto mouse skins, they caused cancerous tumors. 682621615-1617 at 1615 (US 54180).

598. RJR recognized smoking as a cause of disease in mice as early as 1953. This knowledge is documented in a February 1953 Report drafted by Claude Teague, an RJR research scientist, titled "Survey of Cancer Research with Emphasis on Possible Carcinogens from Tobacco." It was clear to Teague that, "[s]ome workers have attempted to produce experimental cancers in test animals by application of tars obtained from tobacco, tobacco smoke, and other materials derived from tobacco." Teague further acknowledged: "On the basis of the information at hand, it would appear that polynuclear aromatic compounds occur in the pyrolytic products of tobacco. Bensyprene and 'N-bensyprene[sic], both carcinogens, were identified in the distillates. . . . Studies of clinical data tend to confirm the relationship between heavy and prolonged tobacco smoking and incidence of cancer of the lung." 501932947-2968 at 2952-2953, 2961, 2963 (US 21407).

599. A 1959 RJR document written by Alan Rodgman, an RJR scientist, discusses a 1954 report of a "carcinogenic (cancer producing) polycyclic hydrocarbon, 3, 4-benzpyrene" and elaborates on RJR's in-house research which corroborated this finding:

> There is no evidence that any of these compounds will produce cancer in man. Nonetheless, there is a distinct possibility that these substances would have a carcinogenic effect on the human respiratory system. Medical experience has shown that man responds to various chemical substances in the same manner as experimental animals. It follows therefore that it would be better for the consumer if cigarette smoke were devoid of such compounds.
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> * * *
>
> Some thirty-odd polycyclic hydrocarbons have since been similarly characterized in these laboratories. Of these, eight are carcinogenic to mouse epidermis.

500945942-5945 at 5942 (US 21249).

600. RJR sought to remove some of the cancer-causing compounds at the same time it was publicly denying that the compounds even existed: "[H]aving confirmed and extended the early published findings on polycyclic hydrocarbons in cigarette smoke, we initiated a lengthy research program to develop methods to lessen the amounts of these potentially dangerous compounds in cigarette smoke." 500945942-5945 at 5943 (US 21249).

601. Rodgman's later work corroborated his prior findings. In 1956, he wrote an extensive paper on "The Analysis of Cigarette Smoke Condensate." In it, Rodgman explained:

> The research described in this report represents a concerted effort to determine whether or not the polycyclic aromatic hydrocarbons are present in cigarette smoke condensate. One of the major objections offered to previous investigations is that the identification of specific compounds solely on the basis of ultraviolet absorption studies is not definitive. Since the present research describes the actual isolation, identification and characterization of several polycyclic aromatic hydrocarbons including the highly carcinogenic 3, 4-benzpyrene, the major criticisms of past research are now nullified.

Rodgman further wrote of the studies undertaken using standard Camel cigarettes:

> In view of this data, it is logical to assume that the carcinogenic activity of cigarette smoke condensate is due to the presence of one or more carcinogenic polycyclic aromatic hydrocarbons.
>
> * * *
>
> Since it is now well-established that cigarette smoke does contain several polycyclic aromatic hydrocarbons, and considering the potential and actual carcinogenic activity of a number of these compounds, a method of either complete removal or almost complete removal of these compounds from cigarette smoke is required.

501008241-8293 at 8254, 8279, 8280 (US 20667).

602. Rodgman's views were consistent with what visiting scientists from the United Kingdom observed in 1958 about researchers working for Defendants. The three British scientists reported widespread acceptance among top officials and scientists in the United States tobacco industry, including those at TIRC, Liggett, Philip Morris, and American, that smoking causes disease. They further noted that there was virtual consensus among researchers within the industry that cigarettes played a role in the production of human cancers:

> With one exception (H.S.N. Greene) the individuals whom we met believed that smoking causes lung cancer if by "causation" we mean any chain of events which leads finally to lung cancer and which involves smoking as an indispensable link. In the U.S.A. only Berkson, apparently, is now prepared to doubt the statistical evidence and his reasoning is nowhere thought to be sound.
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> * * *
>
> In their [Liggett's] opinion T.I.R.C. has done little if anything constructive, the constantly re-iterated "not proven" statements in the face of mounting contrary evidence has thoroughly discredited T.I.R.C., and the S.A.B. of T.I.R.C. is supporting almost without exception projects which are not related directly to smoking and lung cancer. Liggetts [sic] felt that the problem was sufficiently serious to justify large-scale investment by the Company directly in experimental research on smoke and cancer, accepting privately that

> a strong case against tobacco had been made out and avoiding any public comment until their own research had provided something concrete to offer.
>
> * * *
>
> The majority of individuals whom we met accepted that beyond all reasonable doubt cigarette smoke most probably acts as a direct though very weak carcinogen on the human lung. The opinion was given that in view of its chemical composition it would indeed be surprising if cigarette smoke were not carcinogenic. This undoubtedly represents the majority but by no means the unanimous opinion of scientists in U.S.A. These individuals advised us that although it is not possible to predict unambiguously the effect of any substance on man from its effect on experimental animals the generally successful use of animals in other fields as a model for man fully justifies their use in our problem.

TINY0003106-3116 at 3108, 3111, 3112 (US 21369) (emphasis in original); Brandt WD, 94:8-96:13; Brandt TT, 9/28/04, 820:6-20.

603. In 1962, Rodgman offered his assessment of "the smoking and health problem":

> Although the major part of the sales of this Company consists of cigarettes, what the Company sells is cigarette smoke. This Company, therefore, should be concerned with the physiological properties and composition of cigarette smoke. The benefits from such knowledge are obvious, particularly [sic] it anticipates possible governmental regulation. During the past two decades, cigarette smoke has been the target of a host of studies relating it to ill-health and particularly to lung cancer. The majority of these studies incriminate cigarette smoke from a health viewpoint.
>
> * * *
>
> Epidemiological data: The results of 34 different statistical studies show that cigarette smoking increases the risk of developing lung cancer. Many authorities believe the relationship to be one of cause-and-effect. . . . The statistical data from the smoking-health studies are almost universally accepted. After more than ten years, criticisms of the studies have been reduced to the dictum. A statistical study cannot prove a cause-and-effect relationship between two factors.

Rodgman made explicit that he considered the evidence of smoking's harm convincing:

> The Evidence to Date: Obviously, the amount of evidence accumulated to indict cigarette smoke as a health hazard is overwhelming. The evidence challenging this indictment is scant. Attempts to shift the blame to other factors, e.g., air pollutants, necessitates acceptance of data similar to those denied in the cigarette smoke case.
>
> * * *
>
> It has been repeatedly stated that some scientists discount the cigarette smoke-lung cancer theory. This is true. But it should be noted that many of those quoted in this regard are on record with contrasting views, e.g., Berkson, the statistician, has stated "...the definitive important finding of these statistical studies is not that there is an association between smoking and lung cancer, but that there is an association between smoking and deaths from all causes generally. . . ."

504822847-2852 at 2847-2848, 2850-2852 (US 20735) (emphasis in original); Brandt WD, 96:14-99:4.

604. Despite these writings, in 1995, Dr. Rodgman stated under oath that, as of 1962, he disagreed that it was "more likely than not that cigarette smoking caused health problems. This explanation is in direct contradiction to the clear wording of his own documents, set forth above, written 40 years before his 1995 testimony. Moreover, Dr. Rodgman had a financial incentive to offer favorable testimony to RJR when he testified. He worked for RJR as a scientist from 1954 to 1987, rising to the level of R&D Director of Fundamental Research. Since his retirement from RJR in 1987, Rodgman has been retained as a paid smoking and health litigation consultant to Womble Carlyle PLLC ("Womble"), earning as much as a total of $600,000. Rodgman PD, United States v. Philip Morris, 6/26/02, 23:20-32:8. At the same time that he was being paid as a consultant to Womble, Rodgman also served as a fact witness for RJR in its defense of various smoking and

health cases. Id. at 12:10-16, 27:1-32:8, 33:2-25, 37:1-41:12, 42:14-43:11. Dr. Rodgman's recantation of the extensive analysis and findings of his research of the late 1950s and 1960s is patently not credible.

605. Lorillard also conducted research which pointed to cigarette smoking as a cause of cancer and other diseases. In the early 1960s, Lorillard conducted in-house experiments on animals that showed ciliastatic effects of tobacco smoke on the respiratory tract. The cilia are small hair-like structures in the lungs which help move particles out and keep the airways clean. Spears PD, Blue Cross/Blue Shield of New Jersey v. Philip Morris, 3/23/00, 144:4-22.

606. Philip Morris also recognized the link between cigarette smoking and disease. A July 24, 1958 memorandum written by C. Mace, head of research for Philip Morris, admitted that Philip Morris was aware that smoking was linked to lung cancer. The memorandum stated that "the evidence . . . is building up that heavy cigarette smoking contributes to lung cancer either alone or in association with physical and physiological factors." 1000305086-5087 at 5086 (US 20090).

607. Dr. Helmut Wakeham, a high-ranking Philip Morris scientist, wrote in a September 22, 1959 memorandum regarding nicotine:

> One of the main reasons people smoke is to experience the physiological effects of nicotine on the human system. Nicotine, to the best of present knowledge, does not produce cancer. Hence, in theory one could achieve the major advantage of smoking without the hazard of cancer. But nicotine in tobacco smoke is present in the tar phase, and so far a reduction in tar by filtration or otherwise has been accompanied by a comparable reduction in nicotine.

1005039423-9424 at 9424 (US 21657).

608. Liggett internally linked smoking and disease, and sought to reduce or remove hazardous constituents. In a memorandum dated March 15, 1961, Arthur D. Little, Inc., Liggett's outside research consultant, summarized the results of the work it performed for Liggett:

> 1. There are biologically active materials present in cigarette tobacco.
>
> These are: a) cancer causing
>
> b) cancer promoting
>
> c) poisonous
>
> d) stimulating, pleasurable, and flavorful.
>
> 2. There is no reason why the poisonous group, CO, HCN, NO2, etc., cannot be reduced, even though they are not seen as a primary health hazard. Methods for removal are:
>
> a) filtration (treated carbon, etc.)
>
> b) treatment for removing precursors, CN elimination
>
> c) addition as a reactant (urea for NOs).
>
> 3. Cancer promoting materials, esters, phenols, amines, can possibly be reduced by some treatment, extraction, etc.
>
> 4. The cancer-causing materials apparently are in many substances that are pyrolyzed but seem to be associated with tobacco in greater concentration than for primarily cellulose.

These findings were marked "confidential." 2021382496-2498 at 2496 (US 20345).

609. A Liggett working memorandum titled “Alternative Theories of Carcinogenesis,” prepared on April 24, 1963, acknowledged a causal relationship between “the chemical properties

of ingested tobacco smoke" and development of carcinoma that was suggested by Defendants' scientists. 2022969727-9728 (US 20368).

c. In the 1950s, Defendants Began Their Joint Campaign to Falsely Deny and Distort the Existence of a Link Between Cigarette Smoking and Disease, Even Though Their Internal Documents Recognized Its Existence

610. Beginning in the 1950s, all Defendants, including TIRC, the Tobacco Institute and TIRC's successor, The Council for Tobacco Research–U.S.A., Inc. ("CTR"), issued numerous false public statements designed to mislead the public about the connection between cigarette smoking and disease.

611. A March 1954 public speech to the National Association of Tobacco Distributors by George Weissman, a Vice President with Defendant Philip Morris, captured Defendants' public position that there was no link between smoking and disease:

> For never in the history of American industry -- a history that not so incidentally had its origins in tobacco -- has one industry been under such attack as we are today, never has an industry's very existence been so dependent on its relations with the public.
>
> * * *
>
> Which brings me to another, and even more important current problem! -- the current medical propaganda being directed against the cigarette industry by a <u>small number</u> of doctors and a <u>large number</u> of magazines, and newspapers. As many, if not more, distinguished scientists have disputed the arbitrary statements of the few doctors. As many, if not more, distinguished researchers, have pointed out other factors such as air pollution rather than cigarette smoking. There are many scientists who question the statistics and even doubt the fact that there is a health question involved in cigarette smoking. Yet, who rated the headlines when the charges were made? Unfortunately, the cigarette industry. Where were the denials and counterclaims? You sometimes had to use a microscope to find them. . . . If we had any thought or knowledge that in any way we

> were selling a product harmful to consumers, we would stop business tomorrow.

2022239339-9343 at 9339, 9341 (US 21766) (emphasis in original); Brandt WD, 49:23-50:10.

612. On April 14, 1954, TIRC published "A Scientific Perspective on the Cigarette Controversy," which restated the Frank Statement's pronouncement that the Defendants had accepted "an interest in people's health as a basic responsibility, paramount to every other consideration in our business." A total of 205,000 copies were printed and sent to 176,800 doctors, general practitioners and specialists. It was also sent to the deans of medical and dental colleges. The book and an accompanying press release went to a press distribution of 15,000, including editors of daily and weekly newspapers, consumer magazines, veterans magazines, and medical and dental journals, news syndicate managers, business editors, editorial writers, science writers, radio and television commentators, news columnists, and Members of Congress. The Sunday New York Daily News (circulation 3,800,000) gave feature treatment to the booklet, devoting a major part of the page to comment and a cartoon. The story was also sent to some 1,400 radio stations. 1005039987-0008 at 9990 (US 20192); TLT0902954-2955 (US 88388).

613. In a July 1, 1954 statement by TIRC, Defendants promised not only to conduct research on the relationship between smoking and disease, but also to make their findings known to the public. VXA2511193-1194 (US 63544).

614. On October 13, 1954, in newspapers such as the New York Daily Mirror, Timothy Hartnett, Chairman of TIRC, was quoted as saying that "no clinical evidence has yet established tobacco to be the cause of human cancer." ATC2454770-4770 (US 87049).

615. TIRC issued a July 15, 1957 press release titled "Scientist Comments on Benzypyrene Report," where it disputed the United States Surgeon General's report that benzypyrene had been identified in cigarette smoke, and stated that scientists had concluded that benzypyrene in cigarette smoke cannot be a cause of cancer in smokers. This public statement contradicted internal B&W research. 11313243-3244 (US 20280); 650200084-0095 (US 21388).

616. The Tobacco Information Committee, a TIRC subcommittee, published the first in a series of Tobacco and Health newsletters in October 1957. The newsletters contained articles that disputed the relationship between smoking and disease, criticized research that supported such a relationship, and asserted that differing opinions existed regarding tobacco use and health. The newsletter was sent to the medical and scientific communities. It reached a circulation of 520,000 in 1962, with about 315,000 copies being sent to doctors, dentists, and medical schools. The admitted purpose of the publication was to rebut and discredit the charges against tobacco. TIMN123324-3327 (US 21282); 511018410-8413 (US 22459); TIMN0070640-0656 (US 21299); TIMN0070657-0674 (US 22983); TIMN0081443-1457 (US 21307).

617. A December 16, 1957 press release from TIRC falsely stated that "[n]o substance has been found in tobacco smoke known to cause cancer in human beings." 500518708-8711 at 8708 (US 21834).

618. With the rising popularity of filters, Defendants attempted to promote their new filtered cigarettes as safer, without explicitly admitting that their previous products caused health problems. They continued to insist that the rise of filter cigarettes merely reflected the nature of consumer demand. James P. Richards, President of the Tobacco Institute, explained on June 30, 1958:

> The cigaret industry has not changed its mind. Our position was and is based on the fact that scientific evidence does not support the theory that there is anything in cigaret smoke known to cause human lung cancer. . . . [The Tobacco Institute] believes that the health of the people is more important than dividends for any industry.

TIMN0122775-2775 (US 21326).

619. In a newspaper article published on November 19, 1958, Clarence Cook Little was quoted as saying that there was scant clear evidence that smoking caused lung cancer, that much more research was needed, and that TIRC would continue to provide funds for independent research in universities and hospitals until the final answers were obtained. 501860595-0595 (US 21233).

620. In a December 27, 1958 public statement, Hartnett, still TIRC's Chairman, emphasized that links to smoking and disease remained undetermined and asserted that an increasing number of factors were being associated statistically with lung cancer. He cited occupational exposures, specific air pollutants, place of birth and residence, previous lung ailments, and nutrition, claiming that these factors and others were subjects of much scientific investigation. He said that:

> at its formation in January 1954, the Tobacco Industry Research Committee stated its fundamental position: "We believe the products we make are not injurious to health." We are pledging aid and assistance to the research effort into all phases of tobacco use and health. That statement and pledge are reaffirmed today by the members of the Tobacco Industry Research Committee.

500518759-8761 at 8761 (US 20636); Brandt WD, 88:6-89:4.

621. In another Tobacco and Heath newsletter, TIRC claimed:

> Continuing scientific research lends support to the position that too many unknowns exist today concerning lung cancer to warrant conclusions placing a major causative role on cigarette smoking, according to the 1957 Report of the Scientific Director of the Tobacco Industry Research Committee.

The publication also declared:

> Cigarette smoking is compatible with normal health, and even heavier-than-average cigarette smoking is compatible with better-than-average mortality rates, according to a scientific report presented before the Southern Medical Association.

MNAT00515648-5651 at 5648 (US 72185); Brandt WD, 84:10-85:2.

622. On November 27, 1959, the Tobacco Institute issued a statement attacking the article written by Surgeon General Burney on the hazards of cigarette smoking. See ¶¶137, 624; TIMN0110091-0091 (US 21319).

623. Little issued the following statement one day after publication of Burney's 1959 evaluation:

> Despite the recent research trends, the conclusions set forth in the Public Health Service review rely almost entirely on past reports that are no more conclusive today than when these reports were first published. Most of the points are not new but are familiar to the American public because they were first advanced some years ago in statistical studies that admittedly are not supported by experimental evidence.

503283464-3467 at 3465-3466 (US 22981); Brandt WD, 90:20-92:5.

624. Hill and Knowlton, TIRC's public relations counsel, explained its strategy in anticipation of the Burney report:

> Comment from TIRC for the press remains an effective way to meet anti-tobacco publicity efforts and emphasizes the multiple factors that should be considered. This, of course, is complemented with a continuing program of supplying information to give editors and writers a balanced perspective on questions of tobacco and health.
>
> * * *
>
> Published in the November 28 issue of the Journal of the American Medical Association, the article signed by the Surgeon General

> presented a selection of published data about smoking as related to lung cancer. Anticipating the appearance of the Burney article and learning of its contents in advance of publication, it was possible to provide the press promptly with statements from Dr. C.C. Little, Mr. James P. Richards, president of The Tobacco Institute, and others. Press stories used the tobacco industry comment in covering the Surgeon General's article.

HT0145148-5150 at 5148 (US 21177); Brandt WD, 92:23-94:7.

625. Internally, Defendants acknowledged that, as William Kloepfer, Vice President of Public Relations for the Tobacco Institute wrote to Earle Clements, President of the Tobacco Institute:

> Our basic position in the cigarette controversy is subject to the charge, and may be subject to a finding, that we are making false or misleading statements to promote the sale of cigarettes.

TIMN0072354-2356 at 2354 (US 63576).

626. But Defendants' campaign continued. On July 6, 1961, the Tobacco Institute issued a press release that quoted the Tobacco Institute President George Allen's comments on current health concerns regarding cigarette smoking: "The tobacco industry itself is more interested than anyone else in finding out and making public the true facts about tobacco and health." Allen further claimed that "research in recent years has produced findings that weaken rather than support the claim that smoking is a major contributor to lung cancer." TIMN0104428-4429 at 4428 (US 21762).

627. George Allen, President of the Tobacco Institute, explained the Defendants' ongoing position in a radio interview:

> ALLEN: . . . All the medical authorities as far as I know, or practically all of them, agree that nobody knows what causes cancer, and specifically lung cancer, and this is a matter that remains to be found by thorough and energetic scientific investigation.

* * *

> ALLEN: . . .That study [from the Royal College of Physicians, 1962], while considered very strong in its accusations, charges regarding smoking, nevertheless that study itself said that the majority of people smoke without any harm to their system. So if you say, am I going to get lung cancer if I smoke, a lot of people get lung cancer who have never smoked in their lives. We had a recent case, in which 27 nuns had died of lung cancer, not all together, not in the same place, but among the statistics . . . who had never been near tobacco. So, certainly one would have to say that if you just ask the question flatly, if I smoke, will I get lung cancer, there are many, many cases and evidences -- cited statements to the fact that there is no proved cause and effect relationship between the two.

500062010-2018 at 2011, 2015-2016 (US 20619); Brandt WD, 114:6-115:7.

628. On March 14, 1963, eleven months before the release of the 1964 Surgeon General's Report, the Tobacco Institute issued a press release to the New York Times containing a statement by Allen:

> Scientific opinions differ widely. Many scientists say that more must be learned before it will be known whether any of the factors now under study, including smoking, has a role in causation of diseases such as lung cancer, and, if so, whether that role is direct or indirect, primary or incidental. In the opinion of these scientists, singling out tobacco as a major factor is not warranted by scientific knowledge.

TIMN0131426-1426 (US 21336).

629. On April 15, 1963, ten months before the release of the 1964 Surgeon General's Report, Allen commented on a recent booklet issued by the American Cancer Society:

> There is dispute among scientists as to the causes of lung cancer. Many differing opinions exist. . . .
>
> The booklet does not purport to contribute new knowledge.
> It is our belief that the answers to questions about diseases such as lung cancer will come through the research laboratory, not through booklets or campaigns for or against smoking.

TIMN0118348-8349 at 8348 (US 21320).

630. A June 1963 Tobacco Institute statement by Allen similarly claimed that there was "dispute among scientists as to the causes of lung cancer." Allen reported that since 1954 the tobacco manufacturers had supported grant-in-aid research through TIRC and had contributed more than $6 million in funds towards independent medical and scientific research. While the research programs were continuing, the press release claimed that research findings regarding underlying causes of cancer and cardiovascular diseases were to that date inconclusive. TIMN0104311-4312, at 4311 (US 21317).

631. A July 9, 1963 press release reaffirmed the Tobacco Institute's public position to not accept any claims that smoking played a part in causation of human disease until further research provided facts to link smoking to certain health effects. The release quoted Allen:

> With the numerous theories, statements, and resolutions that have been presented to the public, there is some danger of losing sight of what ought to be the basic objective of all who are concerned. That is, doing the needed research. We believe the answers will be found. And they will be found in the scientific laboratory, not through pronouncements either for or against tobacco.

TIMN0098597-8598 at 8598 (US 21270).

632. In September 1963, the Tobacco Institute issued a publication titled "Tobacco and The Public Interest." It provided: "[t]here ought to be a respite from theories, resolutions and emotional statements for a time at least, so that scientists can objectively evaluate what is known and what is not known." He reaffirmed Defendants' purported commitment to research to find necessary facts:

> That is what this industry has tried to do in the past, through the research program of the [TIRC]. And that is what we shall do in the

> future, until enough facts are known to provide solutions to the health questions involved.

TIMN0104251-4256 at 4254, 4256 (US 21316).

633. On October 11, 1963, in order to intensify Defendants' public relations campaign in anticipation of the 1964 Report, the Tobacco Institute issued a press release: "Allen Outlines Some of Reasons Why Smoking-Health Theory is Disputed." It provided:

> [P]eople sometimes forget that there are good reasons why the theories about smoking and health problems are in dispute, and are often questioned by responsible scientists. . . . [T]he original theory about smoking and lung cancer -- the theory that smoke was a direct, contact carcinogen -- has virtually been abandoned.

He asserted that the case against smoking rested largely on statistical studies, whose meanings were questioned by many leading medical statisticians, and that there was a growing interest among scientists studying the issue as to the possible role of constitutional and genetic factors. TIMN0118249-8250 at 8249 (US 21561).

634. On November 3, 1963, a Tobacco Institute news release titled "Tobacco Industry Confident Research Will Find Answers, George Allen Says," stated that Allen was "convinced that scientific research will discover the answers to questions about smoking and health and the causes of the diseases with which smoking has been associated." After cataloguing Defendants' positions on smoking and health, Allen "suggested a moratorium on resolutions and emotional statements about smoking and health, so that scientists can objectively evaluate what is known and what is not known." TIMN0118245-8246 at 8245, 8246 (US 77055).

635. The Surgeon General's Report was released on January 11, 1964. Following the release of the Report, Defendants continued to assert alternative causation theories. Despite

overwhelming evidence from a wide range of disciplines including statistics and epidemiology, pathology and chemistry, clinical observation, and animal experimentation, as well as their own internal research, Defendants continued to claim "no proof" and continued to attempt to create doubt about the scientific findings.

636. Defendants recognized -- and used -- the denial and rationalization used by smokers. In a memo to Joseph F. Cullman of Philip Morris, George Weissman, Executive Vice President Overseas (International), described how, in response to the 1964 Surgeon General's Report, "we must in the near future provide some answers which will give smokers a psychological crutch and a self-rationale to continue smoking." Among the "crutches" and "rationales" proposed to be offered to the smokers were questions of medical causation, "that more research is needed," and that there are "contradictions" and "discrepancies." 1005038559-8561 at 8559-8560 (US 20189).

637. In testimony on June 25, 1964, five and a half months after issuance of the 1964 Surgeon General's Report, at a hearing of the Committee on Interstate and Foreign Commerce, Bowman Gray, Chairman of the Board of RJR, stated:

> I believe . . . that nearly everyone familiar with these difficult problems would agree that there are large and basic areas where there is lack of knowledge, uncertainty, and where a great deal more research is essential before definitive answers can be made. Many distinguished scientists are of the opinion that it has not been established that smoking causes disease.

501935056-5071 at 5060 (US 20690).

638. In a newspaper article dated July 12, 1964, Horace Kornegay, the Chairman and President of the Tobacco Institute, was quoted as saying: "There exists no definite proof that

smoking cigarettes causes lung cancer or any other dreaded disease." TIMN013181-3181 (US 88779)3.

639. On August 17, 1964, CTR issued a press release quoting Little: "The fact remains that knowledge is insufficient either to provide adequate proof of any hypothesis or to define the basic mechanisms of health and disease with which we are concerned." MNAT00287815-7818 at 7815 (US 21224).

640. On December 29, 1965, the Tobacco Institute issued a press release reiterating that research had not established whether smoking causes disease and that it was still an "open question." The release went on to state that "[i]f there is something in tobacco that is causally related to cancer or any other disease, the industry wants to find out what it is, and the sooner the better." TIMN0123790-3793 at 3790, 3791 (US 21330).

641. On October 21, 1966, more than two years after issuance of the 1964 Surgeon General's Report, the Tobacco Institute issued a public statement to newspapers that stated that the tobacco industry knew "of no valid scientific evidence demonstrating that either 'tar' or nicotine is responsible for any human illness." TIMN0099040-9041 at 9040 (US 21550).

4. The 1964 Surgeon General Report Represented a Scientific Consensus that Smoking Causes Disease

a. The Process and Methodology of the Surgeon General's Report

642. In 1961, the Surgeon General created his Advisory Committee on Smoking and Health to perform a comprehensive evaluation of all the existing research regarding cigarettes and disease and offer a definitive assessment. The process of the Committee's formation, its selection, its substantive work, and its findings were designed to represent a model of objective, public

scientific and medical inquiry based on a rigorous and systematic assessment of the health implications of smoking. Brandt WD, 99:5-112:1. The findings of the Advisory Committee would become the Surgeon General's Report.

643. Surgeon General Luther Terry first drew up a list of some 150 individuals as potential Advisory Committee members. None were known to have taken a public position regarding the relationship of smoking and health. These individuals represented a number of fields and medical specialties from pulmonary medicine to statistics, cardiology to epidemiology. This list was then circulated to the American Cancer Society, the American Heart Association, the National Tuberculosis Association, and the American Medical Association, as well as the Tobacco Institute. Each group was permitted to eliminate any name, without citing any reason. Individuals who had already published on the issue or had taken a public position were also eliminated. The selection process indicated Terry's commitment to a process that would produce a genuine and definitive consensus. Dr. Terry had wanted to ensure that the Report could not be attacked on the basis of its membership. All ten of the members finally selected were eminent physicians and scientists; eight were medical doctors, one was a chemist and the other a statistician. Three of the panelists smoked cigarettes, two others occasionally smoked pipes or cigars. VXA1601844-2232, at 1864-1867 (US 64057) (1964 Surgeon General Report); Brandt WD, 100:8-102:8.

644. All of the major companies manufacturing cigarettes and other tobacco products were invited to submit statements and any information pertinent to the inquiry. The replies which were received were taken into consideration by the Committee. VXA1601844-2232 at 1870 (US 64057) (1964 Surgeon General Report); Brandt WD, 100:8-102:8.

645. Terry's first ten selections all agreed to serve on the Advisory Committee, indicating to him "that these scientists were convinced of the importance of the subject and of the complete support and confidence of the Public Health Service." VXA2511396-1397 at 1396 (US 21376) (Terry, Luther L., The Surgeon General's first report on smoking and health: A challenge to the medical profession, New York State Journal of Medicine, 1254 (1983)); Brandt WD, 102:4-23.

646. The Report drew on the respective disciplinary strengths of the Advisory Committee members. Walter J. Burdette was a prominent surgeon and chair of the Surgery Department at the University of Utah; John B. Hickman was the Chair of Internal Medicine at the University of Indiana; and Charles LeMaistre was a pulmonary specialist and head of a very large cancer treatment center. The pathologists joining the Committee were: Emmanuel Farber, Chair of Pathology at the University of Pittsburgh; Jacob Furth from Columbia, an expert on the biology of cancer; and Maurice Seevers, Chair of the University of Michigan Pharmacology Department. Louis Feiser of Harvard University was an eminent organic chemist. Completing the Committee were: Stanhope Bayne-Jones, a bacteriologist, former head of New York Hospital and Dean of Yale Medical School; Leonard H. Schumann, epidemiologist at the University of Minnesota; and William G. Cochran, a Harvard University mathematician with expertise in statistical methods. VXA1601844-2232 at 1864-1867 (US 64057) (1964 Surgeon General Report); Brandt WD, 102:9-23.

647. Terry divided the preparation of the 1964 Report into two distinct phases. The first phase, the work of the Advisory Committee, was to determine the "nature and magnitude of the health effects of smoking." The Committee sought to arrive at a clinical judgment on smoking. As one public health official explained, "What do we (that is, The Surgeon General of the United States

Public Health Service) advise our patient, the American public, about smoking?" VXA2511346-1350 at 1346 (US 63531).

648. The Advisory Committee met together nine times in just over a year. In between these meetings, both Committee members and staff worked to review, critique, and synthesize what had become a formidable volume of scientific work on tobacco. Terry promised that the report on these findings would be followed by phase II, proposals for remedial action, thereby insulating the Committee from the politics that swirled around the tobacco question. Terry recognized that the Advisory Committee could only speak with authority about the scientific nature of the health risks of smoking; he would leave the policy questions to the political process. Brandt WD, 103:23-104:19.

649. Beginning with the first Report in 1964, the United States Public Health Service has followed the scientific consensus formation approach when producing a Report of the Surgeon General on Smoking and Health. The scientific community forms a consensus on issues of causation by reviewing all of the scientific evidence available; examining that evidence for its strength, consistency, coherence, temporal association and biological plausibility; and then reaching a judgment as to whether the data support a causal relationship between smoking and a disease. Burns WD, 14:13-19.

650. The Reports go through a careful process to ensure that individual biases play no role in determining the conclusions or statements reached. That process occurs through a set of expert reviews of the Report at various stages in its preparation. Individual scientists, usually outside of the government, are first selected and asked to write chapters on a given topic. Sometimes the entire Report will be devoted to a specific topic, like cancer or heart disease or lung disease. In that case,

individuals are asked to write chapters or sections on specific questions that relate to the general issue examined, so that chapters can be assembled to cover the entire topic. The individual authors selected are extremely knowledgeable in the specific area that they are asked to write about. They are directed to consider all of the pertinent scientific literature and to base the chapter's conclusions on the data presented in that literature rather than on the author's personal views. Initial drafts of chapters are prepared for each Report by the individual authors, and the initial drafts are received and then edited into chapters. Id.

651. Once the chapters are submitted by the initial author, the editors make all subsequent changes and the chapters are not resubmitted to those authors for their approval of the changes. The chapters are next sent out to a group of expert scientific reviewers for peer review of their scientific accuracy and completeness, as well as for balance, tone and appropriateness of the conclusions drawn from the scientific data. These comments are integrated into the volume, and the entire volume is then sent out to a group of senior scientists in the academic community for further review for its accuracy, balance and tone. The Report is also formally reviewed by each of the agencies of the Public Health Service. Id.

652. Once these many reviews are completed, the editors again integrate the comments into the text to strengthen its substance. Each Report is then submitted for final formal clearance by the Centers for Disease Control, by the Assistant Secretary for Health, by the Surgeon General, and by the Secretary of Health and Human Services. Once the Report is cleared, it is transmitted as a formal requirement of law to Congress as the official position of the HHS on the issue. It is also released to the public and the press. Id. at 15:3-16:7. In the 1960s and 1970s, it took approximately one year to complete the Report preparation process. More recently, given the vast expansion in the body of

smoking and health literature, it has required two to three years to accomplish the task of preparing a Report of the Surgeon General on Smoking and Health. Burns WD, 16:8-11.

653. As part of that process, the Advisory Committee established a set of criteria to evaluate the significance of a statistical association. Recognizing that such evaluation requires judgment, the Committee sought to specifically define the process, as rigorously as possible, and set forth five specific conditions for judging causal relations:

a. Consistency of the Association. Nearly all the retrospective and prospective studies produced comparable results, despite the fact that different methods were employed for collecting data.

b. Strength of the Association: the ratio of lung cancer rates for smokers versus nonsmokers. The Committee assessed the significance of the dose effect phenomenon, finding that risk increased with amount smoked. According to the Report:

> [A]verage smokers of cigarettes have a 9- to 10 fold risk of developing lung cancer, and heavy smokers, at least a 20-fold risk. Thus it would appear that the strength of the association between cigarette smoking and lung cancer must be judged to be high.

c. Specificity of Association. This criteria, according to the Report:

> implies the precision with which one component of an associated pair can be utilized to predict the occurrence of the other, i.e. how frequently the presence of one variable (e.g., lung cancer) will predict, in the same individual, the presence of another (e.g., cigarette smoking).
>
> In a discussion of the specificity of the relationship between any factor possibly causal in character and a disease it may produce, it must be recognized that rarely, if ever, in our biologic universe, does the presence of an agent invariably predict the occurrence of a disease. Second, but not less

> important, is our growing recognition that a given disease may have multiple causes.

In the current case, the specificity of the association was especially strong. The Report explained, "of the total load of lung cancer in males about 90 percent is associated with cigarette smoking."

d. Temporal Relationship of Associated Variables: the Advisory Committee wrote:

> Exposure to an agent presumed to be causal must precede, temporally, the onset of a disease which it is purported to produce. . . . [N]o evidence has thus far been brought forth to indicate that the initiation of the carcinomatous process in a smoker who developed lung cancer antedated the onset of smoking.

e. Coherence of the Association: the Advisory Committee concluded:

> A final criterion for the appraisal of causal significance of an association is its coherence with known facts in the natural history and biology of the disease.

VXA1601844-2232 at 2033-2036 (US 64057) (1964 Surgeon General Report); Brandt WD, 105:6-111:7.

654. The 1964 Surgeon General's Advisory Committee's assessment of causality was based on a coherent and logical set of criteria, which have become the basic methodology for causal inference concerning disease since issuance of the Report. Brandt WD, 104:20-108:21.

b. The Conclusions

655. The 387-page 1964 Surgeon General's Report, citing 7,000 articles, came to the following conclusions:

> Cigarette smoking is associated with a 70 percent increase in the age-specific death rates of males. The total number of excess deaths causally related to cigarette smoking in the U.S. population cannot be

> accurately estimated. In view of the continuing and mounting evidence from many sources, it is the judgment of the Committee that cigarette smoking contributes substantially to mortality from certain specific diseases and to the overall death rate.
>
> * * *
>
> Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction.
>
> * * *
>
> The risk of developing lung cancer increases with duration of smoking and the number of cigarettes smoked per day, and is diminished by discontinuing smoking.

VXA1601844-2232 at 1884 (US 64057) (1964 Surgeon General Report); Brandt WD, 108:22-111:7.

656. The 1964 Report carefully evaluated the animal studies that had been conducted up to that time:

> Condensates of tobacco smoke are carcinogenic when tested by application to the skin of mice and rabbits and by subcutaneous injection in rats.
>
> * * *
>
> Bronchogenic carcinoma has been produced in laboratory animals by the administration of polycyclic aromatic hydrocarbons, certain metals, radioactive substances, and viruses. The histopathologic characteristics of the tumors produced are similar to those observed in man and are predominantly of the squamous variety.

VXA1601844-2232 at 1884, 1994-1997, 2016 (US 64057) (1964 Surgeon General Report); Brandt WD, 108:22-111:7.

657. The 1964 Report found much higher death rates among smokers, as compared with nonsmokers; these rates increased with consumption:

> The death rate for smokers of cigarettes only, who were smoking at the time of entry into the particular prospective study, is about 70 percent higher than that for nonsmokers. The death rates increase with the amount smoked. For groups of men smoking less than 10, 10-19, 20-39, and 40 cigarettes and over per day, respectively, the death rates are about 40 percent, 70 percent, 90 percent, and 120 percent higher than for nonsmokers. The ratio of the death rates of smokers to nonsmokers is highest at the earlier ages (40-50) represented in the studies, and declines with increasing age. The same effect appears to hold for the ratio of the death rate of heavy smokers to that of light smokers. In the studies that provided this information, the mortality ratio of cigarette smokers to nonsmokers was substantially higher for men who started to smoke under age 20 than for men who started after age 25. The mortality ratio was increased as the number of years of smoking increased. In two studies which recorded the degree of inhalation, the mortality ratio for a given amount of smoking was greater for inhalers than for non-inhalers.

VXA1601844-2232 at 1888-1889 (US 64057) (1964 Surgeon General Report); Brandt WD, 108:22-111:7.

658. The 1964 Report also reached conclusions as to coronary heart disease:

> Although the causative role of cigarette smoking in deaths from coronary disease is not proven, the Committee considers it more prudent from the public health viewpoint to assume that the established association between cigarette smoking and coronary disease has causative meaning than to suspend judgment until no uncertainty remains.

The 1968 Report went a step further, concluding that

> [b]ecause of the increasing convergence of epidemiological and physiological findings relating cigarette smoking to coronary heart disease it is concluded that cigarette smoking can contribute to the development of cardiovascular disease and particularly to death from coronary heart disease.

VXA1601844-2232 at 1885 (US 64057) (1964 Surgeon General Report); ATC1081418-1542 at 1430 (US 65351) (1968 Surgeon General Report).

659. From both a clinical and a public health perspective, the 1964 Report concluded that stopping smoking lowered an individual's risk of disease and health:

> Cigarette smokers who had stopped smoking prior to enrollment in the study had mortality ratios about 1.4 as against 1.7 for current cigarette smokers. The mortality ratio of ex-cigarette smokers increased with the number of years of smoking and was higher for those who stopped after age 55 than for those who stopped at an earlier age.

VXA1601844-2232 at 1888-1889 (US 64057) (1964 Surgeon General Report).

660. The 1964 Surgeon General's Report on Smoking and Health is widely considered by historians to be one of the most significant documents in the history of twentieth century public health. Brandt WD, 99:5-112:1.

5. Post-1964 Research on the Adverse Health Effects of Smoking and Defendants' Persistent Denials Thereof

a. Following Publication of the 1964 Report, the Scientific Community Continued to Document the Link Between Smoking and an Extraordinary Number of Serious Health Consequences

661. Smoking and health is one of the most studied subjects in the field of public health. The Smoking and Health Database, maintained by the Centers for Disease Control and Prevention, United States Department of Health and Human Services, is a bibliographic database -- accessible via the internet -- which includes more than 62,000 items on smoking and health and covers over thirty years of information. The medical literature is replete with extensive epidemiological studies, conducted over decades, comparing the disease and death rates of millions of smokers and nonsmokers. Every relevant population and demographic group has been examined. Examples of these studies are: American Cancer Prevention Study I and II; British Physicians Study; Dorn Study

of United States Veterans; National Health Interview Study; Current Population Survey; and the Behavioral Risk Factor Survey. Burns WD, 9:2-16.

662. This body of literature has been cited, reviewed, and discussed in Reports of the Surgeon General on Smoking and Health published in 1964, 1967, 1968, 1969, 1971, 1972, 1973, 1974, 1975, 1976, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1988, 1989, 1990, 1992, 1994, 1998, 2000, and 2001. Id.

663. The scientific conclusions presented in each of the Reports of the Surgeon General are based on the consensus of then-existing scientific understanding. Burns WD, 14:10-12.

b. Defendants' Internal Documents and Research from the 1960s, 1970s, and Beyond Reveal Their Continued Recognition That Smoking Causes Serious Adverse Health Effects and Their Fear of the Impact of Such Knowledge on Litigation

664. By at least January 1964, with the issuance of the Surgeon General's 1964 Report, Defendants knew there was a consensus in the scientific community that smoking caused lung cancer and other diseases. Despite that fact, they publicly insisted that there was a scientific controversy and disputed scientific findings linking smoking and disease knowing their assertions were false.

665. Following issuance of the 1964 Surgeon General's Report, Helmut Wakeham, then Vice-President of Research and Development at Philip Morris Inc., admitted in a research report that there was "little basis for disputing the findings [of the 1964 Surgeon General's Report] at this time" and acknowledged that the Report reflected a "professional approach" of the Advisory Committee. However, Philip Morris continued to maintain – for another thirty-five years – its public position that the causal link between smoking and health was an "open question." 1000335612-5625 at 5615, 5616 (US 22986).

666. According to a February 1964 report prepared by Alan Rodgman at RJR, "Cigarette smoke from any tobacco type or tobacco blend contains carcinogenic components." The report also indicated that "[n]one of the chemical data acquired in our studies or in studies conducted elsewhere is inconsistent with reported biological, pathological, or statistical data indicting cigarette smoke as a health hazard." 504912643-2713 at 2704 (US 20736).

667. In August 1964, Rodgman recognized in an internal RJR document:

> Many nitrosamines [substances in tobacco smoke] have been shown to be carcinogenic for different organs in several species of animals. As nitrosamines are formed by the reaction of oxides of nitrogen with secondary amines, it is possible that cigarette smoke could contain nitrosoanabasine and nitrosonornicotine. Nitroanabasine, which is a derivative of the carcinogenic nitrosopiperidine, has now produced many tumors of the esophagus when given orally to rats.

501013277-3277 (US 20670).

668. In 1966, in a semi-annual report on Philip Morris's "Project 6900," which explored the biological activity of tobacco smoke, Project Director Peter C. Luchsinger noted that "cigarettes will most likely be implicated as one of the causative agents in these diseases [emphysema and bronchitis]." Luchsinger noted that in a series of long-term primate experiments financed by Philip Morris, monkeys forced to inhale smoke had a higher rate of emphysema than those in a non-smoking control group. Project 6900 included other experiments with smoking rodents, cats and other animals to determine whether different cigarettes affected lung function in a different manner or to a different degree. Luchsinger's report, never released to the public and marked "[n]ot to be taken from this room," concluded that, based on long-term inhalation studies, "gross lung pathology can be induced by smoking cigarettes." 100341400-1414 at 1402, 1406 (US 20095).

669. A May 1967 report on "Project 6900" described further tests with mice, pigs, monkeys and cats, concluding that filtered smoke was "no less tumorigenic than nonfiltered smoke." 1000342063-2073 at 2065 (US 20096).

670. Philip Morris Senior Scientist, Dr. Helmut Wakeham, informed Philip Morris executives on January 10, 1969, that "[n]ow we have a study of the effect of smoking in pregnancy which supports previous conclusions that smoking mothers produce smaller babies," and that the medical field recognized that "smaller babies suffer detrimental effects all through life," including "lower intelligence test scores at age 10." 1000211305-1307 at 1306 (US 20080).

671. A 1969 Phillip Morris memorandum revealed:

> A review of recent mouse skin painting data from the Harrogate Laboratories appearing in progress reports of the Tobacco Research Council (Great Britain) indicates strong support for previously published data on the following points: Cigaret smoke condensate painted on the backs of mice over a two-year period produces tumors in numbers proportionate to the amount of condensate applied. In other words, the dose-response relationship is clearly being followed in these experiments.

2025010581-0583 at 0591 (US 20405).

672. In the 1960s, RJR established a facility in Winston-Salem, North Carolina, which used mice to research the health effects of smoking. In this facility, nicknamed the "Mouse House," RJR scientists researched a number of specific areas, including studies of the actual mechanism whereby smoking causes emphysema. Internally, an RJR-commissioned report favorably described the Mouse House work as the most important of the smoking and health research efforts because it had come close to determining the underlying mechanism of emphysema. Bumgarner PD, Texas v. American Tobacco, 11/11/86, 32:9-33:5

673. Research done in RJR's science and health group located at the Mouse House was routinely withheld from the scientific community -- scientists were forbidden to both discuss and publish their findings. Id. at 35:3-38:18.

674. As a result of the Mouse House work, RJR was aware that smoking was linked to emphysema. After extended exposure to smoke, the animals suffered weight loss and changes in metabolism of lipids both in surfactant and in lung and liver. Id. at 63:17-66:15, 68:14-20.

675. RJR knew that exposing rabbits to tobacco smoke led to: slowing of heartbeat during puffs, decrease in pulse pressure, increased number of goblet cells, alveolar collapse, erythema of nasopharynx, acute pulmonary edema, erythema, endocardial hemorrhage, kidney disease, bronchial hyperplasia, emphysema, epithelial hyperplasia, bronchial edema, bronchiolar plugs, and gross lesions on lungs. 515384994-4999 (US 87983) (1969 Research Report titled "Initial Attempts at Exposing Rabbits to Whole Cigarette Smoke").

676. Moreover, the fact that RJR scientists had produced emphysema in chronic-smoke-exposed rats was known to Philip Morris. In a 1969 Philip Morris document concerning the biological research program at the Mouse House and the linkage it showed to smoking and disease, a Philip Morris scientist wrote:

> I met Dr. Price from R.J Reynolds at the CTR-USA meeting of December 11 and 12, 1969. He mentioned doing chronic cigarette smoke exposure studies with rats. The animals received up to 500 cigarettes and emphysema was produced.

1001882748-2749 at 2748 (US 26123).

677. In 1970, Philip Morris's President complained to RJR about the work going on in the Mouse House. Despite the progress made there, RJR responded to the complaint by abruptly closing

the Mouse House -- disbanding the entire research division in one day, without giving notice to the staff, firing all twenty-six scientists at the Mouse House, and destroying years of smoking and health research. 110315968-5971 (US 26378). The scientists were told that the terminations were not a reflection on their work, but that "economic reasons" caused a change in the direction of the company. When they were dismissed, they were reminded that they had signed confidentiality agreements that meant they were not to discuss company research. Bumgarner, PD, Texas v. American Tobacco, 11/11/96, 38:19-44:4, 44:5-53:24.

678. At the meeting informing employees working at the Mouse House of its disbanding, the group was informed by its supervisor that the legal department had requested their lab notebooks. They were initially told that the notebooks would be returned to them, but they were not. Later, Anthony V. Colucci, Director of the company's Scientific Litigation Support Division, informed them that some of the notebooks had been accidentally destroyed in the legal department. Id. at 38:19-44:4. Only one was ever produced as evidence in this case.

679. Defendants also obtained evidence about the health effects of smoking that was contrary to their public statements from research they funded jointly. Dr. Gary Huber conducted smoking and health research funded by Defendants from 1972 to 1980 while working at Harvard University Medical School. Huber's research was conducted pursuant to a written agreement between Harvard and B&W, Liggett, Lorillard, RJR, and Philip Morris. The agreement created the Harvard Research Tobacco and Health Program, with Huber as its head and chief investigator. Huber PD, Texas v. American Tobacco, 9/20/97, 11:9-12:16, 24:1-11, 24:13-25:9.

680. Huber and his group used laboratory animals to conduct numerous studies into the response of the lungs to tobacco smoke. These studies assessed the effects of smoke on lung

airways, lung parenchyma, and the heart and cardiovascular systems of animals. The studies also looked at COPD, emphysema, chronic bronchitis and coronary artery disease. Huber's animal studies utilized commercially available and research cigarettes, including commercially available cigarettes supplied by Defendants, and produced human-type diseases in the lungs of animals that inhaled cigarette smoke. The inhalation studies demonstrated changes in animal lungs that Huber's group concluded were analogous to human diseases. Id. at 12:4-13:20, 40:13-15, 40:17-25, 42:2-43:3.

681. Huber specifically reported to his sponsors -- B&W, Liggett, Lorillard, RJR, and Philip Morris -- that his research demonstrated a response to inhaled cigarette smoke, including disease mechanisms similar to those associated with diseases in humans. Id. at 12:20-13:20, 14:17-15:1, 15:6-16, 17:24-18:14, 18:22-24, 19:3-9.

682. Huber also conducted research funded by Defendants that studied changes in human smoking behavior as a function of lower and higher nicotine levels in cigarettes. The research demonstrated that smokers of lower nicotine cigarettes had an increased risk of developing pulmonary disease. Huber found that "compensation," or smoking behavior modifications, exhibited by smokers of lower nicotine cigarettes, rendered such cigarettes potentially more harmful than higher nicotine counterparts because more intense inhalation carried the smoke deeper into the lung where adenocarcinoma generally occurs. Id. at 49:6-50:3, 50:5-51:4, 51:6-11.

683. Another group of inhalation studies conducted by Huber focused on rats. The research showed that rats exposed to cigarette smoke developed emphysema. Huber reported these results to Defendants. Id. at 17:16-18, 18:21-24, 19:3-9.

684. Huber had frequent contact with scientists working for Defendants, including Alexander Spears of Lorillard, Alan Rodgman of RJR, and Thomas Osdene of Philip Morris.

Spears made several site visits to Huber's laboratory and reviewed his progress reports. Spears admitted that the research conducted by Huber concluded that tobacco smoke caused changes in the respiratory tracts of the animals consistent with chronic obstructive lung disease. Id. at 27:15-28:23, 29:4-13; Spears PD, Texas v. American Tobacco, 7/24/97, 233:1-238:12, 239:8-16; Spears PD, Cipollone v. Liggett, 7/26/84, 177:1-181:25.

685. On September 26, 1977, Philip Morris's Assistant General Counsel, Alexander Holtzman, sent a warning to the company President, Joseph Cullman, informing him that the results from the Harvard Project had led Huber to the conclusion that exposure of rats to cigarette smoke for six months causes emphysema and that a paper announcing those results would be delivered at the American College of Chest Physicians meeting in October, 1977. Holtzman indicated that attorney William Shinn of Shook, Hardy & Bacon, under the direction of industry counsel at the Tobacco Institute, had been sent to modify Huber's views on the results of his research. The attorney did not succeed in altering Dr. Huber's interpretation of the results of his study. The Tobacco Institute prepared a press release to mitigate the damage in the event Huber's interpretation received any media attention. 1005053856-3856 (US 20197).

686. In 1980, Huber sought to continue his smoking and health research on animals at a time when he was making significant progress, but Defendants cut off funding for his research at Harvard and denied his request for funding after he moved later that year to the University of Kentucky. In a 1980 meeting, Defendants' attorneys told Huber that the reason funding for his research had been discontinued was because he was "getting too close to some things." The attorneys included Lee Stanford from Shook, Hardy & Bacon, Ernest Pepples from B&W, and

Arthur Stevens from Lorillard. Huber PD, Texas v. American Tobacco, 9/20/97, 41:4-17, 43:21-44:15, 46:6-10, 46:12-24, 47:2-5, 73:12-74:18.

687. A number of exhibits were identified and introduced by plaintiff's and defendant's counsel during Dr. Huber's September 20, 1997 deposition in the State of Texas litigation. The documents shed light on Dr. Huber's relationship with Defendants and provide specific examples of information withheld from him by Defendants. HTT0010212-0214 (US 88807); HTT0010215-0216 (US 88808); HTT0010217-0219 (US 88809); HTT0010220-0222 (US 88810); HTT0010223-0225 (US 88811); 1335866-5870 (US 88812); HTT0010359-0360 (US 88815); HTT0010361-0363 (US 88816); HTT0010364-0368 (US 88817); 1000037069-7069 (US 88818); 501009723-9727 (US 88819); 01421596-1600 (US 88820); 03540193-0194 (US 88821); 01346204-6208 (US 88822); HTT0010392-0404 (US 88823); 504822923-2923 (US 88824); 504912643-2713 (US 88825); HTT0010502-0503 (US 88826); 0000130803-0803 (US 88827); 01370915-0915 (US 88828); HTT0010508-0510 (US 88829); HTT0010511-0513 (US 88830); HTT0010514-0516 (US 88831); HTT0010517-0531 (US 88832); HTT0010532-0534 (US 88833).

688. When Huber was subpoenaed by the State of Texas to testify in its case against the Defendants in 1997, lawyers for Defendants, including Robert McDermott at Jones Day and Lee Stanford at Shook, Hardy & Bacon, contacted him and urged him "to keep the faith, to hold the line." Huber PD, Texas v. American Tobacco, 9/20/97, 99:21-100:2, 100:4-8. The attorneys implied to Huber that he did not "fully appreciate the full weight of Shook, Hardy & Bacon and Jones Day" representatives of the tobacco industry. The calls caused Huber to fear for the safety and financial security of his family. Id. at 101:4-8, 10-21. Huber perceived a clear message: Defendants wanted to keep him silent. Id. at 102:3-17.

689. After the conclusion of his Texas case deposition, Defendants obtained an order sealing the transcript to keep Dr. Huber's testimony from public view and vigorously opposed efforts by litigants to obtain the transcript. Those efforts continued in this case, before this Court and in the Eastern District of Texas. Defendants succeeded in keeping the transcript sealed for almost seven years, but ultimately, the United States obtained an order from the Eastern District of Texas in 2004, unsealing the transcript, which is cited at length, supra. In re United States' Motion to Modify Sealing Orders, 5:03-MC-2 (E.D.Tex. June 18, 2003), Order of June 8, 2004.

690. Scientists working for Defendants also recognized the validity of research that Dr. Oscar Auerbach conducted with smoking beagles in the 1960s and early 1970s.

691. Principal Philip Morris scientist Raymond Fagan sent a memorandum dated February 25, 1970 to Helmut Wakeham, then Philip Morris's Research Director, on "Auerbach's Smoking Beagles" that described his visit to Auerbach's laboratory to observe the smoking dogs and tissue slides. Fagan observed:

> I would say that the experiment is a crude one but effective in that carcinoma in dogs has been produced. . . . The crux of the situation is whether there is general agreement by qualified pathologists that carcinoma . . . has indeed been produced. And even if the cancer-production is invalidated the obvious emphysema produced cannot be denied.

1000837391-7392 at 7392 (US 20109).

692. On April 3, 1970, a company researcher of Gallaher Ltd. (American Tobacco Company's British-based sister company) wrote his managing director a confidential memo titled "Auerbach/Hammond Beagle Experiment" describing Auerbach's research as "undoubtedly a significant step forward" and noting: "[W]e believe that the Auerbach work proves beyond

reasonable doubt that fresh whole cigarette smoke is carcinogenic to dog lungs and therefore it is highly likely that it is carcinogenic to human lungs." The research manager continued, "[t]he results of the research would appear to us to remove the controversy regarding the causation of the majority of human lung cancer," and "[t]o sum up, we are of the opinion that Auerbach's work proves beyond all reasonable doubt the causation of lung cancer by smoke." 321993992-3995 at 3992, 3993, 3994 (US 21688).

693. After a review of a presentation before the Tobacco Working Group, Lorillard's Alexander Spears admitted that "[t]he slides (shown by Auerbach) represented obvious lung pathology with increased cellular proliferation with smoke exposure." Spears PD, Cipollone v. Liggett, 7/26/84, 190:1-191:25.

694. A July 21, 1970 letter from B&W outside counsel Shook, Hardy, Ottman, Mitchell & Bacon to B&W General Counsel Debaun Bryant, reveals that B&W was concerned that statements of B&W and BAT employees, "which appear to demonstrate a belief on the part of company personnel that cigarette smoking has been established as a general health hazard or a cause of some particular disease or diseases," would expose B&W and BAT to smoking and health litigation. As examples, the letter discusses statements memorialized in the minutes of a conference at Kronberg, Germany, held from June 2 through 6, 1969 that was attended by both BAT and B&W researchers. It was David Hardy's opinion that such statements "constitute a real threat to the continued successful defense of smoking and health litigation." The statements which generated concern included, but were not limited to:

> There is a possibility that the experiments taking place at R. & D. E., Southampton, with the membrane of the chicken embryo, might be showing genuine carcinogenic effects in days; and

> The conclusion of the Conference was that at the present time the Industry had to recognize the possibility of distinct adverse health reactions to smoke aerosol: (a) Lung Cancer (b) Emphysema and Bronchitis. . . .

The letter also discusses additional concern stemming from the existence of a "'BAT/B&W Cost & Risk Pooling Agreement' executed in July 1969." 681805313-5319 at 5313, 5314, 5316 (US 30935).

695. Defendants also reviewed outside research that confirmed that smoke constituents were carcinogenic. A February 14, 1973 research report distributed to Defendants and their outside law firms linked smoking to cancer. The report, titled "Cigarette Smoke Condensate Preparation and Dermal Application to Mice," was prepared by Hazelton Laboratories and submitted to American, B&W, Liggett, Lorillard, Philip Morris, RJR, and the law firm of Covington & Burling. It reported that "97 of the 100 mice developed gross lesions in the skin in the area of dermal applications of benzo(a)pyrene." Examination indicated that these were squamous cell carcinomas. 501547434-7448 at 7444 (US 20682).

696. On January 7, 1969, Wakeham informed his superiors at Philip Morris that an abstract of a paper prepared by a researcher receiving CTR funding stated: "scientific findings suggest that inhalation of fresh cigarette smoke may enhance carcinogenesis in mice." 682011667-1671 at 1668 (US 21021).

697. In 1974, David Hardy of Shook, Hardy & Bacon advised BATCo against admitting to the public what its scientists knew internally -- that smoking causes disease. At the time, BATCo was considering placing a warning on cigarette packages sold in England -- with no government attribution -- that stated that smoking "causes lung cancer, bronchitis, heart disease." In a letter

addressed to BATCo, Hardy advised that this admission of fact would impede the defense of smoking and health litigation in the United States. He wrote:

> The proposed new warning removes the attribution of the warning to "H.M. Government," and instead appears to be a voluntary and direct admission by the cigarette manufacturer that the cigarettes contained in the package cause "lung cancer, bronchitis, heart disease." A wholly owned subsidiary of the manufacturer would, in our opinion, be adversely and prejudicially effected by such a voluntary warning even though it is a separate entity.
>
> * * *
>
> Once the fact and content of the warning got before a jury in the United States in a case involving the subsidiary, the defense of "no proof of causation" would be lost for all practical purposes. Such a result would indeed be unfortunate in view of the fact that in every instance where the matter has been explored in our Courts through expert testimony and otherwise, the cigarette manufacturer has prevailed.

110318156-8157 at 8156, 8157 (US 34974).

698. Similarly, a January 1, 1976 letter from B&W Vice President and General Counsel, Ernest Pepples, to BATCo General Counsel, H.A. Morini, discusses B&W's concern that voluntary consent by BAT to placing additives under the Tobacco Medicine Act would prejudice B&W, because it could attribute to B&W knowledge of specific hazards, which would badly weaken B&W's litigation position. MNATPRIV00023457 (US 86869).

699. In 1980, in a confidential memo analyzing BAT public positions and their impact on B&W's stance in litigation , BATCo internally admitted: "It is simply incorrect to say, 'There is still no scientific proof that smoking causes ill-health.'" 680050983-1001 at 0998 (US 20981).

700. Philip Morris scientist James Charles (who would later serve as the company's Vice President of Research) sent a February 23, 1982 memorandum to department head Thomas Osdene,

responding to the 1982 Surgeon General's Report on Smoking and Health: "Cigarette smoke is biologically active" and "cigarette smoke condensate applied to the backs of mice causes tumors." He listed nine facts relating to the biological activity of cigarette smoke and told Osdene "you may shred this document . . . or use [it] in any way you see fit." 1003171563-1567 at 1564, 1566 (emphasis in original) (US 26137).

701. On May 4, 1982, a BATCo consultant, Francis Roe, wrote to BAT and explained why he believed the industry position on causation to be unsupported, noting that "[i]t is not really true, as the American Tobacco industry would like to believe, that there is a raging worldwide controversy about the causal link between smoking and certain disease." 100432193-2203 at 2194 (US 20182).

702. RJR's recognition of the validity of epidemiological and scientific studies led Anthony V. Colucci, Director of the company's Scientific Litigation Support Division, to write to attorney James E. Young of Jones, Day, Reavis & Pogue to push the "mechanistic argument" of causation. In a 1986 memorandum, Colucci explicitly admitted: "that cigarettes are a risk factor for human lung cancer is an irrefutable fact." 507910855-0856 at 0855 (US 20803).

703. By 1980, Lorillard was aware that every major medical and scientific group in America that had studied the question had concluded that smoking causes disease. The company was equally aware that the only scientific studies to disagree with that conclusion were performed or funded by the tobacco industry. Spears PD, Texas v. American Tobacco, 7/24/97, 58:3-60:12.

704. The testimony of two high-level Philip Morris scientists fully corroborates the documentary evidence cited above that Defendants were totally aware of and convinced that smoking caused disease. First, former Philip Morris scientist Dr. William Farone, who worked at Philip Morris for 18 years and was impressive and credible as both a fact and expert witness, when asked

what the view was among Philip Morris scientists on the question of whether smoking cigarettes is a cause of lung cancer and other diseases, responded:

> There was widespread acceptance that smoking caused disease. I never talked with a scientist at Philip Morris who said that smoking doesn't cause disease.

When asked what the basis was for this understanding, he stated:

> The compelling epidemiology such as that recounted in the Surgeon's General's reports, and our knowledge about the chemicals that were created by cigarettes and what was delivered to the smoker, hundreds of times per day on average.

Dr. Farone was also asked whether any of these executives in his discussions with them challenged the validity of the scientific evidence that smoking causes disease, and answered:

> No. Their comments generally focused on how the company could or should respond, not to whether the scientific evidence was valid. Remember, a main reason why they hired me in 1976 was to help develop a less hazardous cigarette. It seemed to me at the time I was hired, and certainly was the case during my entire time there, that hiring me for that job was itself implicit recognition that the cigarettes that were out there being sold were causing disease.

Farone WD, 66:11-18, 68:22-69:10.

705. Second, Dr. Jerry Whidby, a former Philip Morris scientist who continues to appear as a fact and expert witness for the company and was paid $2800 per day by Philip Morris for his testimony in this case, responded to questions from the Court on the same subject:

> THE COURT: And you were asked in this question: "How long have you recognized that smoking was dangerous and caused cancer, emphysema and other disease?"
>
> And am I correct that you answered: "Since years before I went to work for Philip Morris."

> So the answer would be, I gather, that for years before 1972, you recognized that smoking caused cancer, emphysema and other disease, is that correct?
>
> THE WITNESS: Yes, that is correct. When I was in high school and grammar school, we talked about it in school.
>
> THE COURT: And the next question was: "Have you ever doubted that smoking was dangerous and caused cancer, emphysema and other diseases?"
>
> And you answered: "No, I have never doubted that." Is that correct?
>
> THE WITNESS: That's what I answered, yes.
>
> THE COURT: And were you aware from 1972 for at least 20 years, more than 20 years that you were working at Philip Morris, that Philip Morris was taking the public position that it was an open question as to whether smoking was dangerous and caused cancer, emphysema and other diseases?
>
> THE WITNESS: I was aware of some of those statements, not all the statements, no.
>
> THE COURT: . . . but did you not also testify in your direct that that was the common knowledge amongst your scientific colleagues at Philip Morris, that smoking was dangerous and caused cancer, emphysema and other diseases?
>
> THE WITNESS: People I worked around who shared their beliefs with me, yes, that's what we thought. We were there to make the cigarette better.

Whidby TT, 2/22/05, 14112:6-14113:11.

c. Despite Their Internal Knowledge, Defendants Continued, From 1964 Onward, to Falsely Deny and Distort the Serious Health Effects of Smoking

706. Defendants responded to the 1964 Surgeon General's Report, which reflected the scientific consensus that smoking causes lung cancer with a campaign of proactive and reactive

responses to scientific evidence that was designed to mislead the public about the health consequences of smoking. Defendants' goal was to create and maintain the smoking habit so as to enhance corporate profits.

707. In November 1967, at the direction of outside lawyers David Hardy of Shook, Hardy & Bacon, and Ed Jacobs of Cabell, Medinger, Forsyth & Decker, the Tiderock Corporation, the Tobacco Institute's public relations firm, prepared an action plan titled "The Cigarette Controversy." The action plan proposed to influence public opinion by creating specific initiatives to re-open the "open question" cigarette controversy. The program called for the creation of a position paper for intra-industry use as well as one for distribution to the media and public. The plan included targeted categories for mailings such as the medical profession, scientists, communicators (press, radio, television), educators, top public figures, and 10,000 top corporate presidents. It also detailed the publication of magazine articles. 1005109086-9106 (US 20211); TIMN0070816-0821 (US 77048); 502644592-4616 (US 20703).

708. In 1968, the Tobacco Institute published a pamphlet titled "The Cigarette Controversy: An Examination of the Facts by the Tobacco Institute -- The Tobacco Industry's Contribution to Health Research." It declared:

> In order to help advance scientific understanding of the causes, as well as the means of preventing and controlling disease, the American tobacco industry has contributed millions of dollars for independent research on smoking and health. During the past thirteen years, the industry has supported over 300 independent health studies through the industry's Council for Tobacco Research - U.S.A. Do cigarettes cause disease? In spite of all the debate -- in spite of all of the research -- that question is still unanswered. The industry will continue to seek the truth in the continuing cigarette controversy.

TINY0006498-6601 at 6534-6536 (US 87056); TIMN0104765-4868 at 4802-4803 (US 21613).

709. An April 23, 1968 publication of The Cigarette Controversy re-stated and re-emphasized Defendants' views:

> Q: Has any important new evidence against cigarettes been reported in recent years?
>
> A: No. Cigarettes today are branded guilty on virtually the same kind of evidence that was considered insufficient only a few years ago.
>
> * * *
>
> Q: Is smoking a health hazard?
>
> A: That question is still an open one.
>
> * * *
>
> At that time [the early 1950s], most scientists considered the findings of these studies insufficient to prove a case against smoking. Since then, many other studies have been done. But there is still no proof that cigarette smoking is a cause of lung cancer -- or any other disease.

502644592-4616 at 4595, 4596 (US 20703).

710. In a 1969 press release titled "American Tobacco Refutes Anticigarette Charges," American announced it was distributing another version of "The Cigarette Controversy." The booklet purported to review research done over the prior fifteen years and concluded that, in the absence of medical evidence, "the question is still an open one." It was mailed to more than 140,000 stockholders of American. TLT0962304-2309 at 2304 (US 88668).

711. This updated version presented "facts" explaining that there was "controversy" surrounding the science of smoking and health that must be answered by further scientific research and public discussion. The pamphlet was reviewed by CTR's Scientific Director Robert Hockett

prior to publication. According to a letter from David Hardy to Hockett, this Tobacco Institute booklet was written to explain to the public the "reasons why representatives of the Cigarette Industry contend that the case against cigarettes has not been proved." Hardy explained that "the Tobacco Institute has felt it desirable to have some readable document or pamphlet to give them which spells out some of the unanswered questions." 1005152849-2896 (US 20226); HK0108004-8004 (US 21171).

712. In 1971, the Tobacco Institute revised and republished another edition of "The Cigarette Controversy -- eight questions and answers." It was distributed by direct mail to physicians, librarians, newspaper and magazine editors, Members of Congress and their top aides, members of public relations groups, medical school faculties, leading tobacco growers and executives of industry supplier firms, other United States business leaders, college and university presidents and department heads, science writers, and business and financial writers and securities analysts. Copies were also mailed to a large list of ministers. The mailing went to nearly 350,000 persons. It was sent to over 300 radio and television station managers together with a sixty second announcement. TIMN300233-0257 (US 21675); 690014815-4838 (US 21041); TIMN0080470-0477 (US 21716); 03768320-8337 (US 20064).

713. In 1971, the Tobacco Institute published a shorter summary of the 1970 "Cigarette Controversy" pamphlet titled "Smoking/Health An Age-Old Controversy." This leaflet briefly stated Defendants' opinions on the questions of causation and the validity of the scientific research conducted to date. A November 9, 1973 Tobacco Institute memorandum described "Smoking/Health An Age-Old Controversy" as a "good synopsis of the [1970] pamphlet" and a "shorter version of the

industry stand on the cigarette controversy" that should "be put to good use." TIMN0121524-1527 (US 21710); TIMN0395428-5429 at 5429 (US 21365).

714. In November 1971, RJR requested and received from the Tobacco Institute 1,000 copies of the pamphlet "Smoking/Health An Age Old Controversy" for use in responding to inquiries from children about smoking and health. In February 1973, 500 more copies were requested, again for responding to school children. TIMN0121524-1527 (US 21710); 500005148-5148 (US 21323); 500013882-3882 (US 20611).

715. After the publication of "The Cigarette Controversy," the Tobacco Institute published a series of advertisements in various magazines, inviting readers to request copies of the pamphlet. For example, on November 6, 1972, the Tobacco Institute ran an advertisement in The Nation that stated "YOU HAVE A RIGHT TO A FULL DISCUSSION ABOUT smoking and health. The cigarette question is still a question. Send for free booklet, 'The Cigarette Controversy.'" TIMN0124460-4460 (US 21333).

716. The Tobacco Institute published a 1974 version of "The Cigarette Controversy" and continued to argue that objective research was needed to explore questions about smoking and health. The Cigarette Controversy stated that a causal relationship between smokers and illness or death had not been established and that such claims were unproven. Over one million copies of the Cigarette Controversy, which was described as "the basic guide for other forms of communication," were in print by the end of the year. TIMN0017604-7612 (US 23020); TIMN217628-7639 at 7634 (US 21263).

717. In an address delivered on October 3, 1967, Paul D. Smith, Vice President and General Counsel of Philip Morris, stated: "The truth of the matter is this: No one knows whether

cigarette smoking causes any human disease or in any way impairs human health." Smith also claimed that "[n]obody has yet been able to find any ingredient as found in tobacco or smoke that causes human disease." He also criticized the Public Health Service's accusations against tobacco and claimed that the public research community was biased due to its receipt of federal funds. 2015068601-8612 at 8603, 8611 (US 20337); 2010035814-5818 (US 21603).

718. In 1968, a sportswriter named Stanley Frank, who worked for Hill & Knowlton was paid $500 by the Tobacco Institute, to write an article titled "[T]o smoke or not to smoke -- that is still the question," which appeared in the "Science" section of True Magazine. In the article, Frank stated that he had reviewed the evidence on smoking and disease and found it inconclusive and contradictory. See, III(D)(3)(¶167-168). TIMN462375-2380 (US 21660); 690012994-2994 (US 54322).

719. The Tobacco Institute ordered millions of reprints of the Stanley Frank article for mass mailings. In April 1968, Lorillard, RJR, Philip Morris, and B&W purchased reprints of the article for further mailings. 690012994-2994 (US 54322); TIMN0070307-0307 (US 21571); TIMN0070324-0335 (US 21592); TIMN0071398-1401 (US 21301).

720. In an internal memorandum outlining the Tobacco Institute's involvement with the Frank article, William Kloepfer, Vice President of Public Relations at the Tobacco Institute, noted with approval that the Tobacco Institute's involvement in another article, "the Barron's editorial," had not been uncovered:

> It should be noted that our earlier project, the advertisement of the Barron's editorial, escaped noticeable rebuttal. The editorial will be remembered, however, as an independent criticism of government activity, with no reasonable suspicion possible that cigarette interests were responsible for its preparation.

TIMN0071398-1401 (US 21301); 1005112459-2461 at 2460 (US 20213).

721. All these activities, such as the Cigarette Controversy series, the Frank article, and public statements of the industry were undertaken as part of a concerted, wide-ranging public relations strategy on the part of Defendants to mislead the public. A 1968 Tobacco Institute "Tobacco and Health Research Procedural Memo" lays out the basic strategy:

> The most important type of story is that which casts doubt on the cause and effect theory of disease and smoking. . . . [T]he headline should strongly call out the point -- Controversy! Contradiction! Other factors! Unknowns!

TIMN0071488-1491 at 1489 (US 21302).

722. In 1969, the Tobacco Institute prepared an article titled "Centuries-old Smoking/Health Controversy Continues," which asserted that the causes of cancer and heart disease were still unknown. The article stated that evidence concerning smoking and cardiovascular disease was, if anything, more confused than it was in 1964 and did not permit the conclusion that there was a causal relationship between smoking and cardiovascular disease. TIMN395434-5437 (US 21664).

723. Claims that smoking was only statistically linked to disease persisted. A February 3, 1969 CTR press release explained:

> The scientist who has been associated with more research in tobacco and heath than any other person [Clarence Cook Little, Executive Director of CTR] declared today that there is no demonstrated causal relationship between smoking and any disease. The gaps in knowledge are so great that those who dogmatically assert otherwise -- whether they state that there is or is not such a causal relationship -- are premature in judgment. If anything, the pure biological evidence is pointing away from, not toward, the causal hypothesis. . . . Statistical associations between smoking and lung cancer, based on study of those two factors alone, are not proof of causal relationship in the opinion of most epidemiologists.

670307882-7891 at 7882 (US 21867).

724. On February 6, 1969, the general counsels for Philip Morris, RJR, B&W, Lorillard, and Liggett, all of whom were members of the Committee of Counsel, approved publication of the foregoing press release under the headline: "How much is known about smoking and health." The ad was run in major newspapers around the country, advertising journals, and medical journals, including papers in Richmond, Raleigh, Knoxville, Nashville, Washington, New York, Louisville, Lexington and Columbia; in the eastern edition of the Wall Street Journal, Advertising Age, Broadcasting, Editor and Publisher, Southern Advertising and Publishing, National Association of Retail Druggist Journal, Food Topics, VEND, Retail Tobacconist, Southern Tobacco Journal, Tobacco, Tobacco Distributor and Confectionary Guide, Tobacco Jobber, Tobacco Leaf, Tobacco Record, Tobacco Reporter, US Tobacco Journal, Medical World News, Medical Economics, and US Medicine. 1005132848-2849 (US 20222); 1005153098-3099 (US 20227); TIMN0081698-1698 (US 21309); TIMN0000560-0561 (US 21874); TIMN0081695-1696 (US 21308).

725. Defendants realized that they needed to change public opinion in order to sustain the viability of the tobacco industry given the fact that there was little, if any, evidence to support their position. In an August 10, 1967 RJR memorandum from J.S. Dowdell to C.B. Wade, Dowdell acknowledged:

> Despite the fact that the industry has very little, if any, positive evidence upon which to base the aggressive campaign necessary at this late date to materially change public opinion, public attitudes can be changed. At least to the extent that the majority who now believe smoking is a <u>proven</u> cause of lung cancer could become doubtful; and, others who are now skeptical could be convinced that before the industry is further penalized more evidence is required. However, the unfavorable opinion on the hazards of smoking will remain definitely high, and will not shift in a favorable direction, until positive action

> is taken by the industry to counter the anti-smoking propaganda and publicity.

Dowdell advocated that the Tobacco Institute Executive Committee approve the 1967 Public Relations Program and begin an aggressive public relations campaign. 500006192-6194 at 6193 (US 47761) (emphasis in original).

726. At the same time, an internal B&W document titled "Smoking and Health Proposal" explained: "Doubt is our product since it is the best means of competing with the 'body of fact' that exists in the mind of the general public. It is also a means of establishing a controversy." 690010951-0959 at 0954 (US 21040).

727. In a 1969 B&W document prepared for public dissemination titled "How Eminent Men of Medicine and Science Challenged the Smoking-and-Health Theory During Recent Hearings in the U.S. Congress," B&W stated that "the question of smoking and health remains an open, not a closed, issue." B&W also asserted that "[t]he cause of cancer in humans, including the cause of cancer of the lung, is unknown" and that "[t]he concept that cigarette smoking is the cause of the increase in lung cancer and emphysema is a colossal blunder." 650332832-2839 at 2833, 2835-2836 (US 20947).

728. On November 11, 1969, the Tobacco Institute published an advertisement titled "All Advertising Should be Truthful," containing a reprint of an Advertising Age article titled "The Truth Seems a Little Twisted." The article attacked the American Cancer Society and the American Heart Association commercials informing the public about the risks of cigarette smoking. The article stated that the commercials were untruthful and misleading and that "wild" unsupported statements should not be permitted on the air. The Tobacco Institute ran these advertisements in newspapers

in New York, Boston, Philadelphia, Washington, Chicago, Los Angeles and San Francisco and in issues of Time, Newsweek, and the Wall Street Journal. 1005132842-2842 (US 21667); 1005132840-2840 (US 21668); 1005132841-2841 (US 21669).

729. In February 1970, the Tobacco Institute issued an announcement titled "The Tobacco Institute believes the American public is entitled to complete, authenticated information about cigarette smoking and health," with the subtitle "The American Cancer Society does not seem to agree." This announcement challenged information issued by the American Cancer Society concerning a research project published by Dr. Oscar Auerbach titled "The Effects of Cigarette Smoking Upon Dogs." For a complete discussion of Defendants' efforts with respect to the Auerbach Studies, see Section III(F)(3) and Section V(A)(5)(b)(¶690-693), supra. TIMN0081949-1949 (US 21686).

730. On April 30, 1970, the Tobacco Institute sent a press release that falsely claimed that the American Cancer Society had refused to release experimental data underlying the Auerbach/Hammond "smoking beagles" study, which discovered bronchial carcinoma in beagle dogs forced to smoke tobacco. T076378-6379 (US 21237).

731. In March 1970, the Tobacco Institute approved television spots which said:

> Today, we in this industry support more impartial research on the vital question of tobacco and health than any agency of the Federal Government, and more than all the voluntary agencies combined. We have great confidence that the findings of this research will lead the way in providing fair and accurate information regarding cigarette smoking.
>
> * * *
>
> Do Smokers have common sense? We in the tobacco industry believe they do, and that millions of reasonable and responsible men

> and women who smoke will not be misled by the campaign of fear that is conducted against smoking. We believe that these emotional charges are no substitute for objective facts gathered from research.

2010008819-8822 at 8820 (US 20300).

732. On April 22, 1970, a CTR press release titled "Studies Raise Questions About Smoking as Health Hazard" quoted Clarence Cook Little as stating: "The deficiencies of the tobacco causation hypothesis and the need of much more research are becoming clearer to increasing numbers of research scientists." 500015901-5905 at 5902 (US 47778).

733. On September 7, 1970, Dr. Sheldon Sommers, Scientific Director of CTR and Chairman of the SAB, asserted in an article titled "Smoking and Health: Many Unanswered Questions": "I do not believe it has been scientifically established that cigarette smoking causes human disease," and, "The Council for Tobacco Research is deeply committed to the search for answers." ZN16062-6065 at 6063, 6065 (US 21161).

734. In December 1970, the Tobacco Institute issued yet another statement, published as an advertisement in major American newspapers, titled "The Question about Smoking and Health Is Still a Question":

> [A] major portion of this scientific inquiry has been financed by the people who know the most about cigarettes and have a great desire to learn the truth . . . the tobacco industry. And the industry has committed itself to this task in the most objective and scientific way possible . . .1115 reports in all. Through this work much valuable data have been produced about lung cancer, heart disease, chronic respiratory ailments and other diseases. However, there's still a lot more to be learned. . . . There are eminent scientists who believe that the question of smoking and health is an open one and that research in this area must go forward. From the beginning, the tobacco industry has believed that the American people deserve objective, scientific answers. With this same credo in mind, the tobacco industry stands ready today to make new commitments for additional

> valid scientific research that offers to shed light on new facets of smoking and health.

The "eminent scientists" in such pronouncements were never identified. Defendants widely distributed reprints of the advertisement and provided it to every member of Congress with a personal letter from Horace Kornegay, President of the Tobacco Institute. TIMN0081352-1352 (US 21305); 2010008873-8873 (US 22010); 1005132832-2832 (US 21666); 2010008878-8879 (US 36514); 500004807-4809 at 4807 (US 20608); Brandt WD, 128:14-129:11.

735. Defendants' executives also continued to insist in the 1970s, as they had in the 1950s, that "if and when" any harmful elements were identified in cigarettes, they would take necessary steps to remove them. For example, on January 3, 1971, Joseph Cullman III, President of Philip Morris, explained in a "Face the Nation" television interview:

> [T]his industry can face the future with confidence because when, as, and if any ingredient in cigarette smoke is identified as being injurious to human health, we are confident that we can eliminate that ingredient . . . . We do not believe that cigarettes are hazardous; we don't accept that. But we are working with the government, working very hard with the government, on various methods of ascertaining whether or not cigarettes can be found to be hazardous. . . . I believe they have not been proved to be unsafe.

1002605545-5564 at 5550, 5560 (US 35622).

736. During the same televised interview, Cullman falsely denied that cigarettes posed a hazard to pregnant women or their infants: "[I]t's true that babies born from women who smoke are smaller, but they are just as healthy as the babies born to women who do not smoke. Some women would prefer to have smaller babies." His statement contradicted the information Helmut Wakeham, Philip Morris's Vice President for Corporate Research and Development, had given him two years earlier. 1002605545-5564 at 5561-5562 (US 35622); 1000211305-1305 (US 20080).

737. In an effort to detract attention from smoking as a cause of disease, Defendants pointed to other possible causes. On January 3, 1971, a Tobacco Institute press release contained statements criticizing public health efforts, and suggesting to the public that not enough was being done to investigate incidents of lung cancer in nonsmokers. The press release alleged that "thousands of lung cancer victims who have never smoked cigarettes [are] being neglected by expensive propagation of myths instead of scientific knowledge." It also quoted Tobacco Institute President Horace Kornegay: "Any organization in a position to apply resources in the search for those keys -- and which fails to do so -- will continue to be guilty of cruel neglect of those whom it pretends to serve." Kornegay told the public that the Defendants planned to provide more than four million dollars in 1971 for independent scientific research. 2001052715-2718 at 2716, 2718 (US 21719); TIMN0123716-3720 at 3717 (US 21328).

738. A May 25, 1971 Tobacco Institute press release publicly denied any links between smoking and health. In this press release, Defendants again represented that "many eminent scientists" (unidentified) believe that "the question of smoking and health is still very much a question." TIMN0131768-3769 at 3769 (US 21337).

739. In a press release dated November 15, 1971, the Tobacco Institute challenged the claim that smoking is harmful to pregnant women. Horace Kornegay, President of the Tobacco Institute, was quoted: "We just don't know, and only further research on smoking and all the other possible factors that may affect pregnancy will answer the question." TIMN0100469-0470 at 0469, 0470 (US 21687).

740. The Tobacco Institute prepared an entire "backgrounder" on smoking and pregnancy which was sent to newspaper editorial writers throughout the country. A TI press release discussing

the backgrounder claimed that ". . . opponents of cigarettes are endeavoring to scare pregnant women with such statements as that of the Surgeon General that 'we are losing babies because of mothers' smoking.'" TIMN0100469-0470 at 0469 (US 21687).

741. In the January 24, 1972 issue of the Wall Street Journal, Philip Morris's Senior Vice President James Bowling was quoted as stating: "[i]f our product is harmful . . . we'll stop making it. We now know enough that we can take anything out of our product, but we don't know what ingredients to take out." Bowling further stated that "[w]e don't know if smoking is harmful to health, and we think somebody ought to find out." 500324162-4164 at 4163 (US 20627).

742. On February 1, 1972, the Tobacco Institute issued a press release declaring that

> [t]he cigarette industry is as vitally concerned or more so than any other group in determining whether cigarette smoking causes human disease, whether there is some ingredient found in cigarette smoke that can be shown to be responsible, and if so, what it is

and that

> despite this effort [the commitment of $40 million by the tobacco industry for smoking and health research] the answers to the critical questions about smoking and health are still unknown.

TIMN0120596-0597 at 0597 (US 21321).

743. Defendants issued scathing comments about official reports demonstrating the adverse health effects of smoking. For example, a February 26, 1972 Tobacco Institute press release asserted that the 1972 Surgeon General's Report on the Health Consequences of Smoking "insults the scientific community" and that the report was "another example of 'press conference science' -- an absolute masterpiece of bureaucratic obfuscation." The press release further asserted that "the

number one health problem is not cigarette smoking, but is the extent to which public health officials may knowingly mislead the American public." TIMN0120602-0603 at 0602 (US 21322).

744. The reasoning behind the Tobacco Institute's public relations campaign based on the open question controversy is explained in a 1972 Tobacco Institute internal document, which stated:

> In the cigarette controversy, the public -- especially those who are present and potential supporters (e.g. tobacco state congressmen and heavy smokers) -- must perceive, understand, and believe in evidence to sustain their opinions that smoking may not be the causal factor.

87657703-7706 at 7705 (US 21098).

745. A May 1, 1972 memo written by Fred Panzer, Vice President of the Tobacco Institute, to Horace Kornegay described the strategy employed by Defendants:

> For nearly twenty years, this industry has employed a single strategy to defend itself on three major fronts -- litigation, politics, and public opinion.
>
> While the strategy was brilliantly conceived and executed over the years helping us win important battles, it is only fair to say that it is not -- nor was it intended to be -- a vehicle for victory. On the contrary, it has always been a holding strategy consisting of
>
> -- creating doubt about the health charge without actually denying it
>
> -- advocating the public's right to smoke, without actually urging them to take up the practice
>
> -- encouraging objective scientific research as the only way to resolve the question of health hazard.
>
> <u>On the litigation front</u> for which the strategy was designed, it has been successful. While we have not lost a liability case, this is not because juries have rejected the anti-smoking arguments.
>
> <u>On the political front,</u> the strategy has helped make possible an orderly retreat. But it is fair to say that it has not stemmed the

> pressure for new legislation, despite the major concessions we have made.
>
> On the public opinion front, however, our situation has deteriorated and will continue to worsen. This erosion will have an adverse effect on the other fronts, because here is where the beliefs, attitudes and actions of judges, juries, elected officials and government employees are formed.

Panzer, like other industry executives, noted that the open question strategy was not likely to be successful much longer. Still, he believed the traditional defense was viable in some respects:

> As things stand we supply them [the public] with too little in the way of ready-made credible alternatives.
>
> * * *
>
> Two such credible alternatives exist:
>
> > 1) The Constitutional Hypothesis i.e. people who smoke tend to differ importantly from people who do not, in their heredity, in constitutional makeup, in patterns of life, and in the pressure under which they live.
> >
> > 2) The Multi-factorial Hypothesis i.e. as science advances, more and more factors come under suspicion as contributing to the illnesses for which smoking is blamed–air pollution, viruses, food additives, occupational hazards and stresses.
>
> Our 1970 public opinion survey showed that a majority (52%) believed that cigarettes are only one of the many causes of smokers having more illnesses. It also showed that half of the people who believed that smokers have more illnesses than nonsmokers accepted the constitutional hypothesis as the explanation.

TIMN0077551-7554 at 7551-7553 (US 63585) (emphasis in original).

746. Following this strategy, on January 14, 1975, the Tobacco Institute released another version of its booklet "The Cigarette Controversy." This announcement stated that:

> If smoking does cause disease, why, after years of intensive research, has it not been shown how this occurs? And why has no ingredient as found in smoke been identified as the causal factor? These are among the unanswered questions set forth in a new publication of the Tobacco Institute, titled The Cigarette Controversy.

TIMN0120638-0639 at 0638 (US 21698) (emphasis in original).

747. Defendants continued to recognize and exploit the fact that their public relations campaign provided rationalizations for the smoker. Their use of public relations was calculated and precise, and internal research done on it demonstrated its efficacy. As B&W stated in a November 29, 1976 memo titled "Cigarette Advertising History":

> Good cigarette advertising in the past has given the average smoker a means of justification on the two dimensions typically used in anti-smoking arguments: [risk to health and immorality] . . . All good cigarette advertising has either directly addressed the anti-smoking arguments prevalent at the time or has created a strong, attractive image into which the besieged smoker could withdraw.

680086039-6044 at 6039, 6040 (US 20984).

748. On June 6, 1977, Addison Yeaman, B&W's General Counsel, publically reaffirmed Defendants' promise to conduct meaningful research, as he explained in his remarks at Maxwell Associates' Biannual Tobacco Seminar that:

> I am utterly secure in saying to you that the tobacco industry recognizes its responsibility and its duty and that it will continue its every effort and at whatever cost to find the answer to the question, "what part, if any, does tobacco play in human diseases."

CTRPUBLICSTMT001437-1445 at 1445 (US 21164).

749. In a document distributed by B&W titled "Facts Every Tobacco Man Should Remember," which appeared in the October 27, 1977 edition of the United States Tobacco Journal, B&W claimed that "[t]he case against tobacco is not closed . . . in a sense, the jury still isn't able to

retire to consider the case because it doesn't have all the relevant facts." 544001284-1297 at 1285-1286 (US 20935).

750. The Tobacco Institute's public relations strategy focused its attention on disseminating Defendants' message to the public that there was no definite link between smoking and health and that, until answers to these questions were found, smokers should not fear that their health was endangered. Defendants' four-point platform was set out in a December 29, 1977 Tobacco Institute press release:

> 1. The question of smoking and health is still a question requiring scientific resolution.
>
> 2. Tobacco smoke does not imperil normal nonsmokers.
>
> 3. The tobacco farm program is an essential part of public policy.
>
> 4. The freedom of choice of our industry's customers must be preserved.

TIFL0522279-2280 at 2280 (US 21424).

751. In 1977, the Tobacco Institute published a pamphlet titled "Facts About the Smoking Controversy." The pamphlet claimed that the 1964 Surgeon General's Report "was essentially a 'study of numbers -- a selective review of population studies which compared disease rates among smokers, ex-smokers and nonsmokers.'" It also stated: "Has the Surgeon General's report established that smoking causes cancer or other diseases? No." TIMN0055129-5135 at 5130 (US 21298).

752. Defendants aimed much of their public relations campaign at lung cancer and, as time went on, heart disease. In 1978, a Tobacco Institute pamphlet stated: "The flat assertion that

smoking causes lung cancer and heart disease and that the case is proved is not supported by many of the world's leading scientists." TIMN319568-9604 at 9578 (US 62902).

753. On January 12, 1978, Ross Millhiser, President of Philip Morris, stated in a letter to the editor in the New York Times: "as for the lack of research on the 'harmful' effects of smoking, the fact is there is good reason to doubt the culpability of cigarette smoking in coronary heart disease." ATC2411308-1308 (US 21378).

754. In May 1978, the Tobacco Institute published a fifty-four page document titled "Fact or Fancy?" and sent it to broadcasters, editors, writers, and officers of women's associations and organizations "because the tobacco and health controversy has increasingly focused on women and smoking." The document claimed to have been produced "to present more factual and balanced answers on the health question about which mature women need to know more." It presented the controversy argument that causality had yet to be proven in any of the diseases and conditions linked statistically with cigarette smoking. 03731785-1838 (US 21466); 04326897-6897 (US 21468); 04326898-6898 (US21467); 04326900-6900 (US 21469); 04326901-6901 (US 21470).

755. Defendants also continued to insist publicly that there was no need to undertake research to develop "safer" cigarettes, since they asserted that the cigarettes then being sold were not harmful to health. In June 1978, William Dwyer, Vice President of the Tobacco Institute, explained in an article titled "Smoking: A Free Choice":

> A question often asked of the tobacco industry is whether researchers are developing a “safe” cigarette. A variation of that question is whether low “tar” nicotine cigarettes are safer. The tobacco industry is convinced that no cigarette has been proved unsafe. Therefore, they regard any suggestion of a “safe” or “safer” cigarette as tortured logic. The reduced “tar” and nicotine cigarettes represent about 20 percent of sales and are in the marketplace because of consumer

> demand. That demand obviously reflects the personal preferences of smokers.

TIMN0074796-4800 at 4797 (US 21480).

756. In December 1978, the Tobacco Institute published "The Smoking Controversy: A Perspective." The publication stated that society was on the "brink of paranoia" regarding smoking; that "[n]o one really knows whether this personalized warfare against tens of millions of Americans will prevent a single case of lung cancer"; that "[n]o one really knows the root or causes of cancer"; and that the "wars" against disease that were being "waged by the government and voluntary health agencies" were "beyond the realm of science." TIMN0129593-9628 (US 21499); MNAT00224317-4354 (US 21223).

757. In 1979, the Tobacco Institute published a document titled "TOBACCO from seed to smoke amid controversy." It stated flatly that "it has not been established that smoking causes any human disease." 690142176-2180 at 2178 (US 21512).

758. One year prior to the release of the 1979 Surgeon General's Report on Smoking and Health, Defendants started planning their response to what they expected it to say. That response included establishing a task force to write and publish a rebuttal paper. Rather than have scientists evaluate the evidence or the Report's findings, once they were issued, the Tobacco Institute assigned a public relations staff member to research, write, and edit the rebuttal paper. Anne Duffin was given this responsibility, under the direction and guidance of the law firm Shook, Hardy & Bacon. Other public relations staff members re-read and edited chapters of the document as it was drafted. TIMN0073990-3992 at 3990 (US 21525).

759. On January 10, 1979, one day prior to the release of the 1979 Report of the Surgeon General on Smoking & Health, the Tobacco Institute published a document titled "Smoking and Health 1964-1979: The Continuing Controversy." The Tobacco Institute prepared it for distribution to the news media and tailored it to respond to the content of the 1979 Report. The Tobacco Institute had obtained three draft chapters of the Surgeon General's Report. The rebuttal document was 166 pages long and represented a major effort on the part of the tobacco industry to pre-empt the impact of the1979 Surgeon General's Report. TIMN0084430-4594 (US 21534).

760. Peter Lee, a long time industry consultant, characterized the Tobacco Institute's 1979 document "The Continuing Controversy" (referred to as "TA73") as "misleading." He wrote that the Tobacco Institute's counter publication did not appear to understand the idea of medical causation:

> Discussion of the role of other factors can be particularly misleading when no discussion is made of relative magnitudes of effects. For example, heavy smokers are observed to have 20 or more times the lung cancer rates of non-smokers. Sure, this does not prove smoking causes lung cancer, but what it does mean, <u>and TA73 never considers this,</u> is that for any other factor to explain this association, it must have at least as strong an association with lung cancer as the observed association for smoking (and be highly correlated with the smoking habit).
>
> * * *
>
> TA73 seems ready to accept evidence implicating factors other than smoking in the aetiology of smoking <u>without</u> requiring the same stringent standards of proof that it requires to accept evidence implicating smoking. This is blatantly unscientific .

100214029-4047 at 4046 (US 21515) (emphasis in original).

761. While he identified problems with the Tobacco Institute public relations document, Lee acknowledged that: "There is no doubt that [the Surgeon General's Report] is an impressive document." His memorandum dated February 9, 1979 also states: "The way in which the information was presented was on the whole sound, scientific and unemotive." He predicted that the Report would become "the Number One basic reference document for smoking and health researchers the world over." 100214029-4047 at 4030 (US 21515).

762. The day before the 1979 Report was released, Defendants held a press conference, distributed press kits, and arranged for several television appearances by Horace Kornegay, President of the Tobacco Institute. A January 25, 1979 Tobacco Institute document memorializes remarks made at a TI Executive Committee meeting where the goal of the TI approach to the 1979 Surgeon General's Report was explained. One of the goals was: ". . . to encourage the press and public officials to apply a skeptical, or at least questioning, attitude to the substance of the report, and its source." TIMN0073990-3992 at 3991-3992 (US 21525); TIFL0403308-3312 at 3308 (US 62631); TIMN0055304-5330 (US 62816).

763. Defendants' internal documents note that their public relations efforts received press coverage that equaled that received by the Report itself:

> Most of us are aware that news coverage of the 1979 Surgeon General's Report achieved a balance, of sorts, with attention given to the Tobacco Institute's views both before and after the actual event.

TIMN0073993-4002 at 3994 (JD 011663) (emphasis in original).

764. On January 11, 1979, for example, the News and Observer of Raleigh, North Carolina, quoted the Tobacco Institute as stating that "'many scientists' are becoming concerned that

the focus on cigarette smoking diverts attention from other suspected health hazards." TIMN0122721-2721 (US 21325).

765. On January 17, 1979, the Tobacco Institute continued its aggressive public relations effort and issued a press release stating that the tobacco industry had spent $75 million on research over twenty years to learn whether smoking is harmful, but that "the case against cigarettes is not satisfactorily demonstrated." TIMN0074006-4006 (US 87985).

766. Philip Morris's 1979 Annual Report similarly declared: "No conclusive clinical or medical proof of any cause-and-effect relationship between cigarette smoking and disease has yet been discovered." 2043819548-9607 at 9561 (US 20451*).

767. While the public relations campaign continued, Defendants promised their commitment to disinterested research. In 1981, for instance, the Tobacco Institute published a document titled "On Smoking -- 21 questions and answers," written by the law firm Shook, Hardy & Bacon, which stated:

> The tobacco industry has committed more than $91 million for independent research on smoking and health questions. . . . The tobacco industry remains committed to advancing scientific inquiry into the gaps in knowledge in the smoking controversy.

TIEX0007587-8106 at 7589 (US 87061).

768. On December 31, 1981, the Tobacco Institute published a document titled "Tobacco Industry Research on Smoking and Health: A $104 Million Commitment" that again asserted: "questions of smoking and health are unresolved." 2046754709-4710 at 4710 (US 20474).

769. In 1982, the Tobacco Institute launched a national series of advertisements on behalf of Defendants that addressed smoking and health issues, environmental tobacco smoke ("ETS"),

public smoking restrictions, and youth smoking. These ads asked readers to keep an open mind on tobacco issues and "[w]eigh both sides before [they] take sides." Readers were encouraged to request a free copy of the Tobacco Institute's booklet "Answers to the Most Asked Questions about Cigarettes." 03028799-8809 at 8801 (US 20053).

770. On February 18, 1982, "Smoking and Cancer -- A Scientific Perspective" was published by the Tobacco Institute in anticipation of the release of the 1982 Surgeon General's Report on Smoking and Health. The timing of the release was based on the Tobacco Institute's "axiom that it is more effective to take the initiative in situations involving a prospective negative news event." The press release accompanying the 104-page Tobacco Institute document stated that scientific research had not been able to establish a causal link between smoking and cancer. Copies were provided to correspondents and to various Members of Congress. 2025431644-1748 (US 20417); TIMN0245529-5529 (US 21340); 03762472-2472 (US 20063); TIMN0245530-5532 (US 21341); TIMN0245292-5292 (US 21339); 03762460-2461 (US 20062).

771. A May 7, 1982 memorandum to RJR executives advised that the key point to be made in any discussion of the issue of smoking and health "is that it is a legitimate scientific controversy which continued unresolved." 502483421-3421 (US 20700).

772. In 1983, in anticipation of the 1983 Surgeon General's Report, "The Health Consequences of Smoking -- Cardiovascular Disease," the Tobacco Institute published a document titled "Cigarette Smoking and Heart Disease." It stated that smoking was not an important risk factor for heart disease, and that "[w]hether cigarette smoking is causally related to heart disease is not scientifically established." The document was first distributed to Defendants, who were asked not to distribute the publication widely, but to use it for internal purposes only until the Report was

released. Upon release, the Tobacco Institute distributed the document, as did the Defendants' European information clearinghouse, known as "INFOTAB" (discussed in detail at Section III(I)(6), supra). 2501112047-2098 at 2090, 2091 (US 20561); 2023274132-4133 (US 20386); 2501023645-3645 (US 20556).

773. Sheldon Sommers, Scientific Director of CTR, testified before Congress in 1983 that "cigarette smoking has not been scientifically established to be a cause of chronic diseases, such as cancer, cardiovascular disease, or emphysema." 503685073-5075 at 5073 (US 88734).

774. In 1984, RJR placed an ad in numerous newspapers, including The New York Times, titled "Smoking and health: Some facts you've never heard about." This ad contained the statement:

> You hear a lot these days about reports that link smoking to certain diseases. This evidence has led many scientists and other people to conclude that smoking causes these diseases.
>
> But there is significant evidence on the other side of this issue. It is regularly ignored by the critics of smoking. And you rarely hear about it in the public media. But, it has helped persuade many scientists that the case against smoking is far from closed.
>
> No one wants to know the real answers more than RJR. That is why we are providing major funding for scientific research. The funds are given at arm's length to independent scientists who are free to publish whatever they find. We don't know where such research may lead. But this much we can promise: when we find the answers, you'll hear about it.

504100135-0136 at 0136 (US 50882).

775. In 1983, the Tobacco Institute published a pamphlet titled "Tobacco Industry Research on Smoking and Health: A $120 Million Commitment." This pamphlet stated:

> Since the first questions were raised about smoking as a possible health factor, the tobacco industry has believed that the American

> people deserve objective, scientific answers. The industry has committed itself to this task.

2045377870-7876 at 7871 (US 20460).

776. In January 1984, an RJR press release declared:

> After all of this study, there are many scientists who believe there is no laboratory or clinical proof that cigarette smoke does -- or does not -- cause disease. We believe that reasonable people who examine all the evidence concerning smoking and disease would agree this is an open scientific controversy, not a closed case.

504638054-8056 at 8056 (US 20733).

777. A month later, Edward Horrigan, Chairman of the Board at RJR, made the following comments as part of a panel discussion on the "Nightline" television program: (1) "It is not known whether cigarettes cause cancer"; (2) "Despite all the research to date, there has been no causal link established [between smoking and emphysema]"; and (3) "As a matter of fact, there are studies that while we are accused of being associated with heart disease, there have been studies conducted over 10 years that would say, again, that science is still puzzled over these forces." 502371212-1223 at 1216, 1217 (US 20699).

778. RJR placed an ad in daily newspapers in 1984 titled, "Can we have an open debate about smoking?" In this ad, RJR claimed that "[s]tudies which conclude that smoking causes disease have regularly ignored significant evidence to the contrary," and that those "scientific findings come from research completely independent of the tobacco industry." It also states that "reasonable people who analyze it [the evidence] may come to see the issue not as a closed case, but as an open controversy." 513943434-3434 (US 50268).

779. That same year, 1984, the Tobacco Institute published a document titled "Cigarette Smoking and Chronic Obstructive Lung Diseases: The Major Gaps in Knowledge." It declared that Defendants did not agree with the conclusion of the Surgeon General's Reports that cigarette smoking had been established as a cause of chronic bronchitis and further asserted that a causal relationship between smoking and either chronic bronchitis or emphysema had not been established scientifically. TI13062142-2156 (US 62409).

780. The Tobacco Institute published another report in 1984 titled "The Cigarette Controversy: Why More Research is Needed" as a formal statement of Defendants' position. It purported to review the testimony given at the 1982 and 1983 Congressional tobacco labeling hearings and stated:

> Thirty nine scientists presented testimony against proposals in the bills. Their evidence was based on their own published research or their review of scientific literature.
>
> Each of them in his or her own right is a recognized scientist, and most have reached eminence in their area of expertise.
>
> * * *
>
> The evidence presented by these men and women is summarized in the following pages. The scientists and their professional affiliations are listed in the Appendix. We publish this summary in the belief that the controversy about smoking must be resolved by scientific research and in the belief that informed discussion of the controversy is in the public interest.
>
> * * *
>
> Fifteen witnesses explained why they consider the hypothesis that cigarette smoking causes lung cancer to be unproven.
>
> * * *

> Witnesses also questioned the assertion that cigarette smoking causes emphysema in particular and chronic obstructive lung disease (COPD) in general.

The report failed to disclose that most of these scientific witnesses were tobacco industry consultants who were receiving funding from the lawyers' Special Account No. 4. TI12431636-1650 at 1638, 1642,1645 (US 62384).

781. In July 1984, RJR mailed letters from employee Ann Griffin addressed to various children who had written to the company. In the letters, RJR claimed to be engaged in an effort to determine the harmful effects of smoking for the benefit of smokers, promised to support disinterested research into smoking and health, and claimed that research had not revealed any "conclusive" evidence that any element in cigarettes causes disease. 505465919-5919 (US 20741).

782. Over time, RJR sent numerous letters to survivors of deceased smokers, denying any scientifically established links between smoking and disease. For instance, on August 18, 1988, RJR sent a letter to Anthony A. Christina (the widower of a lung cancer victim) in which the company denied that there was any causal link between smoking and disease. 515792869-2869 (US 2086).

783. As of January, 2005, RJR Chairman Andrew Schindler was asked what his current answer to the Christina letter would be, and whether he would still refuse to admit that smoking causes disease. The most he would say was that, as of January, 2005, smoking poses “significant health risks and may contribute to certain diseases in some people." Schindler TT, 1/24/05, 10810:9-21.

784. In January 1990, RJR's Public Relations Manager wrote in a letter to the principal of a grade school and one of the school's students:

> The tobacco industry is also concerned about the charges being made that smoking is responsible for so many serious diseases. Long before the present criticism began, the tobacco industry, in a sincere attempt to determine what harmful effects, if any, smoking might have on human health, established the Council for Tobacco Research -- USA. The industry has also supported research grants directed by the American Medical Association. Over the years the tobacco industry has given in excess of $162 million to independent research on the controversies surrounding smoking -- more than all the voluntary health associations combined. Despite all the research going on, the simple and unfortunate fact is that scientists do not know the cause or causes of the chronic diseases reported to be associated with smoking.

508466199-6200 at 6199 (US 20813).

785. Beginning in 1986, Brennan Dawson, spokesperson for the Tobacco Institute, reiterated in numerous television appearances the Tobacco Institute's public position that the links between smoking and disease were based on statistics, and that the causal relationship between smoking and disease had not yet been established. The Tobacco Institute's position that it had not been proven that smoking caused disease was not shared by a single public health organization during the entire time Dawson served as spokesperson for the organization. Dawson WD, 64:17-23, 76:8-11; Dawson TT, 1/3/04, 10102:5-24.

786. During an August 17, 1986 appearance on the television program "Newsmaker Sunday," Dawson stated, in response to a question about the Tobacco Institute's position on whether cigarette smoking is hazardous to the smoker, that "what we think . . . is that the facts are not clear. The causal relationship has not been established." (no bates) (US 89296).

787. In an April 8, 1987 appearance on the television show "Ask An Expert," when asked whether smoking causes lung cancer, Dawson stated, "[i]t's not a yes and it's not a no. . . . We're not

going to tell anyone that smoking is good for them. We're not going to tell them that smoking is bad for them. It may be, it may not be." (no bates) (US 89292).

788. In a January 11, 1989 appearance on the television show "Good Morning America," Dawson stated that "all the links that have been established between smoking and certain diseases are based on statistics. What that means is that the causative [sic] relationship has not yet been established." This was twenty-five years after the Surgeon General announced a causal relationship between smoking and lung cancer. TIMN389474-9479 at 9475 (US 21286).

789. Similarly, in an appearance on CNN's "Crossfire" on April 18, 1989, Dawson claimed:

> Statistically there are associations. In terms of biological causation that hasn't been found which is why I came to the conclusion that smokers have to make up their own minds. We all know what the Surgeon General's warnings say. In fact, the vast majority of people believe it so I think we are intelligent enough as adults to make up our own minds.

(no bates) (US 89290).

790. In a February 27, 1990 appearance on CBS's "Nightwatch," when asked whether she believed cigarette smoking "contributes to heart disease and cancer," Dawson refused to provide a straight answer, instead responding that "I think that that's an individual decision that each person needs to make for themself." CORTI1731-1738 at 1737 (US 87735).

791. Dawson dismissed the overwhelming scientific evidence linking smoking and disease as merely "statistical." In a subsequent appearance on Crossfire on April 11, 1990, when asked whether smoking caused cancer, heart attacks, or strokes, Dawson again repeated: "The links that

have been made between smoking and disease you just rattled off, for example, are statistical in nature. The industry sticks by that position." CORTI1828-1841 at 1831 (US 85150).

792. The Chief Executive Officer and Chairman of Philip Morris Companies, Geoffrey Bible, was the ultimate authority on what the content would be in public statements on smoking and health made by Philip Morris Companies subsidiaries, including Philip Morris USA.[12] Bible PD, United States v. Philip Morris, 8/22/02, 83:9-84:9, 85:22-86:25.

793. When a company makes a statement about the carcinogens in its product, that has much more impact upon the consuming public than if some third party does. Bible PT, Minnesota v. Philip Morris, 3/2/98, 5762:5-9.

794. When Philip Morris made statements about smoking and health, the company intended the public -- including consumers and public health authorities -- to rely on them. Id. at 5718:7-14.

795. When Brown & Williamson puts statements on its website, it intends that consumers should act in reliance upon the information contained in those statements. Ivey TT, 11/16/04, 6098:16-19.

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[12] Defendant Altria, which was originally incorporated in 1985 as Philip Morris Companies Inc., effectively and actively controls the activities of all of its subsidiaries, including Defendant Philip Morris USA Inc., Philip Morris Companies, and Philip Morris International, Inc. ("PM International"). Overall policies on all major aspects of Altria operating companies' operations are set by Altria management, and senior Altria executives, employees, and agents participate in and/or control decisions about how the operating companies implement those policies, through both formal and informal reporting relationships. Berlind PD, United States v. Philip Morris, 5/23/02, 8:4-10:13; 2071412978-3143 (US 23061*).

6. As of 2005, Defendants Still Do Not Admit the Serious Health Effects of Smoking Which They Recognized Internally Decades Ago

796. More than forty years after Defendants issued the Frank Statement and created TIRC, Defendants' essential position on the relationship of smoking and health remains virtually unchanged. In April 1994, in the now-famous congressional hearings before the United States House of Representatives' Subcommittee on Heath and the Environment, Defendants' executives asserted yet again that the causal relationship of smoking and cancer had not been proven: the CEOs of Defendants B&W, Liggett, Lorillard, Philip Morris USA, and RJR publicly denied that smoking caused cancer. TLT0730001-0850 (US 77011); TLT0730851-1975 (US 77012); Brandt WD, 128:14-131:4; (no bates) (US 20468) (Cimons, Marlene, Cigarette Chiefs Steadfastly Deny Smoking Kills, Los Angeles Times, April 15, 1994, at A1.

797. The statements of the CEOs were restatements of positions the companies continued to take publicly and uniformly at that time. For instance, in 1991, Charles Wall of Philip Morris Companies sent a letter to international competitors discussing unified industry language to deny that cigarette smoking had been proven to "cause" lung cancer. 2023235511-5512 (US 22725).

798. Thomas Sandefur, CEO of B&W from 1993-1996, stated in 1994 that "there's a health risk with smoking and disease," but that it "hasn't been proven that it [smoking] causes lung cancer." Sandefur PD, Broin v. Philip Morris, 7/13/94, 84:22-86:5.

799. Sandefur also stated that he did not agree with the Surgeon General's conclusion that smoking causes cancer, heart disease, and other diseases because, as he stated, "[t]hey're not dealing with whole smoke. They're dealing with painting of mice and that kind of thing. I don't think that's valid in terms of human practices of smoking whole smoke." Id.

800. Sandefur admitted that he was unaware of any studies showing that whole smoke does not cause disease, and he was unable to name one scientist or medical doctor totally unconnected with the tobacco industry who said that it had not been established that cigarette smoking causes cancer. Id. at 86:6-87:4, 89:11-17, 125:13-16, 144:15-145:9.

801. In April 1995, B&W informed B&W Japan to answer inquiries about smoking and health by reassuring the person making the inquiries that whether or not smoking cause diseases "is still [an] inconclusive matter." 450180143-0143 (US 21885).

802. As of the early 1990s, Lorillard's position on causation was:

> Lorillard does not and will not authorize the use of the Risk Factor formulation for causation for public relations purposes. We wish to maintain the traditional articulation: unproven, statistical, lack of mechanism. Risk Factor discussion is for scientists only and only in the courtroom and its controlled circumstances.

92348935-8936 (US 57176); Stevens WD, 47:21-48:13.

803. Michael Prideaux, a spokesperson for BAT, stated in 1994 that BAT's current position was that there was no causal link between smoking and cancer. 502576028-6030 at 6028 (US 86882).

804. Martin Broughton, Chairman of BAT plc, the corporate parent of BATCo, stated in opening remarks to analysts, investors and journalists at a briefing held at Windsor House on October 30, 1996, that "We have no internal research which proves that smoking causes lung cancer or other diseases or, indeed that, smoking is addictive." 800113810-3812 at 3810 (US 85343).

805. In 1994, Philip Morris ran a paid newspaper statement about smoking, nicotine and addiction. It said: "Both smokers and nonsmokers deserve to know facts, not innuendo, about cigarettes." The statement also said “Philip Morris does not believe cigarette smoking is addictive.

People can and do quit smoking all the time." 2023011263-1263 (US 20371); Keane WD, 36:21-37:16.

806. In 1997, Philip Morris Companies' Chief Executive Officer and Chairman, Geoffrey Bible, took the position that cigarettes were not a cause of lung cancer, but asserted that if they were shown to be, "[he'd] probably . . . shut [the] company down instantly to get a better hold of things." He made this statement four decades after Philip Morris USA recognized the carcinogenic and disease-causing nature of cigarettes in internal documents. Bible PD, Florida v. American Tobacco, 8/21/97, 27:1-24. In 1997, Bible also voiced his disagreement with an Australian cigarette label warning that stated: "Smoking causes lung cancer." Id. at 32:16-33:8.

807. Bible stated in 2002 that he did not know if Philip Morris cigarettes had ever caused disease in any individual. Bible PD, United States v. Philip Morris, 8/22/02, 63:19-64:5.

808. Although Philip Morris expressed "differences" in opinions between it and the public health authorities, Senior Vice President and General Counsel Denise Keane could not, while testifying in this litigation, cite any peer-reviewed article, study, or consensus report from 1977-1997 that disputes the scientific conclusion that smoking causes lung cancer. Keane WD, 16:18-17:12.

809. Prior to October 1999, Philip Morris's public position on disease causation was that smoking cigarettes was a risk factor for many diseases, but may or may not cause them. Steve Parrish admitted that Philip Morris's "risk factor" position was at odds with the position of the public health authorities who had stated for decades that smoking was not merely a risk factor for certain diseases, but caused these diseases as well. Parrish WD, 15:11-16:14.

810. Finally, on October 13, 1999, when Philip Morris launched a corporate website, it changed its public position on smoking and health issues. The website stated: "There is an

overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema, and other serious disease in smokers." Steve Parrish, Senior Vice President of Corporate Affairs for Altria Group, acknowledged that the overwhelming scientific consensus referenced in the October 1999 statement had existed for decades. Parrish further conceded that Philip Morris's refusal to acknowledge prior to October 1999 that smoking caused disease had damaged the company's credibility because there was no support for Philip Morris's view outside of the tobacco industry. 2085240087-0089 at 0087 (US 45673); Parrish WD, 9:20-12:3, 15:5-10; Keane WD, 24:21-25:28:8.

811. Although Philip Morris recognized the "overwhelming medical and scientific consensus," regarding the causation of disease by cigarette smoking in 1999, it did not state its agreement with that consensus until October 2000. Keane WD, 27:11-28:11. Parrish acknowledged that Philip Morris changed its position on causation in 2000 because of criticism from the public health community, and that Philip Morris's decision to state its agreement with the "overwhelming medical and scientific consensus" was not based on any new scientific evidence. The scientific basis for the "overwhelming medical and scientific consensus" had existed for decades prior to Philip Morris's decision to state its agreement with it. Parrish WD, 19:13-21:21.

812. Although Philip Morris is free to voluntarily change the information it includes on its cigarette warning labels, it has chosen not to change those labels even though in October 2000, the company changed its public position to admit that smoking causes disease and is addictive. Bible PD, United States v. Philip Morris, 8/22/02, 112:12-113:17.

813. Philip Morris has never told its customers on its cigarette packaging or in onserts that it agrees that smoking causes cancer and other diseases in smokers. Its packages merely direct smokers to its website address. Keane WD, 35:10-22.

814. Speaking on behalf of RJR, Chairman Andrew Schindler, who received between $44 and $45 million in compensation in 2004, has refused to admit that smoking causes disease, as the following colloquies demonstrate: (1) When asked, "you won't say sitting here today that cigarette smoking causes disease, right?," he responded: "Well, my testimony and what's on our Website today is cigarette smoking [has] inherent health risks [and] may contribute to causing certain diseases in some people." Schindler TT, 1/24/05, 10811:11-19; (2) when asked again, "So you say it's possible, it's likely, but you don't say it does, do I have that right?," Mr. Schindler admitted, "Yes." Id. at 10812:20-22; (3) RJR's website, like its Chairman, does not admit that smoking is a cause of disease. Instead, it states: "We produce a product that has significant and inherent health risks for a number of serious diseases and may contribute to causing these diseases in some individuals." Id. at 10814:11-15.

815. As late as 2004, Lorillard CEO Martin Orlowsky refused to admit the full extent of smoking's harm. He was specifically asked: "Why hasn't Lorillard specifically stated publicly that smoking causes any diseases other than smoking [sic] emphysema, COPD or heart disease?" He responded:

> We have -- in certain instances, we do not know if in fact the evidence, the scientific evidence is such that it warrants saying it does cause. However, Lorillard's longstanding position, as long as I've been with the company, is that certainly smoking can, and is a risk factor for those diseases.

Orlowsky TT, 10/13/04, 2303:7-15.

816. Arthur Stevens, former Senior Vice President and General Counsel of Lorillard responded in 2000 to the question of whether smoking causes disease:

> I am aware that the company and others are of the position and the view, and I embrace that, that cigarette smoking is a risk factor for disease and I have no argument with the public health and the medical and other authorities taking that position.

Stevens WD, 47:1-11.

817. The risk factor language was not and is not the position of the scientific community and Stevens knew that. When questioned regarding the distinction, Stevens said: "Q: Were you aware, Mr. Stevens, that the risk factor formulation you stated was not the position of public health authorities? A: Yes I was." Stevens WD, 47:12-14.

818. Lorillard continues to issue public statements on smoking and health issues through PR Newswire. Press releases are sent by interstate wire transmission by PR Newswire, which in turn sends the releases out to news media so that Lorillard can "get the message out." Milstein TT, 1/7/05, 9261:8-18, 9271:7-17.

819. Press releases are also kept on Lorillard's website, where they can be accessed and reviewed by the public. Id. at 9272:12-20.

820. Lorillard General Counsel Ronald Milstein admitted that the content of recent Lorillard press releases on smoking and health issues, including addiction and the health effects of exposure to ETS, is similar to statements that Defendants have made for decades. Id. at 9264:11-24, 9266:6-16, 9277:23-9278:12; TLT0961610-1610 (US 86693); USX5710001-0002 (US 89303); USX5710005-0006 (US 89305).

821. Two years after the effective date of the Master Settlement Agreement, in 2000, B&W told visitors to its website: "We know of no way to verify that smoking is a cause of any particular person's adverse health or why smoking may have adverse health effects on some people and not others." (no bates) (JD 012645).

7. Conclusions

822. Defendants have been aware since the late 1950s of substantial evidence demonstrating that smoking causes significant adverse health effects, in particular, lung cancer. The evidence was presented by practicing physicians, such as Michael DeBakey, Alton Oschner, and Richard Overholt, by academic scientists, such as Evarts Graham and Ernst Wynder, and by government officials such as Surgeon General Leroy Burney in his 1959 JAMA article.

823. By 1964, when the Surgeon General of the United States, Luther Terry, issued his ground-breaking Report considering some 7,000 scientific articles on the relationship between smoking and health, there could no longer be any question that there was a consensus in the American scientific community "that cigarette smoking contributes substantially to mortality from certain specific diseases and to the overall death rate," that "[c]igarette] smoking is associated with a 70 percent increase in the age-specific death rates of males," that "[c]igarette smoking is causally related to lung cancer in men," and that the "data for women, though less extensive, point in the same direction." In 1968, the Surgeon General concluded that "cigarette smoking can contribute to the development of cardiovascular disease and particularly to death from coronary heart disease."

824. From at least 1953 until at least 2000, each and every one of these Defendants repeatedly, consistently, vigorously -- and falsely -- denied the existence of any adverse health effects from smoking. Moreover, they mounted a coordinated, well-financed, sophisticated public relations

campaign to attack and distort the scientific evidence demonstrating the relationship between smoking and disease, claiming that the link between the two was still an "open question." Finally, in doing so, they ignored the massive documentation in their internal corporate files from their own scientists, executives, and public relations people that, as Philip Morris's Vice President of Research and Development, Helmut Wakeham, admitted, there was "little basis for disputing the findings [of the 1964 Surgeon General's Report] at this time."

825. Indeed, as far back as 1968, William Kloepfer, Vice President of Public Relations for the Tobacco Institute recognized that "[o]ur basic position in the cigarette controversy is subject to the charge, and may be subject to a finding, that we are making false or misleading statements to promote the sale of cigarettes." Mr. Kloepfer was both correct and prescient.

826. For more than forty years after issuance of the Frank Statement in 1954, and for more than thirty years after issuance of the Surgeon General's first Report on smoking and health, Defendants maintained their position denying the causal relationship between smoking and disease. Finally, in 1999, Philip Morris launched a corporate website acknowledging the "overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema, and other serious disease in smokers." Despite this acknowledgment of the "overwhelming medical and scientific consensus," Philip Morris could not bring itself to clearly state its agreement with that consensus until October 2000. Philip Morris still does not include the information on its cigarette packaging that it agrees that smoking causes cancer and other diseases in smokers.

827. Neither RJR, Lorillard, nor B&W, have openly admitted that smoking causes cancer. Indeed, in 2000, two years after the effective date of the Master Settlement Agreement, B&W was

putting the following message on its website: "We know of no way to verify that smoking is a cause of any particular person's adverse health or why smoking may have adverse health effects on some people and not others."

B. The Addictive Properties of Nicotine

1. Introduction

828. Cigarette smoking is an addictive behavior, characterized by drug craving, compulsive use, tolerance, withdrawal symptoms, and relapse after withdrawal. Underlying the smoking behavior and its remarkable intractability to cessation is the drug nicotine. Nicotine is the primary component of cigarettes that creates and sustains addiction to cigarettes. While the terminology of addiction has evolved over time, the underlying facts about the addictive nature of smoking and the centrality of nicotine to the addiction have been known and have not changed in over 40 years.

829. Since the 1950s, Defendants have researched and recognized, decades before the scientific community did, that nicotine is an addictive drug, that cigarette manufacturers are in the drug business, and that cigarettes are drug delivery devices. The physiological impact of nicotine explains in large part why people use tobacco products and find it so difficult to stop using them. Moreover, Defendants have sought to exploit the addictive quality of smoking and nicotine for decades in order to develop new products and increase sales.

830. Notwithstanding the understanding and acceptance of each Defendant that smoking and nicotine are addictive, Defendants have publicly denied and distorted the truth as to the addictive nature of their products for several decades. Defendants have publicly denied that nicotine is

addictive, have suppressed research showing its addictiveness, and have repeatedly used misleading statistics as to the number of smokers who have quit voluntarily and without professional help.

831. Defendants have intentionally maintained and coordinated their position on addiction and nicotine as an important part of their overall efforts to influence public opinion and persuade people that smoking was not dangerous; in this way, the cigarette company Defendants could keep more smokers smoking, recruit more new smokers, and maintain or increase their earnings. Additionally, Defendants have sought to discredit evidence of addiction in order to preserve their "smoking is a free choice" argument in smoking and health litigation.

832. Defendants, with the exception of Philip Morris, continue to publicly deny and distort the truth as to the addictiveness of cigarette smoking and nicotine's role in the addiction. Defendants ignore their own internal statements acknowledging and exploiting nicotine addiction. While nicotine shares certain key attributes of heroin, cocaine, and other drugs, Defendants continue to assert that smoking is no more addictive than coffee, chocolate, and exercise, and (with the exception of Philip Morris) continue to deny that nicotine is addictive at all.

2. Cigarette Smoking Is Addictive and Nicotine Is the Primary Element of That Addiction

a. How Nicotine Operates within the Body

833. When a person puffs a cigarette, she inhales cigarette smoke, which consists of an aerosol of particles and gases, including water, nicotine, and tar. Nicotine, a chemical found primarily in tobacco plants, has a structure similar to a chemical in the body called acetylcholine, a neurotransmitter which provides the pathway of communication from one nerve cell to another. Nicotine competes with and blocks the effects of acetylcholine in the body. When cigarette smoke

is inhaled deeply into the lungs, nicotine particles impact the breathing tubes in the lungs and nicotine is rapidly absorbed into the blood stream. It then rapidly moves to the heart and from there through the arterial blood vessels to the rest of the body, including the brain. It takes about 15-20 seconds from the time a smoker puffs on a cigarette for its nicotine to enter the brain. Benowitz WD, 15:13-16:13.

834. The more quickly nicotine is absorbed, the higher its concentration in the body and the greater its effects. Smoking nicotine provides the fastest rate of absorption and highest blood levels of nicotine. On average, one cigarette delivers 1mg to 1.5 mg of nicotine. In comparison, when nicotine is absorbed from a skin patch, blood levels rise gradually over 4 to 6 hours; when it is absorbed from gums or lozenges, blood levels rise over 30 minutes. Again, in comparison, caffeine and alcohol absorb into the body over 30 minutes. Id. at 18:9-11, 18:18-24, 19:18-20:13.

835. Nicotine binds to receptors that are intended to bind to the body's own neurotransmitter, acetylcholine. When nicotine binds to receptors, it artificially stimulates the acetylcholine system and causes the release of a number of hormones, including dopamine, norepinephrine, serotonin, and endorphins, which then affect mood and behavior. In addition, nicotine affects virtually every body organ. For example, nicotine increases the rate and force of heart contractions and constricts blood vessels. Id. at 16:14-17:23.

836. Nicotine produces two different kinds of effects. First, there are certain primary effects of nicotine on the brain that smokers find desirable. For example, the first cigarette in the morning usually has a stimulating or alerting effect. Similarly, if a person is feeling stressed or anxious, nicotine may reduce that stress or relieve that anxiety and make a person feel better. Smokers may, however, develop tolerance to many of these primary effects. As occurs with the use

of all psychoactive drugs, the brain attempts to adapt to the persistent presence of nicotine. This adaptation, or tolerance, produces actual changes in the brain's structure. Over time, the brain becomes tolerant to the effects of nicotine and needs even greater amounts of it to produce the same effects on hormones as it once did before the development of tolerance. Id. at 22:5-23:17.

837. Second, because the smoker's brain has adapted to the constant presence of nicotine, it becomes dependent on nicotine to function normally. When a smoker doesn't have nicotine, the brain functions abnormally and most people, approximately 80%, experience withdrawal symptoms. Those symptoms, which are the very opposite of the primary effects of nicotine, include irritability, lethargy, restlessness, sleeplessness, anxiety, depression, hunger, and weight gain. Withdrawal symptoms begin to occur as soon as nicotine levels in the body start to decline. When a person is experiencing nicotine withdrawal symptoms, ingestion of nicotine reverses the effects. This reversal of unpleasant withdrawal effects is perceived by the smoker as having beneficial effects on mood and arousal. Id. at 23:18-24:9. Thus, as tolerance develops, the smoker gets fewer pharmacological benefits from each cigarette and smokes more and more to avoid withdrawal symptoms. Id. at 24:18-20; See also Farone WD, 73:2-20. However, the smoker's need for even greater amounts of nicotine does eventually plateau. It take an average of seven years to reach a plateau level of cigarette consumption. Id. at 24:22-24.

838. In commonly understood terms, smokers become dependent on the significant pharmacological and psychoactive effects of the nicotine in cigarettes, resulting in craving, compulsive use, difficulty in quitting, and relapse after withdrawal. Farone WD, 73: 2-20.

839. There is compelling evidence that smoking behavior is motivated by a need to maintain a preferred dose or level of nicotine intake, leading to the phenomenon of nicotine

compensation, or titration, in response to the use of cigarettes with lower nicotine yields. Although it may be correct that addiction to smoking is, in part, an addiction to a set of behaviors, i.e., opening a pack, taking out a cigarette, lighting up, tapping ashes, etc., the fact is that nicotine is the essential ingredient which creates and maintains the addiction. To give a simplistic example, denicotized cigarettes have attracted virtually no smokers even though the behaviors involved are the same. See Farone WD, 73:21-74:3.

840. This understanding supports the now overwhelming consensus in the scientific and medical community that cigarette smoking is an addictive behavior and that nicotine is the component in cigarettes that causes and sustains the addiction. Henningfield WD, 114:9-12; Burns WD, 13:16-14:19. However, it has taken over 50 years for this full understanding of nicotine's role and addictiveness to evolve.

b. Evolving Definitions of "Addiction" and Classification of Nicotine

841. In the last fifty years, as the scientific, regulatory, and public health communities have developed greater understanding of drug use, they have adopted a more nuanced definition of what constitutes an addiction to drugs. As the definition of addiction evolved, so did the classification of nicotine.

842. In its 1957 Report, the World Health Organization ("WHO") Expert Committee on Addiction Producing Drugs set forth criteria for determining both drug dependence and drug habituation:

Drug Addiction	Drug Habituation
Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:	Drug habituation (habit) is a condition resulting from the repeated consumption of a drug. Its characteristics include:
1) An overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;	1) A desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders;
2) A tendency to increase the dose;	2) Little or no tendency to increase the dose;
3) A psychic (psychological) and generally a physical dependence on the effects the effect of the drug;	3) Some degree of psychic dependence on the effects of the drug, but absence of physical dependence and hence of an abstinence syndrome;
4) Detrimental effect on the individual and on society.	4) Detrimental effects, if any, primarily on the individual.

See Benowitz TT, 11/2/04, 4621:28, 4623:1-20; Henningfield TT, 11/23/04, 6866:20-6867:11; (US 64057). The 1957 WHO Report emphasized the importance of intoxication as a component of addiction, which it labeled a personality disorder. A drug addiction was used to describe drugs that produced marked intoxication with concomitant impairment of performance and severe physical dependence. A drug addiction at that time also meant damage not only to the individual but to society (e.g., anti-social behavior and criminality). A drug habit, on the other hand, was considered to be a psychological dependence involving no physical dependence and/or no damage to society. Henningfield WD, 114:18-116:14.

843. In 1964, shortly before the issuance of the Surgeon General's 1964 Report, the WHO Expert Committee on Addiction Producing Drugs published a new Report abandoning its prior definitions of habituation and addiction. Instead, the WHO committee recommended the adoption of the term "dependence," which it defined as "a behavioral pattern in which the use of a given

psychoactive drug is given a sharply higher priority over other behaviors which once had a significantly higher value." Most importantly, the 1964 WHO Report determined that intoxication and personality disorder were not accurate criteria for determining addiction, replacing them with measurements of addictive effects including physiological dependence, withdrawal, reinforcement, and psychoactive effects. Henningfield WD, 109:3,20, 110:8-22, 114:18-116:14, 122:20-123:16.

844. Because the 1964 WHO Report was issued so shortly before the 1964 Surgeon General's Report, the Surgeon General was unable to take its new definitions into account when considering the proper classification of nicotine. Consequently, in his January 1964 Report, the Surgeon General, using the earlier criteria established by the WHO in 1987 for "addiction" and "habituation," concluded that smoking, nicotine, and cocaine were not addictions. Smoking in particular was termed a "habituation" rather than an "addiction." The criteria for addiction that the 1964 Report used were: (1) periodic intoxication; (2) overpowering desire or need; (3) tendency to increase dose; (4) psychic and physical dependence; and (5) detrimental effects on society. The 1964 SG report concluded, based on the 1957 WHO definition and the limited data available at the time, that smoking produced only a "psychiatric but not physical dependence." VXA1601844-2232 (US 64057); Henningfield WD, 114:18-117:5.

845. Between 1964 and 1988, when the Surgeon General finally did apply the term addiction to smoking, many individuals and organizations within the public health community struggled with the classification of nicotine. Each examined the issue from the perspective of their own particular discipline and constituency.

846. Despite the fact that there were a few early studies suggesting that nicotine could create pleasurable effects or withdrawal symptoms, the state of knowledge in the public health

community about nicotine's role in behavior was limited. For example, in 1962, the Larson, Haag, and Silvette compendium was published, with the financial support of Philip Morris. This highly respected reference book summarized much of the world literature on the effects of tobacco and nicotine. Although it found that nicotine is a powerful and potent nerve acting drug, it did not address the issue of addiction. In addition, there was evidence suggesting that nicotine could serve as a reinforcer for monkeys, generated by work in the later 1960s at the University of Michigan. There was evidence suggesting the existence of a nicotine withdrawal syndrome dating to the Finnegan, Larson, and Haag study in 1945. There was evidence suggesting that injected nicotine could cause psychoactive effects and provide a substitute for tobacco from the Lennox Johnston study of 1942. While there was some indication of the important role played by nicotine, all such studies left too many significant gaps in the analysis of nicotine to draw definitive conclusions. Id. at 117:2-118:11.

847. In 1979, Michael Russell, one of the most prominent public health researchers on nicotine, wrote a chapter in a NIDA monograph, titled "Tobacco Dependence: Is Nicotine Rewarding or Aversive," exploring whether nicotine was an important factor in smoking. He concluded that it remained unproven "that nicotine is what smokers seek." ATX02 0068361-10068383 (US 65420). Dr. Russell noted key gaps in knowledge, and that animal models of nicotine self-administration had proven inconclusive. Henningfield WD, 126:18-127:10. At that point, the scientific and medical community simply did not have the knowledge of nicotine's pharmacological effects and the greater impact that a faster rate of delivery of the dose could provide. Id.

848. It was not until 1980 that clinical psychiatrists determined that there was sufficient evidence of dependence and withdrawal from smoking to include these symptoms in the APA's

Diagnostic and Statistical Manual ("DSM-III"). Even then, the syndromes were called "tobacco dependence" and "tobacco withdrawal" rather than "nicotine dependence" and "nicotine withdrawal," because of psychiatrists' insufficient knowledge and understanding of the specific role of nicotine. It was clear to the developers of the DSM-III that nicotine played a role in making smoking addictive, but there were unresolved questions as to the importance of nicotine as opposed to the numerous other constituents of tobacco smoke and behavioral components of smoking that were the possible addictive elements. Henningfield WD, 123:23-128:21.

849. It was not until 1982 that the National Institute of Drug Abuse ("NIDA") concluded that scientific evidence demonstrated that nicotine is addictive. Id. at 132:10-13. The Director of NIDA, Dr. William Pollin, testified to that conclusion before Congress in 1982 and 1983. HHA5002584-2590; US 58808. NIDA applied the 8 factors listed in the Controlled Substances Act of 1970 ("CSA"), all of which were used by the Food and Drug Administration ("FDA") and Drug Enforcement Agency ("DEA"), to determine if a substance should be officially designated an addictive drug, which is a "controlled substance" under the CSA. NIDA concluded that smoking met the following criteria for nicotine drug dependency: (1) persistent regular use of a drug; (2) attempts to stop such use which lead to discomfort and often result in termination of the effort to stop; (3) continued drug use despite damaging physical and/or psychological problems; and (4) persistent drug-seeking behavior. NIDA also concluded that "not only has tolerance to some of the effects of smoking been demonstrated but metabolic tolerance to various components of cigarette smoke, including nicotine, has been documented." NIDA relied upon previously existing data as well as findings from its own Addiction Research Center showing that nicotine met key criteria as a reinforcing and euphoriant drug in animal and human studies. Id. at 133:1-134:13.

850. Finally, in 1988, the Surgeon General, in his Report on "The Health Consequences of Smoking -- Nicotine Addiction," reached the significant conclusion that the reason smokers smoke is because they are addicted to nicotine. After an exhaustive review of the literature on nicotine and smoking behavior, the Report found that cigarettes and other forms of tobacco are addicting, and that nicotine is the substance in tobacco that causes the addiction. The Health Consequences of Smoking: Nicotine Addiction: A Report of the Surgeon General (1988), VXA0300208-0848 (US 64591).

851. Relying in part upon the APA and WHO clinical findings that nicotine dependence and withdrawal could occur with tobacco use and that nicotine was the key pharmacological agent, and in part upon the chemical and pharmacological evidence considered by NIDA, the DEA, and the FDA in determining if a drug is addictive, the 1988 Surgeon General's Report set forth three primary criteria for determining whether a drug, in this case nicotine, is addicting: (1) use is highly controlled or compulsive; (2) the use of the drug produces mood altering (psychoactive) effects; and (3) the drug reinforces behavior, resulting in continued intake or drug-reinforced behavior. Henningfield WD, at 143:20-144:3; VXA0300208-0848(US 64591); Benowitz WD, 27:6-13.

852. The first criterion, highly controlled or compulsive use, refers to drug-seeking and drug-taking behavior that is driven by strong, often irresistible urges. Such use persists despite a desire to quit or even repeated attempts to do so. This type of behavior has also been described as "habitual." Benowitz WD, 27:21-28:2.

853. Drug addiction, however, is distinguished from habitual behaviors not involving drugs -- such as habitual exercising or overeating -- by the second criterion, the presence in the blood stream of a drug with psychoactive or mood-altering effects on the brain. Food, for example, which

is necessary to sustain life, is not a drug and does not satisfy the second criterion. Id. at 28:3-16. Smoking cigarettes involves a drug and is not comparable to non-drug "habits" such as jogging, playing tennis, or biting one's nails. Rowell TT, 3/23/05, 16685:5-16687:19.

854. Finally, to meet the third criterion in the Surgeon General's Report, the drug must be capable of functioning as a reinforcer that directly strengthens behavior leading to further drug ingestion. Such reinforcement exists where, for instance, the drug produces pleasant or rewarding sensations like stimulation, relaxation, or euphoria, or mitigates unpleasant withdrawal sensations experienced when a person stops using it. Benowitz WD, 28:17-29:7.

855. The 1988 SG Report demonstrated that nicotine in cigarettes meets the same criteria for addiction that apply to heroin, morphine, and cocaine and that the pharmacological and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine. Henningfield WD, 143:13-19. The Report specifically found that nicotine, heroin, morphine, and cocaine all met the criteria for addiction.

856. Dr. Peter Rowell, one of the Defendants' experts, admitted that there are many similarities between the properties that determine tobacco addiction and those that determine heroin and/or cocaine addiction:

> Q. And I want to direct your attention specifically to the third major conclusion expressed by the Surgeon General in 1988, which appears at page 9, and it reads, quote, the pharmacologic and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine. Do you see that?
>
> A. Yes, I do.
>
> Q. Do you agree or disagree with what the Surgeon General said about similarities existing between the pharmacologic and

behavioral properties that determine tobacco addiction and those that determine addiction to drugs such as heroin and cocaine?

A. I agree there are similarities.

Q. Have you prepared an animation that -- well, before we get to that, let me ask you a further question. When you say that there are these similarities, what is the basis for your saying that there are similarities from a pharmacological point of view? What are you focusing on?

A. The dependence properties of nicotine and more dramatically cigarette smoking in regards to physical dependence, withdrawal symptoms, effects of neurochemistry in the brain on neurotransmitters, self-administration studies. Many of these things were done in the '80s just before the Surgeon General's report. So these were the similarities that led the Surgeon General to indicate that there were, in fact, these similarities between cigarette smoking and these other drugs.

Rowell TT, 3/22/05, 16549:23-16650:15.

857. The 1988 Surgeon General's Report did not include intoxication as a criterion for addiction. As discussed earlier, in the 1950s and early 1960s, it was believed that significant intoxication or impairment were required to sustain addiction. That requirement of addiction has long been abandoned by the WHO, the APA, and the Surgeon General because many intoxicating substances are not addicting and because many addictive drugs are used and abused in dose levels that do not cause intoxication. Benowitz WD, 30:14-31:25; Henningfield WD, 145:20-146:5, 150:14-151:8.

858. Defendants' own expert witness, Dr. Rowell, rejected the claim that intoxication was necessary for nicotine to be considered addicting:

Q. And, sir, it is correct, is it not, that it's been your view since the early 1970s that to be addictive, a drug does not have to cause intoxication?

A. Yes.

Q. The suggestion, then, that a drug cannot be addictive because it is not intoxicating, you wouldn't agree with that statement, correct?

A. I would not.

Rowell TT, 3/23/05, 16632:4-7, 16632:23-16633:2.

859. In addition, the Surgeon General did not include either tolerance or withdrawal effects as criteria for addiction. However, the 1988 Surgeon General's report documented both tolerance and withdrawal and determined that nicotine met these additional criteria. See 1996 FDA Jurisdictional Determination, 61 Fed. Reg. 44619 (August 1996); VXA1242326-3211 at 2645-2651 (US 64323) (recognizing that nicotine is addictive even under the outdated 1964 SG Report/1957 WHO definition). However, neither tolerance nor withdrawal are the primary criteria of drug dependence/addiction.

860. In 1994, the APA published its Diagnostic and Statistical Manual of Mental Disorders-IV ("DSM-IV") which defined "substance dependence" as "a pattern of repeated self-administration that usually results in tolerance, withdrawal, and compulsive drug-taking behavior." DSM-IV continued to recognize the diagnoses of both "nicotine dependence" and "nicotine withdrawal." American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders IV (1994) at 176-181 (JD 000460).

861. In the DSM-IV section titled "Nicotine-Related Disorders," the APA concluded that nicotine can produce dependence in people who use all forms of tobacco, including pipes, chewing

tobacco, or cigarettes, because the following criteria are present: tolerance, withdrawal, a desire to quit, a great deal of time spent using nicotine, and the continued use despite medical problems. APA, DSM-IV (1994), at 176-181, 242-247 (JD 000460).

862. In describing the diagnosis of "Nicotine Dependence," the DSM-IV authors stated that, "Tolerance to nicotine is manifested by the absence of nausea, dizziness, and other characteristic symptoms despite using substantial amounts of nicotine or a diminished effect observed with continued use of the same amount of nicotine-containing products." Id.

863. The DSM-IV authors specifically rejected Defendants' oft-repeated public claim that smoking cigarettes does not produce withdrawal and therefore is not addictive: "Cessation of nicotine use produces a well-defined withdrawal syndrome that is described below. Many individuals who use nicotine take nicotine to relieve or avoid withdrawal symptoms when they wake up in the morning or after being in a situation where use is restricted." In addition, withdrawal symptoms "are typically more intense among individuals who smoke cigarettes than among individuals who use other nicotine-containing products." Id. at 243-244.

864. By 1988, almost every major public health organization, including the Surgeon General, the National Institute on Drug Abuse, the World Health Organization, the American Psychiatric Association, the Harvard School of Public Health, and others, had declared that smoking is an addiction driven by the drug nicotine. [13] Benowitz WD, 26:3-36:8.

865. Further reflecting the consensus judgment that nicotine is addictive, the investigation by the FDA leading to its Final Tobacco Rule issued in August 1996 confirmed that even under the

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[13] The American Psychiatric Association focuses on behavioral and clinical symptoms indicative of drug dependence, compared to the WHO, Surgeon General, and FDA, which focus more on the pharmacological effects of the drug.

stringent criteria employed by the FDA, nicotine in cigarettes is an addictive drug. Henningfield WD, 159:9-161:22. The FDA concluded in its August 1996 Final Rule that, "All major public health organizations in the United States and abroad with expertise in tobacco or drug addiction now recognize that the nicotine delivered by cigarettes and smokeless tobacco is addictive." 1996 FDA Jurisdictional Determination, 61 Fed. Reg. 44619 (August 1996) at xv, VXA1242326-3211 at 2572 (US 64323).

866. Defendants' own expert, Dr. Rowell, not only agreed that nicotine plays an essential role in cigarette smoking, Rowell TT, 3/23/05, 16625:12-25, but that "there is clearly addiction for cigarette smoking." Rowell TT, 3/24/05, 16790:4-16.

867. As the documentary evidence laid out in great detail infra shows, over the last forty years, Defendants have been no stranger to the term "addiction" in reference to smoking. In-house tobacco industry research, research not disclosed to the 1964 Surgeon General's Advisory Committee, showed drug addiction-like effects, including tolerance, withdrawal, compulsive use, and craving. The actions of BATCo and B&W, described below, are particularly illuminating on the issue of how far superior the cigarette company Defendants' knowledge of nicotine and its behavioral and pharmacological effects was by 1964, compared to the relatively uninformed conclusion of the Advisory Committee to the Surgeon General who lacked that knowledge and its supporting research. See extended discussion at Section V(B)(3)(c-d), infra.

c. Consequences of the Addictiveness of Nicotine

868. Today, most daily cigarette smokers satisfy the Surgeon General's primary criteria for addiction. First, as to highly controlled or compulsive use, addicted smokers smoke numerous cigarettes -- often at least one pack or 20 cigarettes -- throughout the day. Second, the nicotine in

the cigarette tobacco stimulates the nicotinic receptors in the smoker's brain, producing a psychoactive reaction that affects the smoker's mood. Third, the smoking behavior is reinforced by the pleasurable effects of nicotine and/or by the mitigation of unpleasant withdrawal sensations triggered by the need for nicotine. Benowitz WD, 29:8-30:13.

869. Published research indicates that 77% to 92% of smokers are addicted to nicotine in cigarettes. 1996 FDA Jurisdictional Determination, VXA1242326-3211 at 2335, 2528 (US 64323).

870. Many smokers and potential smokers are unaware of or do not fully appreciate the addictive nature of nicotine, the addictiveness of cigarette smoking, and the extent to which nicotine delivery and dosage are +highly controlled and engineered. Weinstein WD, 61:5-74:2.

871. Every year, an estimated seventeen million people in the United States attempt to quit smoking. Fewer than one and a half million, or 8%, succeed in quitting permanently. Benowitz TT, 11/1/04, 4505:2-4506:13.

872. Most smokers smoke cigarettes regularly in order to experience nicotine's effects on the brain and the body, and thereby become addicted to nicotine. People who try to quit smoking often experience withdrawal symptoms that can be extremely disruptive. Accordingly, it is usually very difficult for the smoker to stop smoking cigarettes. Id., 4503:17-4506:13.

873. Most smokers who desire to quit require several quit attempts before they are successfully able to give up cigarettes, and many smokers die of smoking-related diseases before they are able to quit. Id., 4505:2-4506:13.

874. Most smokers become addicted to smoking as teenagers. 88% of daily smokers tried their first cigarette before reaching age eighteen, and 70% of people who have ever smoked daily began smoking daily before they were eighteen years old. Because the addiction to nicotine develops

in the first few years of cigarette smoking, most smokers become addicted to nicotine during adolescence or early adulthood. Benowitz WD, 38:15-39:2, 39:3-5, 9-10.

875. Research shows that 81% of adult smokers said that if they tried to quit for just a day, they experienced strong cravings for cigarettes. Of these, 95% said that the cravings were stronger than what they had expected when they began to smoke. Fewer adolescent smokers -- 46% -- reported that they would experience strong cravings if they tried to quit. Among those adolescents who said they experienced such cravings, 85% said that the cravings were stronger than what they had expected when they began to smoke. In short, people underestimate the addictive power of nicotine when they first become smokers. Weinstein WD, 66:3-69:19.

876. As for quitting, most smokers give no thought to how long they will smoke when they first begin, apparently believing that quitting is something that can be decided later. By then, addiction makes it extremely difficult to quit. In a large national survey, 24% of youth smokers said they expected to smoke for less than a year, 10% said one to five years, and only 5% said they expected to smoke longer than five years. A much larger proportion, 61%, said they had never thought about it. The corresponding figures for adult smokers were: less than one year - 12%, one to five years - 5%, longer than five years - 7%, and never thought about it - 76%. Id.

877. The Annenberg study, which surveyed 600 fourteen to twenty-two year olds in the forty-eight contiguous states, asked smokers who said that they planned to try to quit in the next year, "If we called you again in a year, would you guess you would have successfully quit smoking?" A very high 83% of youths and 78% of adults said they expected to succeed in their quit attempt. The reality was that only 28% of teenage quitters managed to quit smoking for a year, and only 7% of adults smokers who tried to quit were able to remain cigarette free for a year. Id.

878. In another study, smokers who were planning to quit in the next year, and who had tried and failed in the past, were asked about their next quit attempt. From this group, 88% of youths and 64% of adults said that they would be nonsmokers a year later. Even among those who stated that quitting was very hard or almost impossible for others, 83% of youths and 57% of adults predicted their own success. Id.

879. These studies demonstrate that smokers and nonsmokers agree that quitting is difficult, and that teenage and adult smokers greatly overestimate the likelihood that their own individual quit attempts will succeed. Nearly half of teenage smokers think that quitting will be easy for them even though they think it will be very difficult for their peers. The evidence also indicates that people fail to consider the difficulty of quitting when they start to smoke and do not recognize how strong the cravings produced by addiction can be. In short, people, and youth in particular, have insufficient recognition of how difficult it will be for them to stop smoking even though they may have an intellectual understanding of the medical consequences of smoking. Id.

d. Conclusion

880. As the public health community's understanding of nicotine's pharmacological and behavioral effects on the human body has evolved, so has the terminology used to describe nicotine. The scientific and medical community has struggled with the choice of the proper nomenclature to describe the human affinity for nicotine and has moved from "habituation" to "dependence" to "addiction." Since the mid-1980s, the scientific and medical community has viewed the terms "dependence" and "addiction" as virtually synonymous. In fact, many public health organizations, including NIDA, the American Association of Addiction Medicine, and the College on Problems of Drug Dependence, use the terms "drug addiction" and "drug dependence" interchangeably.

Henningfield WD, 110:9-22. Indeed, the tobacco industry itself has used these terms interchangeably. See Section V(B)(3), infra.

881. The Surgeon General chose the term addiction in 1988 in order to effectively convey to the public the severity of smokers' attachment to nicotine, the intense difficulty of breaking that attachment, and the fact that the attachment is physiological and not merely a lack of willpower to stop doing something pleasurable. See Benowitz TT, 11/2/2004 at 4647:4-7, 4647:25-4648:9, 4655:6-4661:21 (JD -054316). In light of these facts, this Court will use "addiction" and "dependence" interchangeably. Disputes over terminology to describe the workings of nicotine should not obscure the reality that Defendants long ago internally recognized the same phenomenon that the scientific and medical community have struggled to understand and describe: the extraordinary hold that nicotine has on the human nervous system and the fact that such hold stems from nicotine's pharmacological properties.

3. Defendants Were Well Aware that Smoking and Nicotine Are Addictive

882. The wealth of documentary evidence examined in this Section, as well as Sections V(C) and (D), reveals that for decades Defendants knew and internally acknowledged that nicotine is an addictive drug, that cigarettes are a nicotine delivery device, and that addiction can be enhanced and perpetuated through manipulating both the amount of nicotine and the method of nicotine delivery. Much of Defendants' knowledge of nicotine was obtained from in-house and industry-funded research into the pharmacological effects of the drug.

883. For example, internal documents reveal that Philip Morris researchers knew in 1969 that nicotine was "a powerful pharmacological agent" and that the company operated on the "premise that the primary motivation for smoking is to obtain the pharmacological effect of nicotine."

1003033413-3417 at 3413 (US 20143); 1003287836-7848 at 7837 (US 22848). RJR's lead nicotine researcher stated in 1972 that nicotine is the "sine qua non of smoking" and that the industry was based on the sale of "attractive dosage forms of nicotine." 500915683-5691 at 5684-5685 (US 20659). BATCo's sophisticated research from the early 1960s demonstrated that "smokers are nicotine addicts." 301083862-3865 at 3863 (US 20577). B&W, BATCo's American subsidiary, possessed the BATCo data and marketed cigarettes with the understanding that they "must provide the appropriate levels of nicotine." 501011512-1515 at 1513 (US 85309). Lorillard researchers accepted the scientific consensus in the 1970s that "the most probable reason for the addictive properties of the smoke is the nicotine." 82396938-6939 (US 22012). Liggett, like its larger cigarette manufacturer counterparts, was actively seeking ways to manipulate the nicotine delivery to smokers. LG0262125-2126 (US 59994).

884. Defendants have studied nicotine and its effects since the 1950s. The documents describing their research into and resulting knowledge of nicotine's pharmacological effects on smokers -- whether they characterized that effect as "addictive," "dependence" producing or "habituating," -- demonstrate unequivocally that Defendants understood the central role nicotine plays in keeping smokers smoking, and thus its critical importance to the success of their industry.

885. Defendants' internal records also demonstrate that they knew that cigarette smoking, and tobacco in particular, were the vehicles for delivering nicotine -- the critical component in maintaining the addiction necessary to sustain and enhance their profits. Indeed, Defendants purposefully designed and sold products that delivered a pharmacologically effective dose of nicotine in order to create and sustain nicotine addiction in smokers. Henningfield WD, 87:19-103:13.

886. Other documents demonstrate Defendants' understanding and acceptance of nicotine's role in maintaining cigarette smoking by showing their recognition that smokers adjust their smoking behavior in order to obtain their necessary nicotine intake. This behavioral adaptation of smokers is known as "compensation," or "titration," a concept Defendants have been well aware of for many years. Henningfield WD, 49:14-55:5; Section V(E)(2)(b), infra.

887. These industry documents also support the conclusion that Defendants knew early on in their research that if a cigarette did not deliver a certain amount of nicotine, new smokers would not become addicted, and "confirmed" smokers would be able to quit.

888. The evidence set forth in this Section demonstrates the extensive knowledge Defendants have had since the 1950s about nicotine's addictive effects on smokers, their use of that knowledge to maintain and increase the sale of cigarettes, and their decades-long efforts both to deny the truth about the addictive nature of nicotine and to conceal their own internal research which generated that information.

a. Philip Morris

889. In a September 22, 1959 memorandum, Philip Morris's Vice President for Research and Development, Hugh Wakeham, emphasized the importance of nicotine to smoking, stating: "One of the main reasons people smoke is to experience the physiological effects of nicotine on the human system." 10005039423-9424 (US 21657).

890. In a November 15, 1961 presentation, Wakeham addressed the company's ability to control the nicotine content of its cigarettes. He stated that "low nicotine does stimulate, but high doses depress functions," and "continued usage develops tolerance." Wakeham further stated that:

"Even though nicotine is believed essential to cigarette acceptability, a reduction in level may be desirable for medical reasons." 1000277423-7447 at 7438, 7441 (US 20088).

891. On March 5, 1964, William L. Dunn, a Philip Morris scientist/psychologist who later became the Principal Scientist for the company, commented at length on the possibility of developing a "surrogate" for cigarettes based on the importance of nicotine. He wrote:

> The pharmacological need [for cigarettes] is readily definable. The smoker seeks the subjective state that results from the introduction of nicotine into the bloodstream. There are some specifiable, some not specifiable changes in the physiological state accruing from the presence of nicotine. . . . There are undoubtedly other physiological reactions which are responsible for the sense of euphoria, or well-being, that the novice smoker experiences in the exaggerated form of dizziness. Without belaboring a most complex and little understood set of phenomena, suffice it to say that it is this subjective state which is sought by the smoker as he lights up.

1003700128-0133 at 0129 (US 20177).

892. In the same document, Dunn also stated that any less hazardous cigarette product developed by Philip Morris "must induce the psychopharmacological state now induced by nicotine absorption into the bloodstream." 1003700128-0133 at 0132 (US 20177).

893. A handwritten summary by Philip Morris researcher Ronald Tamol of a February 1, 1965 brand development meeting/presentation recorded the conclusion that the cigarette manufacturer who could come up with a "flavorful" low tar cigarette with "enough nicotine to keep smokers hooked . . . will reap huge benefits." 0002862-2867 at 2867 (US 88761).

894. In a June 1966 report titled "Market Potential of a Health Cigarette," Philip Morris researchers Dunn and Myron Johnston stated that without nicotine, a health cigarette would not sell:

> [A]ny health cigarette must compromise between health implications on the one hand and flavor and nicotine on the other. . . . Flavor and

> nicotine are both necessary to sell a cigarette. A cigarette that does not deliver nicotine cannot satisfy the habituated smoker and cannot lead to habituation, and therefore would almost certainly fail.

1001913853-3878 at 3860 (US 20123).

895. In a May 7, 1968 Philip Morris memorandum titled "TPN Intake by Smokers," Dunn wrote that "since there is evidence that the smoker adapts his puff, it is reasonable to anticipate that he adapts to maintain a fairly constant daily dosage." Thus, Philip Morris has known for over thirty-five years that smokers would "compensate" in order to maintain a constant intake, or dosage, of nicotine. 1003293548-3555 (US 35743).

896. Philip Morris was well aware that nicotine shared many attributes of an addictive drug. In a February 19, 1969 memorandum from Dunn to Wakeham, Dunn cautioned that nicotine was a drug with FDA implications. He also discussed the "dual action" of nicotine as a drug with pharmacological "stimulant-tranquilizer" effects that caused a "pleasant state of dizziness so clearly experienced by the beginning smoker and by the habituated smoker following abstention." 1003289921-9922 at 9921 (US 20167).

897. In a Fall 1969 draft of the annual report titled "Why One Smokes," and presented to the Philip Morris Board of Directors, Wakeham emphasized the role of nicotine in smoking. He flatly stated:

> We share the conviction with others that it is the pharmacological effect of inhaled smoke which mediates the smoking habit. . . .
>
> We have then as our first premise, that the primary motivation for smoking is to obtain the pharmacological effect of nicotine.
>
> In the past we at R & D have said that we're not in the cigarette business, we're in the smoke business. It might be more pointed to observe that the cigarette is the vehicle of smoke, smoke is the

> vehicle of nicotine, and nicotine is the agent of a pleasurable body response. . . .
>
> This primary incentive to smoking gets obscured by the overlay secondary incentives, which have been superimposed upon the habit. Psychoanalysts have speculated about the importance of the sucking behavior, describing it as oral regression. Psychologists have proposed that the smoker is projecting an ego-image with puffing and his halo of smoke. One frequently hears "I have to have something to do with my hands" as a reason. All are perhaps operative motives, but we hold that none are adequate to sustain the habit in the absence of nicotine. . . .
>
> We are not suggesting that the effect of nicotine is responsible for the initiation of the habit. To the contrary. The first cigarette is a noxious experience to the noviate. To account for the fact that the beginning smoker will tolerate the unpleasantness, we must invoke a psychosocial motive. Smoking for the beginner is a symbolic act. The smoker is telling the world, "This is the kind of person I am. . . ."
>
> As the force from the psychosocial symbolism subsides, the pharmacological effect takes over to sustain the habit . . . .

1003287836-7848 at 7837-7839 (US 22848) (emphasis added).

898. In the final version of Wakeham's presentation, dated November 26, 1969, he largely restated material from the draft quoted above. In explaining that nicotine serves as both a stimulant and depressant, Wakeham stated that smoking maintenance depended solely on the pharmacological effects on smokers:

> We are of the conviction, in view of the foregoing, that the ultimate explanation for the perpetuated cigarette habit resides in the pharmacological effect of smoke upon the body of the smoker, the effect being most rewarding to the individual under stress.

1000273741-3771 at 3752 (US 26080).

899. Philip Morris also produced a February 16, 1970 Research and Development report titled "Some Methods Notes on the Past Research on Cigarette Smoker Motivation" which

acknowledged that the smoking "pattern is strongly resistant to extinction." The report referred to the "puffing act" as an "injection of nicotine." 1003287849-7856 at 7849, 7853-7854 (US 85246).

900. Philip Morris's awareness of nicotine as the crucial ingredient in cigarettes was also made plain in a November 1, 1971 research report written by Thomas Schori and approved by Dunn. The report accepted a 1943 scientific study's results which suggested that a habitual smoker continues to smoke because of the pharmacological effects of nicotine in cigarettes. 1000350158-0188 (US 20176).

901. Notwithstanding its longtime public denials that smoking cessation induces withdrawal -- one of the classic hallmarks of addiction -- Philip Morris knew the extreme difficulty of quitting and the physical and mental effects of cessation attempts on the smoker. Scientists Dunn and Frank Ryan described some of the withdrawal effects of nicotine in a 1971 study on cessation in the following graphic terms:

> Even after eight months quitters were apt to report having neurotic symptoms, such as feeling depressed, being restless and tense, being ill-tempered, having a loss of energy, being apt to doze off. They were further troubled by constipation and weight gains which averaged about five pounds per quitter. . . . This is not the happy picture painted by the Cancer Society's anti-smoking commercial which shows an exuberant couple leaping into the air and kicking their heels with joy because they have kicked the habit. A more appropriate commercial would show a restless, nervous, constipated husband bickering viciously with his bitchy wife who is nagging him about his slothful behavior and growing waistline.

1000348671-8751 at 8676, 8708 (US 20097).

902. With respect to the phenomenon of nicotine "compensation," Schori and Dunn wrote in a January 1972 Report titled "Tar, Nicotine, and Cigarette Consumption" that their research

> supports the notion that smokers develop a daily nicotine intake quota and that when smoking cigarettes differing in nicotine delivery from that to which they are accustomed they tend to modify their consumption rate in order to maintain their normal quota. No support was found for the analogous notion of a daily tar intake quota, however.

1003285403-5416 at 5403 (US 20159).

903. In a 1972 "Confidential" research report titled "Motives and Incentives in Cigarette Smoking," Dunn asserted that people smoke in order "to obtain nicotine," and that nicotine "is the industry's product," adding that "without nicotine, the argument goes, there would be no smoking." In the report, Dunn summarized a 1972 CTR-sponsored conference held on the Caribbean island of St. Martin. More commonly known as St. Martin Conference, the meeting was not a secret. Some scientists unconnected to the tobacco industry attended and the proceedings of the conference were published shortly thereafter. (no bates) (JD 040795). Dunn wrote:

> The majority of the conferees would go even further and accept the proposition that nicotine is the active constituent of cigarette smoke.
>
> Without nicotine, the argument goes, there would be no smoking. Some strong evidence marshaled to support this argument:
>
> 1) No one has ever become a cigarette smoker by smoking cigarettes without nicotine.
>
> 2) Most of the physiological responses to inhaled smoke have been shown to be nicotine-related.

2023193286-3304 at 3289 (US 22967); 503654881-4885 (US 88413); 105394371-4388 (US 88414).

904. Most graphically, Dunn urged the industry to adopt the following approach:

> Think of the cigarette pack as a storage container for a day's supply of nicotine. . . .

> Think of the cigarette as a dispenser for a dose unit of nicotine: it is readily prepped for dispensing nicotine. . . .
>
> Think of a puff of smoke as the vehicle of nicotine. . . .
>
> Smoke is beyond question the most optimized vehicle of nicotine and the cigarette the most optimized dispenser of smoke.

2023193286-3304 at 3290-3291 (US 22967).

905. During a presentation of his paper delivered at St. Martin and at the 1972 CORESTA/TCRC Joint Conference, Dunn summarized his conclusions from current research on why people smoke. Dunn wrote that, "It is contended in this paper that nicotine, specially packed, is the cigarette industry's product." Dunn added that, "The smoker takes nicotine into his system in order to obtain the salutory effects of nicotine upon body function." 1001820498-0500 at 0498 (US 26121); 2021423403-3497 at 3484 (US 36743); 89285181-5188 at 5181 (US 23583).

906. Philip Morris also documented compensation as further evidence of addiction. A March 1973 Philip Morris Research Report titled "Smoking Behavior: Real World Observations," written by Philip Morris scientists Dunn, Thomas Schori and Janet Duggins, reported that a Philip Morris in-house study had shown that, "the smokers in this study are now smoking cigarettes delivering less tar and nicotine than those they smoked in 1968 and that they are smoking both more rod per cigarette and more cigarettes." 1000353355-3410 at 3361 (US 35242).

907. In a May 8, 1974 presentation to Philip Morris USA President Clifford Goldsmith, Dunn explained how in-house research suggested that smokers titrate or regulate their smoke intake to get what they want out of the smoke:

> I'm sure you are aware of our belief that people smoke for rewards they get from smoke at the pharmacological level. . . . It's simply not an adequate explanation to say that smoking is a habit, or that it is

> social behavior. A smoker is introducing something into his system that he wants. Certain components of smoke, most likely nicotine, act upon his system in some undetermined way to give him some undetermined pleasure. If this is true, then we expect the smoker to seek to take in that amount of smoke that does the job best for him. He is going to regulate his intake to suit his need. . . We are hypothesizing that the smoker titrates (regulates) his smoke intake to suit his dosage needs.

100324972-4976 at 4972-4973 (US 85248).

908. Research conducted at the Philip Morris Research Laboratory in June 1974 using high nicotine and low nicotine cigarettes "showed the existence of a definite compensation mechanism" among smokers. According to the report, titled "Human Smoking Habits," these findings were consistent with:

> evidence in literature that the nicotine of cigarette smoke exerts a distinct pharmacological effect on the smoker which reinforces the smoking behavior. The smoker doses himself with nicotine according to his personal needs which depend on the level of arousal, external stress, his personality and, possibly, a number of other factors.

1001812883-2903 at 2883 (US 85249).

909. In an undated handwritten memo, probably written in the 1970s, Dunn voices his surprise that the industry could not fully separate nicotine from tar, given what the company knew of nicotine at that time:

> It is also remarkable that nicotine delivery has not been liberated from tar delivery, particularly in view of the importance of nicotine as the significant, if not the primary gratification component of the smoke. This is not to say that the task is simple: it is not simple. Consider the ways currently available for altering the nicotine delivery level, with accompanying reasons why these ways do not readily permit independent nicotine variation.

1003285420-5424 at 5420 (US 85250); 2021423403-3497 at 3464 (US 36743).

910. Dunn then listed the methods at Philip Morris's disposal to manipulate nicotine delivery in its products, including air dilution, filtration, nicotine extraction/addition, leaf selection, and base additives to increase pH. 1003285420-5424 at 5421-5422 (US 85250).

911. In March 1975, Helmut Wakeham proposed an industry scientific conference on "The Regulatory Influence of Smoking Upon Human Behavior" to discuss research ideas into the effects of stimulant and calming effects of smoking. LWODJ9056332-6332 (US 87072*); LWODJ9056318-6323 (US 87071).

912. In a May 14, 1975 report evaluating the relationship between a steep short-term decline in sales of Marlboro to a concurrent decline in nicotine, Dunn wrote:

> Nicotine has been singled out for attention because many investigators of smoking behavior, including some P.M. R&D people, have contended that the seasoned cigarette smoker smokes for the nicotine in the smoke. In view of that contention, the question has been raised as to whether the declining nicotine delivery values reported for Marlboro Red could be responsible for the declining sales increment.

0000024914-4920 (US 26072).

913. In a September 8, 1975 letter to long-time Philip Morris-funded researcher Stanley Schachter, a psychology professor at Columbia University, Dunn discussed a reduction in nicotine in Marlboro cigarettes and acknowledged the existence of smoker's compensation to obtain more nicotine, which he referred to as "the goodies":

> Thus to accommodate to the 15% reduction in available Marlboro nicotine, the smoker who was getting 50% of the available nicotine into his blood from the Marlboro delivering 1.3 mg of nicotine into a smoking machine and now must get 59% of what the current Marlboro offers him. He can take bigger puffs, or inhale more from the supply drawn into the mouth (we have varying quantities of residual smoke in the mouth at the end of an inhalation) or for more

> efficient extraction of the goodies, he can draw it in deeper or hold it in longer.

1000738509-8510 at 8510 (US 85251).

914. Philip Morris funded Schachter's research for many years. However, his studies of nicotine and human behavior led him to eventually conclude that smoking was indeed addictive. He reported to Philip Morris in 1977 that, "We propose instead that virtually all long-time smokers, heavy or light, are addicted and suggest that many, perhaps all, exceptions to the addiction model can be understood in terms of such notions as self-control, concern with health, restraints, etc." 1003291155-1191 at 1189 (US 87074); 1003291151-1153 (US 87075).

915. An October 1, 1975 Philip Morris research memorandum titled "Smoke Impact, Part I: Cigarette Smoking and Heart Rate" stated that: "Nicotine is the main determinant for sustaining the smoking habit" and "there is an optimal dose of nicotine, too little or too much is rejected by tobacco smokers." 1003294245-4261 at 4246 (US 20170).

916. In approximately 1976, Philip Morris researcher Frank Ryan explained why people smoke in terms of habit versus need. In Ryan's view, the habit of smoking was very distinct from the smoker's need for nicotine. In a November 11, 1977 memorandum titled "Smoker Psychology," Ryan described nicotine intake as the "critical mainstay of tobacco consumption," and provided the following background for research to be carried out at Virginia Commonwealth University:

> Many of [a smoker's] cigarettes will be smoked out of habit (i.e., will be conditioned responses triggered by external cues) rather than out of any <u>nicotine need</u> (i.e., will be conditioned responses triggered by internal cues). All these cigarettes contribute to the total nicotine in the system, so that a cigarette smoked out of habit will delay the time until a cigarette is smoked out of need.

1003287995-7995 (US 35702) (emphasis in original).

917. In a March 1, 1977 memorandum, Schachter described a smoker as an "addict" who smokes to maintain his nicotine levels:

> To the extent that [he is] an addict, he is probably smoking to keep nicotine or one of its active metabolites at some optimal level. If, then, the heavy smoker does switch to low nicotine brands, he may very well end up smoking more cigarettes and taking more puffs of each.

1003724353-4387 at 4353 (US 21887).

918. In a November 29, 1977 memorandum, Philip Morris Director of Science and Technology, Thomas Osdene, discussed his concerns about a presentation made by Dr. Donald H. Ford, a new CTR staff member, which acknowledged that "Opiates and nicotine may be similar in action"; "We accept the fact that nicotine is habituating"; and "There is a relationship between nicotine and the opiates." 1005045000-5000 (US 20194).

919. In a December 19, 1977 interoffice memorandum sent to Osdene, titled "Behavioral Research Accomplishments -- 1977," Dunn acknowledged the importance of nicotine for the smoker when he listed as one of Philip Morris's 1977 successes the fact that the company had "shown that [it] can distinguish between regulator and nonregulator smokers and that after being deprived, the regulators do indeed try to make up for lost intake." "Regulators" were defined as smokers who "smoke for nicotine." 1003293322-3330 at 3322, 3324-3325 (US 35741).

920. Aware of nicotine's importance to the company and the industry, Osdene voiced concerns at a meeting with the scientific director of CTR in New York on January 5, 1978. Philip Morris had sent Osdene and Robert B. Seligman, Vice President of Research and Development, to CTR to discuss several contract research programs. One of those programs concerned nicotine antagonists -- i.e., drugs which oppose or block the pharmacological and chemical effects of nicotine

as opposed to nicotine analogs, which are substitutes for nicotine and interact with the body in the same pharmacological and chemical way. Seligman's comments revealed the importance of nicotine to the future of cigarette manufacturing. According to Osdene's memorandum of the meeting:

> Dr. Seligman brought up the grant by Dr. Abood in which one of the stated aims was to make a clinically acceptable antagonist to nicotine. This goal would have the potential of putting the tobacco manufacturers out of business.

1000286213-6214 at 6213 (US 35204); see also 1000041904-1905 (US 35103).

921. In a March 1978 report titled "Exit-Brand Cigarettes: A Study of Ex-Smokers," scientist Frank J. Ryan of the Philip Morris Research Center in Richmond revealed Philip Morris's substantial understanding of the role of nicotine in tobacco use at that time: "We think that most smokers can be considered nicotine seekers, for the pharmacological effect of nicotine is one of the rewards that come from smoking. When the smoker quits, he foregoes his accustomed nicotine. The change is very noticeable, he misses the reward, and so he returns to smoking." 1000368057-8080 at 8060 (US 20098*).

922. In the same March 1978 report, Ryan stated that, "If the industry's introduction of acceptable low-nicotine products does make it easier for dedicated smokers to quit, then the wisdom of the introduction is open to debate." 1000368057-8080 at 8060 (US 20098*) (emphasis in original).

923. In the late 1970s and well into the 1980s, Philip Morris carried out the "Nicotine Program." This major research initiative studied nicotine's effects on the central and peripheral nervous systems, nicotine analogs, and "behavioral effects" of nicotine. 1003033413-3417 (US

20143); 1003289974-9975 (US 21553); 1000125871-5872 (US 34273); 1000127789-7790 (US 34422); 2022150943-0951 (US 85254).

924. Wakeham, having apparently read a review of the Philip Morris Nicotine Program by Dunn, wrote a memorandum of concern to Seligman dated February 22, 1979. While Wakeham disagreed with the program's primary focus on nicotine, he admitted that, "I do not deny that many smokers maintain the habit for psychopharmacological reasons." 1003293238-3239 at 3238 (US 26150).

925. In a February 3, 1979 letter to Philip Morris President and CEO Hugh Cullman titled "The Slow Motion Self-Suicide of the Tobacco Industry," D. Todorovic, a retired Philip Morris International researcher, stressed the negative impact of "cigarette substitutes" on conventional cigarette sales and recommended against their development:

> It is obvious that such a tremendous sales gain of "cigarette substitutes" is done at the expense of normal, conventional cigarettes, and there lies all the danger in the near future for the very survival of [the] Tobacco Industry, because these "cigarette substitutes" are unable to make smokers addicts to tobacco. The present smokers of "cigarette substitutes" are the future smoker quitters.

2010064696-4699 at 4697 (US 20303).

926. Ian Uydess, a Philip Morris scientist from 1977 until 1989, stated that Philip Morris knew that a cause and effect relationship existed between market performance and nicotine delivery levels. The declaration also makes clear that nicotine was distinct from taste:

> This belief . . . was reflected in many of the comments made at a number of internal meetings at which zero and "ultra low" delivery products were being discussed. Some scientists even predicted that products made with "no" or "too low" a level of nicotine would probably fail in test markets, "no matter what they tasted like."

521102262-2286 (US 30497).

927. There can be no question taste was not the reason that nicotine was used as a necessary component of cigarettes. Philip Morris scientists understood very well that, as far as "taste" was concerned, nicotine, standing alone, had an "acrid burning taste." 2060537042-7045 (US 87077).

928. In a March 21, 1980 memorandum to Dr. Seligman, Dunn described in detail the Philip Morris-directed "Nicotine Receptor Program," a research initiative aimed at "understanding the specific action of nicotine which causes the smoker to repeatedly introduce nicotine into his body." However, Dunn stated cautiously that, "Any action on our part, such as research on the psychopharmacology of nicotine, which implicitly or explicitly treats nicotine as a drug, could well be viewed as a tacit acknowledgment that nicotine is a drug," and, therefore, subject to FDA regulation. 0000127789-7790 at 7789 (US 21794); 2022249518-9518 at 9518 (US 35152); 1000127789-7790 (US 34422).

929. Dr. Dunn also revealed the concerns of the industry's attorneys that the issue of nicotine addiction could enhance the claims of smokers' lawsuits:

> The psychopharmacology of nicotine is a highly vexatious topic. It is where the action is for those doing fundamental research on smoking, and from where most likely will come significant scientific developments profoundly influencing the industry. Yet it is where our attorneys least want us to be, for two reasons. It is important to have these two reasons expressed and distinguished from one another. The first reason is the oldest and most implicit in the legal strategy employed over the years in defending corporations within the industry from the claims of heirs and estates of deceased smokers: "We within the industry are ignorant of any relationships between smoking and disease. Within our laboratories no work is being conducted on biological systems." That posture has moderated considerably as our attorneys have come to acknowledge that the original carte blanche

> avoidance of all biological research is not required in order to plead ignorance about any pathological relationship between smoke and smoker.

1000127789-7790 (US 34422).

930. Dunn pointed out to Seligman that "the acute, transient, short-lived effects of nicotine upon a physiological system" were the "effect sought by the smoker." In the attachment to his memo, Dunn summed up the relationship between his company and nicotine as follows: "PM sells cigarettes. Cigarettes deliver nicotine." 0000127789-7790 at 7789 (US 21794); 1000127791-7792 (US 34422); 2022249518-9518 at 9518 (US 35152).

931. Dunn's memorandum to Seligman was preceded by that of another Philip Morris scientist, James L. Charles, who also provided Seligman an assessment of the "Nicotine Receptor Program" on March 18, 1980. Charles opened his memorandum with the following observations:

> Nicotine is a powerful pharmacological agent with multiple sites of action and may be the most important component of cigarette smoke. Nicotine and an understanding of its properties are important to the continued well-being of our cigarette business since this alkaloid has been cited often as "the reason for smoking" and theories have been advanced for "nicotine titration" by the smoker.

100328974-8975 at 8974 (US 87078).

932. Charles had made similar observations about nicotine in an earlier memorandum outlining the Philip Morris Nicotine Program dated December 1, 1978. He stated that his views had not changed in the intervening years. 1003033413-3417 (US 20143).

933. Dunn wrote another memorandum dated March 24, 1980 to Seligman relating to a parallel effort at Philip Morris to create cigarettes with even higher nicotine to tar ratios, stating:

> If even only some smokers smoke for the nicotine effect (I personally believe most regular smokers do) then in today's climate we would do

> well to have a low TPM [total particulate matter, or tar] and CO [carbon monoxide] delivering cigarette that can supply adequate nicotine.

1003285586-5586 (US 22029).

934. In an August 12, 1980 memorandum to the Vice President of Research and company Directors, Thomas Osdene ranked nicotine research -- and specifically the Philip Morris Nicotine Program -- as one of the company's top Research and Development priorities because "the thing we sell most is nicotine":

> Nicotine Program. This program includes both behavioral effects as well as chemical investigation. My reason for this high priority is that I believe the thing we sell most is nicotine.

1003030124-0125 at 0124 (US 26132).

935. Philip Morris's nicotine research program included studies which began before 1980 and continued until 1984 to develop nicotine analogs as part of a purposeful effort to find a nicotine-equivalent drug that would retain nicotine's effects on the brain without nicotine's known adverse cardiovascular and carcinogenic effects. DeNoble WD, 5:7-11; 7:8-13; 1003033413-3417 (US 20143); 1003289974-9975 (US 21553); 1000127789-7790 (US 34422); 2022150943-0951 (US 85254); 2020154437-4437 (US 85266).

936. The premise of the research was that "people smoke primarily because of nicotine's rewarding effects on the brain." This research could then, in theory, assist Philip Morris in removing nicotine from tobacco, substituting the analog that lacked nicotine's adverse cardiovascular effects, and thus produce a "safer" cigarette that still possessed nicotine's reinforcing effects on the smoker. DeNoble WD, 8:10-13; 9:13-16. As Dr. William Farone, who worked for Philip Morris from 1976 to 1984 and was Director of Applied Research, explained, this was the second part of a "two-step

process" of internal research, neither of which was pursued by Philip Morris to commercialization. See, Farone TT, 10/7/04, 2023:10-17. (Farone's background is discussed at ¶ 1594, infra.)

937. Philip Morris shared its extensive nicotine and smoking behavior knowledge with BATCo. According to an October 12, 1979 "RESTRICTED" report from BATCo scientist L.C.F. Blackman, he accepted Philip Morris's invitation to visit the Philip Morris Research Center, and was briefed by scientists Osdene, Seligman, and Levy on the company's work, including the development of nicotine alternatives, nicotine discrimination studies, and EEG research. 109877492-7499 (US 87079*).

938. With respect to tolerance, a March 16, 1983 memorandum from Dr. Charles to Dr. Osdene stated that, "We can successfully defend the absence of withdrawal under controlled experiments, but we cannot defend tolerance. Tolerance to nicotine is a well-established fact." 1005061346-1346 (US 20199); 2022252680-2680 (US 36873).

939. Philip Morris's sales director in the United Kingdom, George Mackin, wrote an article for a British tobacconist magazine, dated December 4, 1981, in which he admitted that cigarettes were addictive and that smokers developed tolerance. Mackin wrote that cigarettes were important to overall sales at British convenience stores because:

> Cigarettes are not just habit forming -- the body builds up a requirement for them. Twenty million smokers cannot do without their weed. Take the example of a man going to work in the morning. It's pouring with rain. There are six cars already parked outside the shop. So, there are at least 90 yards to walk back. Would he stop for a newspaper? Would he get out for a Kit Kat?
>
> The answer is probably No, but he would stop for his fags, because he is addicted to cigarettes. And while he is buying a pack, he takes a morning paper and a Kit Kat.

2501013567-3568 (US 27920); 504336658-6658 (US 85261).

940. The Mackin article caused a stir among several cigarette manufacturers, as well as Shook, Hardy & Bacon, when news of his statements became known. However, none of the lawyers who commented on the article disagreed with it. For example, one Philip Morris attorney in Switzerland noted that the Mackin's admissions were only "very unfortunate" and "could cause a lot of problems for us." Another attorney wrote more to the point that "in the product liability context these concepts are important, particularly as regards issues of risk assumption." 024950721-0721 (US 20404); 2501013567-3568 (US 27920); 2024950723-0723 (US 37175); 501626662-6662 (US 85264).

941. Philip Morris knew a significant portion of its customers wanted to quit but could not do so. A March 29, 1985 presentation at a "meeting of top management" was titled "The Perspective of PM International on Smoking and Health Issues." In this presentation, management was told that:

> There are some 50 million smokers today in the U.S. I realize that research tells us that the majority of smokers wished they did not smoke and are, therefore, unlikely to be of much help to the industry.

2023268329-8337 at 8331 (US 26784).

942. According to Dr. William Farone, "Defendants have long understood that cigarettes are addictive and that nicotine is the agent in cigarette smoke primarily responsible for addiction. . . ." Farone WD, 72:10-11; Farone TT, 10/07/04, 1984:19-24.

943. Farone stated that "when I was at Philip Morris, there was widespread acceptance internally throughout the company -- among executives, scientists, and marketing people -- that nicotine was the primary component of tobacco and cigarette smoke responsible for smoker's addiction to smoking." Farone WD, 72:21-73:1.

944. Dr. Farone discussed with other Philip Morris scientists whether smoking was addictive. These discussions revealed "widespread agreement among scientists in R&D that smoking is addictive," id. at 74:10-23, and "a widespread conviction that nicotine is the chemical agent delivered by cigarettes that is primarily responsible for addiction to smoking," id. at 75:1-6. This widespread agreement on the addictiveness of smoking came from "both internal and external research, about nicotine and its primary role in keeping people smoking." Id. at 75:17-23.

945. Philip Morris's intensive internal research on nicotine continued into the 1990s. For example, a May 22, 1990 report stamped "PERSONAL AND CONFIDENTIAL" to scientific director Richard Carchman from company chemists/scientists Frank Gullotta, C.S. Hayes, and B.R. Martin reported on the "Stereospecific Effects of Nicotine and Electrophysiological and Subjective Responses." This research contrasted the physiological effects of two forms of nicotine, "d-nicotine" and "l-nicotine," using human smokers. 2025986606-6612 (US 20421).

946. Many other Philip Morris documents reveal the company's in-depth knowledge of nicotine and a desire to exploit nicotine's effects on the human body. 2025986350-6401 (US 87080); 1000385483-5522 (US 87311); 1000221722-1726 (US 87081); 1003290519-0531 (US 87082); 1003287880-7890 (US 20163); 2023069596-9604 (US 87083); 1003294165-4180 (US 87084); 2062951465-1477 (US 87312); 1003292806-2811 (US 87086); 1003295309-5310 (US 87087); 1000128672-8672 (US 87088); 2022163557-3560 (US 87089).

947. A November 8, 1990 Philip Morris memorandum to Research and Development Vice President Cathy Ellis from Frank Gullotta titled "Raison d'etre" stated: "We have shown that there are optimal cigarette nicotine deliveries for producing the most favorable physiological and behavioral responses. Our laboratory has demonstrated that all forms of nicotine are not behaviorally

or physiologically equal. This observation is important for evaluating research cigarettes where the addition of nicotine is necessary." 2028813366-3368 at 3366 (US 20430).

948. The Philip Morris Nicotine Program was described in detail in a lengthy 1992 review prepared by outside counsel Shook, Hardy & Bacon titled "Philip Morris Behavioral Research Program." In this review, counsel summarized many aspects of the company program, directed by Dunn, and cited specific documents showing a major internal research initiative that began in 1969 and ended abruptly in 1984. 2021423403-3461 at 3408-3409 (US 36743).

949. The Shook, Hardy & Bacon document described how Philip Morris Nicotine Program scientists demonstrated tolerance to nicotine, behavioral effects, nervous system effects, and other results consistent with dependence and addiction. 2021423403-3461 at 3440-3443 (US 36743).

950. The 1992 report also made clear that the program generated results and was still generating data in 1984 related to nicotine receptors, analogs, peripheral nervous system effects, central nervous system effects, effects on animal behavior, and differences between high nicotine delivery and low nicotine delivery cigarettes. With respect to the reasons why the Nicotine Program was ended in 1984, the report simply states that: "For reasons never stated in any internal documents, Philip Morris cancelled the Nicotine Program in spring 1984. The decision to cancel the program may have been the result of outside counsel's legal advice." 2021423403-3461 at 3408 (US 36743).

951. A similar 1994 Shook, Hardy & Bacon report titled "Philip Morris Research on Nicotine Pharmacology and Human Smoking Behavior" reviewed and detailed much of the material described in the 1992 review. For example, the 1994 report summarized Dr. DeNoble's research showing that nicotine and acetaldehyde were synergistically reinforcing: “It was DeNoble's experience with acetaldehyde that it condensed in the brain to form Dopamine-like compounds and

made the animal somewhat 'euphoric.'" 2046819241-9265 at 9249 (US 85265*). See extended discussion of this topic in Sections V(B)(5)(a)(¶¶1299-1301) and V(C)(2)(e)(¶¶ 1695-1700).

952. The 1994 report also described how DeNoble was able to demonstrate both "behavioral tolerance" and "metabolic tolerance" to nicotine, other important aspects of addiction. 2046819241-9265 at 9250-9251 (US 85265*).

953. The report later noted that "additional research on nicotine/acetaldehyde synergism may have shown that cigarettes were in fact addictive." The Shook, Hardy & Bacon lawyers who prepared this report after reviewing their client's documents wrote: "Laboratory Shutdown [CAVEAT: Significance is self-evident.]" 2046819241-9265 at 9254, 9256-9258 (US 85265*). Drs. DeNoble and Mele described the research objectives and projects undertaken by the Philip Morris Behavioral Research Program in the 1970s and 1980s. DeNoble WD; Mele WD. In addition, the planning, findings, and significance of Dr. DeNoble's research in particular are described in numerous Philip Morris documents. 1002973585-3615 (US 35632*); 2056145924-5927 (US 87090); 1003293284-3293 (US 85252); 1003060443-0503 (US 87091); 1003582081-2082 (US 35826); 1002973179-3180 (US 87092); 1001894698-4705 (US 87093); 1000052405-2413 (US 87094); 1000017985-8021 (US 87095); 1003293138-3144 (US 87096); 1000017375 (US 85258); 1003060638-0643 (US 87099); 1003186849-6854 (US 87101); 1000128665-8667 (US 87102); 1000128662-8663 (US 87103); 1000128664-8664 (US 87104); 1000128668-8671 (US 87105); 1003293241-3243 (US 87106); 1003293216-3217 (US 87107); 1000413881-3964 (US 20100); 1003198459-8461 (US 20156); 1003720350-0352 (US 87108); 2047340075-0079 (US 87109); 2022955358-5361 (US 87110); 2022955501-5502 (US 87111); 2057069742-9769 (US 88762).

954. Philip Morris Planning Director Barbara Reuter prepared an analysis of the company's plans to market an alternative nicotine delivery product under the code name "TABLE" in 1993. The 20-page plan, dated October 1992 and stamped "CONFIDENTIAL," stated the following in the "Background" section:

> Different people smoke cigarettes for different reasons. But, the primary reason is to deliver nicotine into their bodies. Nicotine is an alkaloid derived from the tobacco plant. It is a physiologically active nitrogen containing substance. Similar organic chemicals include nicotine, quinine, cocaine, atropine, and morphine. While each of these substances can be used to affect human physiology, nicotine has a particularly broad range of influence.
>
> During the smoking act, nicotine is inhaled into the lungs in smoke, enters the bloodstream and travels to the brain in about eight to ten seconds. The nicotine alters the state of the smoker by becoming a neurotransmitter and a stimulant. Nicotine mimics the body's most important neurotransmitter, acetylcholine (ACH), which controls heart rate and message sending within the brain. The nicotine is used to change psychological states leading to enhanced mental performance and relaxation. A little nicotine seems to stimulate, while a lot sedates a person. A smoker learns to control the delivery of nicotine through the smoking technique to create the desired mood state. In general, the smoker uses nicotine's control to moderate a mood, arousing attention in boring situations and calming anxiety in tense situations. Smoking enhances the smoker's mental performance and reduces anxiety in a sensorially pleasurable form.

2020154466-4486 at 4467 (US 26722); 2020154437-4437 (US 85266).

955. Altria General Counsel Murray Bring acknowledged the addictiveness of smoking in a July 31, 1992 internal memo on PMC letterhead to William Campbell and Bill Murray which discussed recent research on cocaine, and posed these questions from then-PM CEO Michael Miles: “First, how do we stay up to date on the state of smoking cessation technology; second, what effect

would a reliable, readily available "habit breaker" have on our business; and third, what -- if any -- contingency plans should we be making now?" 2074091232-1232 (US 27480).

956. An October 2, 1992 memorandum from Philip Morris scientist Dr. Carolyn Levy to William Campbell reviewed the efficacy of nicotine patches coupled with behavioral therapy to achieve smoking cessation success. Levy stated that the company was almost ready with an alternative nicotine delivery device. She concluded that, "This suggests that at the very least we should have contingency plans for a change in the predominant form of nicotine usage. . . . If these circuits do mediate nicotine intake and they could be blocked, then it is possible that cigarettes' appeal would decline." 2023012974-2975 (US 36943).

b. R.J. Reynolds

957. Many documents indicate that R.J. Reynolds also had a sophisticated understanding of nicotine's role in smoking. For example, on November 16, 1967, RJR scientist Eldon D. Nielson responded to an inquiry about a nicotine inhibitor patent saying that the tobacco companies would not want such an item, as they were "selling a nicotine effect, not fighting it." 502001177-1177 (US 29547).

958. In 1971, RJR scientist Anders H. Laurene internally proposed that the company undertake research into determining more precisely the "habituating level of nicotine." Laurene asked the question, "How low can we go?" 504210018-0018 (US 50577); 522598277-8277 (US 80744).

959. In a March 28, 1972 memorandum regarding the development of new products, RJR scientist Claude Teague stated that for the typical smoker, "nicotine satisfaction is the dominant

desire" and that "[i]n designing any cigarette product, the dominant specification should be nicotine delivery." 5002504536-4544 at 4538 (US 21747); Langenfeld TT, 3/14/05, 15309:20-15310:4.

960. Claude Teague was the RJR equivalent/counterpart to William Dunn at Philip Morris. In an April 14, 1972 report titled "Research Planning Memorandum on the Nature of the Tobacco Business and the Crucial Role of Nicotine Therein," Teague stated:

> In a sense, the tobacco industry may be thought of as being a specialized, highly ritualized and stylized segment of the pharmaceutical industry. Tobacco products, uniquely, contain and deliver nicotine, a potent drug with a variety of physiological effects. . . . Nicotine is known to be a habit-forming alkaloid, hence the confirmed user of tobacco products is primarily seeking the physiological "satisfaction" derived from nicotine - and perhaps other active compounds. His choice of product and pattern of usage are primarily determined by his individual nicotine dosage requirements and secondarily by a variety of other considerations including flavor and irritancy of the product, social patterns and needs, physical and manipulative gratifications, convenience, cost, health considerations and the like. Thus a tobacco product is, in essence, a vehicle for delivery of nicotine, designed to deliver the nicotine in a generally acceptable and attractive form. Our industry is then based upon design, manufacture and sale of attractive dosage forms of nicotine, and our Company's position in our Industry is determined by our ability to produce dosage forms of nicotine which have more overall value, tangible or intangible, to the consumer than those of our competitors.

500915683-5691 at 5684-5685 (US 20659).

961. Teague later stated in his report that:

> If nicotine is the <u>sine qua non</u> of tobacco products and tobacco products are recognized as being attractive dosage forms of nicotine, then it is logical to design our products -- and where possible, our advertising -- around nicotine delivery rather than 'tar' delivery or flavor. To do this we need to develop new data on such things as the physiological effects of nicotine, the rate of absorption and elimination of nicotine delivered in different doses at different

> frequencies and by different routes, and ways of enhancing or diminishing nicotine effects and "satisfactions."

500915683-5691 at 5685-5686 (US 20659) (emphasis in original).

962. Teague also answered the industry's often-heard "nicotine is for taste" argument by stating that, "I believe that for the typical smoker nicotine satisfaction is the dominant desire, as opposed to flavor and other satisfactions." 500915683-5691 (US 20659).

963. Later in the same report, Teague noted the vital role of nicotine to the fundamental existence of the cigarette industry:

> If, as proposed above, nicotine is the sine qua non of smoking, and if we meekly accept the allegations of our critics and move toward reduction or elimination of nicotine from our products, then we shall eventually liquidate our business. If we intend to remain in business and our business is the manufacture and sale of dosage forms of nicotine, then at some point we must make a stand.

500915683-5691 at 5688 (US 20659) (emphasis in original).

964. At the close of his April 14, 1972 memorandum on nicotine, Teague recommended the following courses of action for RJR:

> 1. Recognize the key role of nicotine in consumer satisfaction, and design and promote our products with this in mind.
>
> 2. More precisely define the minimum amount of nicotine required for 'satisfaction' in terms of dose levels, dose frequency, dosage form, and the like. This would involve biological and other experiments.
>
> 3. Sponsor in-depth studies of the physiological, psychological and other effects of nicotine, aimed at demonstrating the beneficial effects of nicotine and at disproving allegations that nicotine produces major adverse effects.
>
> 4. Study, design and evaluate new or improved systems for delivery of nicotine which will provide the minimum

> satisfying amount of nicotine in attractive form, free of allegedly harmful combustion products.
>
> 5. Study means for enhancing nicotine satisfaction via synergists, alteration of pH, or other means, to minimize dose level and maximize desired effects.
>
> 6. Monitor developments in materials and products which may compete with nicotine products or which might be combined with nicotine products to provide added advantages or satisfactions.
>
> 7. Monitor work by others which might be aimed at improved nicotine delivery systems of the type proposed here.
>
> 8. Search for and evaluate other physiologically active components of tobacco or its smoke which may provide desired effects to the smoker.

500915683-5691 at 5690-5691 (US 20659).

965. In 1973, at the request of RJR President William D. Hobbs, Teague prepared a "SECRET" report titled "Implications and Activities Arising From Correlation of Smoke pH with Nicotine Impact, Other Smoke Qualities, and Cigarette Sales." Teague reiterated to company executives RJR's knowledge of the importance of effective nicotine delivery in its competition with Marlboro and Kool:

> In essence, a cigarette is a system for delivery of nicotine to the smoker in attractive, useful form. At "normal" smoke pH, or at below about 6.0, essentially all of the smoke nicotine is chemically combined with acidic substances, hence is non-volatile and relatively slowly absorbed by the smoker. As the smoke pH increases above about 6.0, an increasing proportion of the total smoke nicotine occurs in "free" form, which is volatile, rapidly absorbed by the smoker, and believed to be instantly perceived as nicotine "kick". . . .
>
> As a result of its higher smoke pH, the current Marlboro, despite a two-thirds reduction in smoke "tar" and nicotine over the years,

> calculates to have essentially the same amount of "free" nicotine in its smoke as did the early WINSTON. . . .
>
> In addition to enhancing nicotine "kick," increasing the pH (increasing alkalinity) of smoke above about 6.0 causes other changes, particularly when the increase in smoke pH is achieved by adding ammonia to the blend.

509314122-4148 at 4125 (US 20828*).

966. Teague wrote a "Confidential" memorandum, dated February 2, 1973, titled "Some Thoughts About New Brands of Cigarettes for the Youth Market." In this memorandum, Teague contrasted novice smokers with "confirmed" smokers. He stated that while "pre-smokers" and "learners" start smoking for psychological reasons (fitting in with the crowd, self-image, boredom relief), "once the 'learning' period is over, the physical effects become of overriding importance and desirability to the confirmed smoker, and the psychological effects, except the tension-relieving effect, largely wane in importance or disappear." 502987357-7368 at 7359 (US 21475).

967. In an August 4, 1976 speech to RJR's international division, Director of Research, Murray Senkus, affirmed the indispensable role of nicotine, stating, "In smoking the effect produced on the human body is ascribable to nicotine" and "Without any question, the desire to smoke is based on the effect of nicotine on the body." 501525355-5366 at 5356, 5358 (US 29531).

968. In a RJR August 1976 "Three-Year Action Plan for New Products," nicotine was described as a "traditional need," and "very basic to the cigarette industry's existence." 500672011-2172 at 2078-2105, 2107 (US 20645).

969. In a September 21, 1976 internal RJR memorandum from John L. McKenzie to A.P. Ritchy titled "Product Characterization Definitions and Implications," nicotine was defined as "the

psychopharmacological agent in tobacco which is one of the key factors in satisfaction. . . ." 500380562-0564 at 0563 (US 20630).

970. A November 9, 1976 memorandum on nicotine circulated among RJR scientists reviewed the known physiological effects of nicotine on the body and acknowledged the company's ongoing desire to increase or hold steady the nicotine content of its cigarettes while reducing tar. The memo, titled "Nicotine Research," also acknowledged tolerance to nicotine: "Habituated smokers, both male and female, metabolize nicotine more rapidly than non-smokers, indicating the bodily metabolic acclimation to nicotine." The memo contradicted industry claims that smokers seek nicotine only as a matter of "taste": in-house studies concluded that detectable nicotine produced the taste described as "foul, rotten rubber" and that "Nicotine is definitely an irritant in smoke and its taste must be blended out or modified by other constituents in the TPM to make smoke acceptable." 509078812-8820 at 8814-8815 (US 85271).

971. In a February 7, 1978 memorandum titled "Nicotine Satisfaction – Consumer Test," RJR researchers C.L. Neumann and J.P. Dickerson stated that the focus of the consumer satisfaction program would be on nicotine, as it was "probably the most important satisfaction variable," and because nicotine had "known physiological activity." 504479948-9954 at 9549 (US 20729).

972. In another example, a February 5, 1980 interoffice memorandum from H.E. Guess stated the concern that the reduced level of nicotine in RJR's Winston B Cigarettes would make them less attractive to Winston smokers. 504675307-5307 (US 21549).

973. RJR scientist D.H. Piehl reviewed the scientific literature on nicotine and maintenance of the smoking habit in a "Confidential" internal paper for the company titled "Smoking Behavior -- A Review." In his paper, Piehl summarized with approval many studies which described

the preeminent importance of nicotine to smokers, the various "need" levels of nicotine, nicotine dependence, and addiction. 504972347-2362 at 2362 (US 50710).

974. Scientists at RJR had known for years that most smokers get "hooked" and are unable to quit. Teague wrote a memorandum dated December 1, 1982 to Research and Development Vice President Robert DiMarco in which he stated that RJR needed to tailor its marketing to the reality that "most of those who have smoked for any significant time would like to stop," and most smokers "would stop using if they could." Teague also stated that RJR needed to contemplate the future scenario where smokers who want to stop can stop; if this happened, he wrote, RJR would "go out of business." Therefore, RJR "cannot be comfortable marketing a product which most of our consumers would do without if they could." 500898255-8257 at 8256 (US 48652).

975. An undated RJR document, written after 1984, titled "R&D Outline" listed "Nicotine as a drug" as a topic for departmental discussion. The outline provided for a "discussion of a string of industry memos and reports, dating back to at least the early 1970's, in which industry scientists and execs seem to admit to nicotine's qualities as a drug." The document described several examples, including a 1971 B&W letter, a 1972 RJR report and a 1972 Philip Morris summary of a meeting of industry scientists. 522606315-6317 at 6316 (US 85273).

976. Like Philip Morris, RJR documented smoker compensation. An April 15, 1983 RJR draft document titled "Smoker Compensation Review" reiterated the company's knowledge that smokers of low tar/nicotine products compensated to obtain more nicotine, and that the FTC method of measuring nicotine was flawed. The document included the following in a section titled "Impact of Known Compensatory Behavior On Cigarette Rankings":

> Based on the results of studies similar to those summarized above, it has been stated that low -- "tar" smokers use their cigarettes differently than smokers of higher -- "tar" products. Different "usage" includes propensity to block vents or otherwise manipulate the cigarette, increasing the number of puffs and the number of cigarettes smoked, puffing more frequently or with larger volumes and inhaling more deeply or holding smoke in the lungs longer. These usage patterns are consistent with the theory that low -- "tar" smokers seek to maintain a given nicotine level in the body, regardless of the cigarette. The patterns cited are instances which would tend to increase the "dosage" of nicotine to the smoker.

This statement reveals both RJR's continuing view of smokers as "nicotine seekers" who alter their smoking method to obtain the necessary "dosage" of nicotine, as well as its comprehensive understanding of the compensation phenomenon. 501524500-4514 at 4506 (US 85272).

977. In another undated RJR document written sometime after 1978, a Biobehavioral Department presentation titled "Biobehavioral Aspects of Smoking," the speaker discussed how "maintenance" of the smoking habit for 80% of smokers was related to the "tranquilizing effects" of nicotine. The speaker emphasized at various points that "nicotine is the substance people desire in their use of tobacco," "animals will self-administer nicotine in a laboratory setting," evidence that "smokers smoke to maintain a constant level of nicotine in the body," and that "the fact remains that smokers do not continue to smoke unless their cigarettes contain nicotine." 517214547-4557 (US 87113*).

978. After Dr. Benowitz published his 1983 groundbreaking paper on compensation by smokers of low nicotine yield products, see Benowitz WD, 67:10-18, RJR scientist John Robinson wrote a critique of the paper to Dr. Alan Rodgman in which he stated:

> The paper itself expresses what we in Biobehavioral have felt for quite some time. That is, smokers smoke differently than the FTC machine and may very well smoke to obtain a certain level of nicotine

> in their bloodstream. If a given level of nicotine in the blood is the final goal of a smoker, one would predict that he would smoke an FFT [full flavor tar] and ULT [ultra low tar] cigarette differently.

510994429-4429 (US 85274).

979. Robinson wrote that the Benowitz paper brought to mind a past industry study comparing German Camel cigarettes with Marlboro cigarettes, where "smokers apparently obtained almost exactly the same amount of nicotine no matter which of the four cigarettes they smoked." Robinson recalled that the study "was one of the first indications that smokers may in fact smoke to obtain a certain level of nicotine in their bloodstream." 510994429-4429 (US 85274).

980. In preparation for an RJR "brainstorming session" at the company's Flavor and Biobehavior Divisions, Donald L. Roberts told employees in an October 13, 1983 memorandum that, "The functions a cigarette serves are many fold involving social, psychological and physiological. A short definition is that a cigarette supplies nicotine to the consumer in a palatable and convenient form." Roberts clearly distinguished nicotine from taste, stating that, "The cigarette's taste is a relatively unimportant benefit of smoking. Its taste is primarily a delivery vehicle[.]" 503602711-2714 at 2712 (US 85275).

981. In a June 3, 1985 RJR document titled "Report on Medical and Scientific Issues -- Addiction," the scientist authors attempted to examine current scientific literature to assist the industry with respect to the scientific consensus on nicotine addiction. As part of their review, the scientists reviewed literature compiled by the tobacco law firms of Jacob, Medinger & Finnegan, Shook, Hardy & Bacon, and Jones Day. The scientists wrote in their report that, "Both Mr. Wrobleski [Jacob, Medinger & Finnegan] and Mr. Sirridge [Shook, Hardy & Bacon] warned,

however, that there is very little literature favorable to the industry's position on addiction." 515878492-8522 at 8494. (US 30251).

982. RJR's R&D department embarked on a large-scale nicotine research program in 1988, described in a lengthy October 7, 1988 project report titled "An Integrated Research Program for the Study of Nicotine and Its Analogs." Its purpose was to continue looking into the "pharmacological potency," "biological activity," and central nervous system effects of nicotine and nicotine analogs. The researchers posited that:

> What is known about nicotine is that it elicits the typical consequences of sympathoadrenal activation when administered in doses that produce plasma concentrations similar to those achieved during smoking. Among these are tachycardia, increases in blood pressure, cardiac output, and stroke volume . . . . In addition, there is a fair amount of tolerance induced with regard to sympathetic activation by smoking or chronic nicotine administration.

514894567-4676 at 4586-4587 (US 20862).

983. A May 3, 1991 RJR Research and Development report described a tobacco modification and nicotine manipulation project code-named the "REST Program." One key objective of the Program was to "Independently control nicotine delivery, from very low to elevated levels, to address consumer wants and as a research tool." The basis for the Controlled Nicotine Process component of "REST" was that

> We are basically in the nicotine business. It is in the best long term interest for RJR to be able to control and effectively utilize every pound of nicotine we purchase. Effective control of nicotine in our products should equate to a significant product performance and cost advantage.

509479574-9587 at 9577, 9584 (US 20829).

984. According to the Wall Street Journal, former RJR Nabisco CEO F. Ross Johnson candidly admitted during a 1994 interview that, "Of course it's addictive. That's why you smoke the stuff." Wall Street Journal, Big Spender Finds a New Place to Spend, October 6, 1994. WAS0491982-1985 (US 61440).

985. In a 1998 memorandum titled "ECLIPSE Taste and Satisfaction Improvements," D.E. Townsend stated that R&D staffs were "encouraged to pursue diligently Eclipse designs with increased nicotine yield in an effort, in part, to increase consumer acceptance of the product." He later added: "If increased nicotine yield helps give improved consumer acceptance in the market, then possible benefits of this potentially reduced risk product would be greater." 526013569-3569 (US 85276); 700245849-5849 (US 85277).

986. In an August 10, 1985 memorandum titled "Smoking and Health Litigation, Tactical Proposals," RJR's lawyers at Jones Day recognized that their client had long since acknowledged the addictiveness of nicotine and smoking. 680712261-2337 at 2308 (US 87114). They also observed that:

> "Addiction" has received little industry research attention. Nevertheless, many industry documents support the contention that there are types of persons whose psychological profile and smoking behavior is such that they have great difficulty in quitting. For example, documents describe a British American Tobacco Company sponsored conference in 1978, attended by PM and B&W representatives. One of the findings of the conference was: "Serious smokers smoke to prevent withdrawal symptoms. Another study which Dr. Piehl (RJRT) cites recognizes "addictive" smokers: "People who find it unbearable to run out of cigarettes are described as using addictive-type smoking." The industry has also recognized that some smokers, especially smokers of high nicotine cigarettes "compensate" or regulate nicotine intake if it is lowered in individual cigarettes.

681879254-9715 at 9302-9303 (US 21020).

987. In the same Jones Day memorandum, the authors provide examples from Defendants' files where the companies (with emphasis on RJR) and their employees admit the primacy of nicotine to cigarettes and the addictiveness or dependence-producing quality of their products. 681879254-9715 at 9601-9643 (US 21020).

c. BATCo

988. Many documents disclose that BATCo had an intimate understanding of nicotine's role in smoking, as well as its effects on smokers long before the medical and public health community reached a similar level of sophistication. Moreover, many BATCo documents disclose how BATCo and other Defendants, in particular B&W, used BATCo's knowledge of nicotine for commercial gain.

989. BATCo knew that nicotine was an essential component of cigarettes as early as the 1950s. A June 1959 BATCo internal document pointed out that the company must consider "the question of nicotine and its effect on the smoker." The author stated that the company had to choose between maintaining current nicotine content "in order to maintain the firmly entrenched nicotine habit developed by the majority of smokers," or reducing the nicotine content to meet consumer demand for lower nicotine products. However, the writer cautioned that

> To lower nicotine too much might end up destroying the nicotine habit in a large number of consumers and prevent it from ever being acquired by new smokers.

100099115-9117 at 9117 (US 20112); Henningfield WD, 88:21-89:10.

990. In a November 15, 1961 memorandum reviewing secret nicotine research and development projects, Sir Charles Ellis, scientific advisor to the BAT Board of Directors, acknowledged BATCo's understanding that nicotine is addictive:

> Experiments of Hippo have led to a great increase in our knowledge of the effects of nicotine. . . . Smoking demonstrably is a habit based on a combination of psychological and physiological pleasure, and it also has strong indications of being an addiction. It differs in important features from addiction to other alkaloid drugs, but yet there are sufficient similarities to justify stating that smokers are nicotine addicts.

301083862-3865 at 3863 (US 20577).

991. In the same 1961 internal document reviewing BATCo's secret nicotine research, Ellis emphasized the company's need to determine exactly what made smoking and nicotine addictive:

> If the competition is to be met successfully, it must be important to know how the tranquilizing and stimulating effects of nicotine are produced and the relation of addiction to the daily nicotine intake. These are the reasons for proposing that Project Hippo be continued with the particular object of finding the causes of the pleasurable physiological effects and the causes of addiction.

301083862-3865 at 3863 (US 20577).

992. As early as February 13, 1962, Sir Charles Ellis provided an overview of the company's massive nicotine research program in a "Private and Confidential" memorandum titled "The Effects of Smoking." Ellis recited in his memorandum that BATCo research into the "physiological and psychological effects of smoking" being conducted by Battelle Laboratories began in 1959, and was carried out in the intervening years under various project "code names" including "MAD HATTER I," "MAD HATTER II," "MAD HATTER III," "HIPPO I," "HIPPO II," and "ARIEL." 301083820-3835 at 3820-3824 (JE 46579).

993. In the February 13, 1962 memorandum, Ellis devoted a lengthy section to the commercial importance of the company's nicotine research objectives. He explained that the reason BATCo commissioned the "MAD HATTER" and "HIPPO" research projects was "to understand addiction . . . [and to] appreciate the strength and vulnerability of our position." Ellis wrote further in detail:

> However, the force of the habit or the strength of addiction is not such as to give any grounds for complacency in the face of alternative methods of stimulating the body to meet stress, and that is just where the danger lies since alternatives are becoming available. In the last few years there has been a quite remarkable increase in the production of tranquilliser drugs, and while most of these need a doctor's prescription there is already one on free sale in Switzerland (Librium made by Hoffman LaRoche). If such drugs become more freely available they will compete with nicotine, which is a natural tranquilliser, and will leave smoking primarily dependent on its psychological effects for the maintenance of the habit.
>
> What we need to know above all things is what constitutes the hold of smoking, that is, to understand addiction. . . .
>
> These are the reasons for the study of the physiological effects of nicotine carried out under the MAD HATTER and HIPPO contracts, and they have sufficient force alone to justify this expenditure. . . .

301083820-3835 at 3826-3827 (JE 46579).

994. Ellis described in another section of his memorandum the outcome of BATCo's efforts to learn about nicotine and its role in smoking. He further delineated some of the concrete conclusions which the BATCo research had reached, reiterating unequivocally that BATCo believed nicotine was addictive and explaining graphically the relationship of the research to addiction:

> As a result of these various researches we now possess a knowledge of the effects of nicotine far more extensive than exists in published scientific literature. It is indeed so extensive and represents so much

> new thought that it is not easy to condense the material of these several reports and working papers without over-simplification.
>
> Nicotine, however administered, rapidly gets into the blood stream and the lymph system, and once there has a number of varied effects. . . . By far the most important effect is that of mobilising the resources of the body to resist stress. That this occurs has been known from the earliest days of smoking but no explanation exists in the published literature. Battelle [Laboratories] have now carried out experiments which are beginning to show how nicotine enters into the mechanism of this vital reaction. . . .
>
> The stimulation to resist stress occurs almost immediately on absorption of nicotine, and the effect -- that is, the extra supply of cortico steroids in the blood -- falls off markedly within a matter of thirty minutes. Addiction is something quite different from this since it is well known that the craving for nicotine in a confirmed smoker who stops smoking persists for ten, twenty or thirty days.
>
> We believe that we have found possible reasons for addiction in two other phenomena that accompany steady absorption of nicotine.

301083820-3835 at 3828-3829 (JE 46579).

995. The two additional "phenomena" that Ellis referred to in his February 1962 memorandum were responsible for nicotine addiction were tolerance and withdrawal:

> Experiments have so far only been carried out with rats, but with these it is found that certain rats become tolerant to repeated doses and after a while show the usual nicotine reactions but only on a very diminished scale. The interesting point is that these tolerant or nicotine-conditioned rats are found to have a greatly enhanced power of detoxification of nicotine in their liver. Crudely put, they can stand up to high continuous doses of nicotine just because their liver has developed the ability to dispose of it more rapidly and efficiently. . . . As long as the smoker keeps to his normal regime and the nicotine level in his blood remains high there is a steady job for these [liver] enzymes, and the whole situation is normal and under control. But if now the smoker stops smoking and there is no longer nicotine in his blood then in the liver there is this supply of enzymes with nothing to work on. In fact, they proceed to work on other material passing through the liver, with consequent disturbance of the body's working

> and with all sorts of alarm signals sent back to the brain. The effects of unbalanced enzymes is not unlike unbalanced nicotine, and the abstaining smoker experiences physiological reactions as acute as a novice who starts smoking. When to this one adds the longing for that immediate stimulation to resist stress that comes from smoking a cigarette it would appear that we are making progress towards understanding addiction. . . .
>
> Thus we have already greatly increased our knowledge of the manifold ways in which nicotine affects the body and, in particular, have identified and studied separately the stress resisting mechanism and the other effect on the liver which we believe is responsible for addiction.

301083820-3835 at 3829-3830 (JE 46579).

996. In the final section of his paper, Ellis discussed some particulars of the nicotine projects code-named "PROJECT HIPPO II" and "PROJECT ARIEL." He stated that the secret "physiological and biochemical" PROJECT HIPPO research "should lead to an understanding of the mechanism which creates addiction" and confirm that "addiction depended on the enzymes involved in the metabolism of nicotine in the liver." 301083820-3835 at 3832 (JE 46579). While BATCo did not submit this work to the 1964 Surgeon General's Advisory Committee, some Battelle research, on dependence to nicotine developing in stressed but not unstressed rats, was submitted and cited in the 1964 Report. (no bates) (JD 032048); (no bates) (US 64591 at 125). See also Section V(B)(5)(f).

997. "PROJECT ARIEL" was a secret project to develop an alternative nicotine delivery device to compete with work that Ellis believed was being carried out at the American Tobacco Company and RJR. Ellis also justified the project with his concern that the "drug industry" could "at any time attempt to invade the cigarette smoke field by alternative drugs." He stated that the final

product "must have within it the ultimate possibilities of meeting the psychological demands of smokers as well as the physiological ones." 301083820-3835 at 3833-3835 (JE 46579).

998. The concluding section of Ellis' memorandum revealed the high level of secrecy accorded the company's nicotine research:

> FUTURE POLICY.
>
> For good reasons the results of Battelle's work have been kept at a high level of secrecy, but they are now building up to such a comprehensive picture of the action of nicotine that I suggest they should soon be made available in detail to a few of our top scientists.

301083820-3835 at 3835 (JE 46579).

999. Thus, as early as 1962, BAT had reached the internal corporate conclusion that smoking was an addiction produced by nicotine, and met the requisite criteria in terms of cravings, compulsive use, physiological effects on the body, tolerance, and withdrawal. In a paper presented to a 1962 BAT conference in Southampton, England, attended by B&W representatives, Sir Charles Ellis openly stated that "smoking is a habit of addiction." Ellis's presentation was preceded by an introduction from the chairman of BAT, A.D. McCormick. The substance of the conference was included in a BAT conference report titled, "Smoking and Health - Policy on Research," produced from B&W files. 650344433-4493 (US 53468).

1000. McCormick told attendees at the 1962 conference that the "best way to deal with the [smoking and health] matter was on an industry rather than an individual company level." He then introduced Ellis. In his presentation, Ellis stated:

> Smoking is a habit of addiction that is pleasurable; many people, therefore, find themselves sub-consciously prepared to believe it must be wrong.

650344433-4493 at 4439 (US 53468).

1001. Ellis later added:

> One result of the recent public discussions on smoking and health must have been to make each of us examine whether smoking is just a habit of addiction or has any positive benefits. It is my conviction that nicotine is a very remarkable beneficent drug that both helps the body to resist external stress and also can as a result show a pronounced tranquillising effect. . . . Nicotine is not only a very fine drug, but the techniques of administration by smoking has considerable psychological advantages and a built-in control against excessive absorption.

110070785-0842 (US 20270); 650344433-4493 at 4450-51 (US 53468).

1002. In January 1962, Battelle scientists working for BATCo submitted their "Final Report on Project HIPPO I." The purposes of the project were to study: (1) the action of nicotine in the diuresis mechanism; (2) the possible interference of nicotine in the "stress" mechanism; (3) the inhibiting effect of nicotine on body weight; and (4) the possible activity of nicotine on other hypothalamic functions. The report stated in the introduction the working question: "It is an everyday experience to each smoker that smoking a cigarette helps mastering the numerous stressful stimuli of modern life. This effect is probably one of the most powerful reasons which make one smoke. How does nicotine exert this action?" 105620620-0683 at 0622-0625 (US 20247).

1003. The "HIPPO I" researchers concluded that:

> From all our data it seems that the effect of nicotine in the "stress reaction" is a very prominent and very complicated one. The understanding and thorough investigation of this effect seems of the greatest importance: it is by this very effect that nicotine acts as a "tranquilliser."

105620620-0683 at 0683 (US 20247).

1004. At about this same time, Battelle drafted a January 3, 1962 research proposal regarding "Project Ariel" for BATCo in London. According to the proposal, the proposed new smoking device would administer nicotine while "avoiding the well-known disadvantages inherent in actual cigarette smoking," but it needed to resemble a tobacco smoking product "to avoid interference with the legislation in force about drugs," and "it should also create addiction in the same relative amounts." 100335808-5816 at 5811, 5814 (US 20173).

1005. Throughout the 1960s, BATCo continued to discuss and research the Ariel product that was known simply as a nicotine delivery device that would allow the smoker to "obtain a satisfying dose of nicotine" without any of the harmful effects from smoke. 100335894-5918 at 5897 (US 20174).

1006. By 1964, BATCo had developed the prototype of Ariel which allowed for "a reasonably even release of nicotine" for the smoker. 100175613-5617 at 5616 (US 20115).

1007. BATCo continued its Project HIPPO for several years. In a March 1963 study titled "Final Report on Project HIPPO II," scientists C.H. Kaselbach and O. Libert reported the results of their sophisticated comparison of nicotine to tranquilizers, a comparison that built on the earlier findings of HIPPO I. Their report to BATCo stated at the outset that:

> The aim of the whole research "HIPPO" was to understand some of the activities of nicotine -- those activities that could explain why cigarette smokers are so fond of their habit. It was also our purpose to compare these effects with those of the new drugs called "tranquillizers," which might supercede tobacco in the near future. . . . The reasons for the "pleasure of smoking" must be found partly in the relief of anxiety that cigarette smoking brings so constantly, and in such a very short time.

105620569-0605 at 0572 (US 20246).

1008. Later in the "Final Report on Project HIPPO II," the researchers revealed their conclusion that while nicotine differs in some respects from tranquilizers, nicotine causes both tolerance and addiction, and is in fact addictive:

> A quantitative investigation of the relationship with time of nicotine -- and of some possible brain mediators -- on adreno-corticotropic activity could give us the key to the explanation of both phenomena of tolerance and of addiction, in showing the symptoms of withdrawal.

105620569-0605 at 0575 (US 20246).

1009. Having obtained a clear understanding of the fundamental issue that nicotine was addictive, BATCo researchers targeted and sought to understand the actual mechanism of addiction. In a May 30, 1963 report titled "A Tentative Hypothesis on Nicotine Addiction," Dr. G. Haselbach and Dr. O. Libert, scientists performing work for BATCo, discussed nicotine's ability to produce tolerance and postulated a sophisticated explanation for nicotine addiction:

> The hypothalamo-pituitary stimulation of nicotine is the beneficial mechanism which makes people smoke; in other words, nicotine helps people cope with stress. In the beginning of nicotine consumption, relatively small doses can perform the desired action. Chronic intake of nicotine tends to restore the normal physiological functioning of the endocrine system, so that ever-increasing dose levels of nicotine are necessary to maintain the desired action. Unlike other dopings, such as morphine, the demand for increasing levels is relatively slow for nicotine.
>
> In a chronic smoker the normal equilibrium in the corticotropin releasing system can be maintained only by continuous nicotine intake. . . . If nicotine intake, however, is prohibited to the chronic smokers, the corticotropin-releasing ability of the hypothalamus is greatly reduced, so that these individuals are left with an unbalanced endocrine system. A body left in this unbalanced status craves for renewed drug intake in order to restore the physiological equilibrium. This unconscious desire explains the addiction of the individual to nicotine. . . .

> In conclusion, a tentative hypothesis for the explanation of nicotine addiction would be that of an unconscious desire to restore the normal physiological equilibrium of the corticotropin-releasing system in a body in which the normal functioning of the system has been weakened by chronic intake of nicotine.

536480912-0914 at 0912, 0914 (US 20928).

1010. In a 1963 research report titled "The Fate of Nicotine in the Body," BATCo researchers reported their conclusions as to nicotine pharmacology and mechanisms of tolerance and addiction. The scientists emphasized that nicotine was a key part of "tobacco habituation and/or addiction" and that the tobacco industry should focus its future research on the effects of nicotine in the bodies of smokers:

> There is increasing evidence that nicotine is the key factor in controlling, through the central nervous system, a number of beneficial effects of tobacco smoke, including its action in the presence of stress situations. In addition, the alkaloid appears to be intimately connected with the phenomenon of tobacco habituation (tolerance) and/or addiction. Detailed knowledge of these effects of nicotine in the body of smokers is therefore of vital importance to the tobacco industry, not only in connection with their present standard products, but also with regard to future potential uses of tobacco alkaloids.

501012199-2255 at 2202 (US 21562).

1011. BATCo also participated in the nicotine research carried out at the Huntington Research Centre in Huntington, England. A scientific study prepared by Huntington for either BATCo or Imperial Tobacco is described in an undated report from the late 1960s titled "Effects of Nicotine on Electrocortical Activity and Acetylcholine Release from the Cerebral Cortex of the Squirrel Monkey." In this report, researchers stated at the outset that, "The habitual use of tobacco may be related to numerous factors amongst which the pharmacological effects of nicotine on the

central nervous system figure dominantly." The report then went on to describe the complex and significant effects of nicotine on acetylcholine release in animal brains, and stated that "The doses of nicotine used in these experiments are based on the reported smoking dose." 680050472-0485 (US 53985).

1012. Another "Confidential" Huntington in-depth study focusing on nicotine's drug-like effects on the primate brain was titled "Effects of Nicotine on the Central Nervous System." This study was addressed to Imperial Tobacco, and a copy was forwarded to BATCo. The authors of this study explained the tests they planned to conduct to understand how nicotine affects "physiological processes and behavioural functions of the central nervous system of the primate" and described some preliminary results 680050504-0521 (US 53986).

1013. BATCo was also provided nicotine research funded by its Australian affiliate, BATAS. For example, BATCo had knowledge of a 1970 University of Melbourne study titled "The Absorption and Effects of Nicotine from Inhaled Tobacco Smoke." The Australian study program assessed nicotine blood levels and physiological effects, the transfer of nicotine to the blood, and the absorption of nicotine in the mouth. 680050575-0589 (US 53987).

1014. BATCo scientists understood that the addictive impact and potential of nicotine is enhanced by the speed at which, and form in which, it reaches the brain. An August 7, 1964 memorandum from H.D. Anderson, Vice President of Research and Development, to BATCo President, Sir Richard P. Dobson, discussed the enhancement of nicotine "kick" through the addition of potassium carbonate to tobacco:

> There seems no doubt that the "kick" of a cigarette is due to the concentration of nicotine in the blood-stream which it achieves and

> this is a product of the quantity of nicotine in the smoke and the speed of transfer of that nicotine from the smoke to the blood-stream.
>
> Nicotine is in the smoke in two forms as free nicotine base (think of ammonia) and as a nicotine salt (think of ammonium chloride) and it is almost certain that the free nicotine base is absorbed faster into the blood-stream. Thus the effect of this potassium carbonate treatment, even though it does reduce the total quantity of nicotine in the smoke, may be to enhance the effect of what is left until it is equal or maybe greater in physiological effect than in the original smoke.

100059066-9067 at 9067 (US 20102).

1015. A 1966 internal tobacco industry report issued by BATCo scientist I.W. Hughes also emphasized that the effects of nicotine on the human body were a function of the speed at which nicotine reaches the brain and the form it takes:

> It would appear that increased smoker response is associated with nicotine reaching the brain more quickly. . . . On this basis, it appears reasonable to assume that the increased response of a smoker to the smoke with a higher amount of extractable nicotine may be either because the nicotine reaches the brain in a different chemical form or because it reaches the brain more quickly.

00039304-9490 at 9306, 9310 (US 34187).

1016. In a March 2, 1967 memorandum from BATCo Chief Scientist S.J. Green to Deputy Chairman Desmond Hobson, Green broadly evaluated BATCo scientific research. With respect to nicotine, he reported the following:

> Work on the psychopharmacology and pharmacology of nicotine is accelerating. There is now no doubt that nicotine plays a large part in the action of smoking for many smokers. It may be useful, therefore, to look at the tobacco industry as if for a large part of its business is the administration of nicotine (in the clinical sense). . . . The main objective of our research is to make the administration of nicotine better by . . . making the administration pleasanter or more convenient.

WAS0433494-3500 at 3497 (US 86690).

1017. In a March 20, 1967 document titled "First Meeting with U.S. Company Lawyers," R.M. Macrae, Tobacco Research Council assistant director and BATCo employee, recalled that at the March 8, 1967 meeting, representatives from the United Kingdom made the point that "the major section in the U.K. industry believes that nicotine content of cigarettes should not be greatly lowered if consumer acceptance is to be maintained." 301080659-0662 at 0661 (US 22896).

1018. In fact, "consumer acceptance" was tied to addiction, a word that company executives and directors continued to use internally to describe the necessity of nicotine to smokers. According to the report of the October 1967 BATCo (Group) Research and Development Conference in Montreal, one of the company's research "assumptions" was that, "[t]here is a minimum necessary level of nicotine. Smoking is a habit attributable to nicotine. The form of nicotine affects the rate of absorption by the smoker." And later in the conference report, the BATCo R&D department stated the following as research objectives:

> The development of low T.P.M. [total particulate matter, or tar], normal nicotine cigarettes should continue. In this connection, the use of filter additives . . . might be helpful since it might render the nicotine more available to the smoker.
>
> The development of a low T.P.M., low nicotine cigarette should be expanded. This raises the question of the level of nicotine required. . . .

100051950-1963 at 1952, 1957 (US 85279).

1019. The BATCo R&D Conference report also acknowledged that the department's general objectives included "insur[ing] the continuation of the industry and the prosperity of the company within the industry," and "sustaining and increasing the profits of the company." Thus, even the

scientists realized and accepted the link between nicotine and the future of both the company and the industry. 100051950-1963 at 1955 (US 85279).

1020. The minutes of a BAT Group Research Conference held at Hilton Head, South Carolina, from September 24-30, 1968, recorded similar statements. The conference group, which included representatives of B&W as well, noted that:

> In view of its pre-eminent importance, the pharmacology of nicotine should continue to be kept under review and attention should be paid to the possible discovery of other substances possessing the desired features of brain stimulation and stress-relief without direct effects on the circulatory system. The possibility that nicotine and other substances together may exert effects larger than either separately (synergism) should be studied and if necessary the attention of the Marketing Departments should be drawn to these possibilities.

682633150-3156 at 3152 (US 54206).

1021. The recognition of nicotine's singular importance in smoking was the basis for an October 1969 BATCo report titled "Future Work on Nicotine and Compounds With Related Pharmacology," in which J.G. Underwood detailed company efforts to search for compounds that would mimic the pharmacological effects sought by smokers with fewer toxic properties, and foresaw that questions might be raised about the health effects of nicotine. The introduction states:

> At the physiological level the major part of the satisfaction of smoking is derived from nicotine and the first section of this note is concerned with optimising nicotine usage, increasing the delivery of smoking mixtures deficient in nicotine, and attempting to anticipate some "health" problems that may arise with changes in current practices.
>
> At present the cigarette industry depends on nicotine as the principal pharmacological agent in confirming the smoking habit. This could be dangerous commercially, since it may well be that legal restrictions are imposed on the nicotine delivery of cigarettes if the medical evidence shows beyond reasonable doubt that the long-term

> effects of nicotine are harmful. The industry is far more vulnerable to restrictions on the use of nicotine, than attempts at restricting, say, carcinogens or "tar." Consequently, the second sections considers some possibilities of finding alternatives to nicotine that could supplement or replace nicotine in a cigarette.

680050592-0608 at 0593 (US 85280).

1022. In 1969, BATCo researcher D.J. Wood gave a presentation for company executives in which he described the company's pharmacological research focusing on nicotine. He stated that BATCo researchers believed that nicotine was responsible for the "satisfaction of smoking," and that future research was aimed at finding out more about how the human body absorbed nicotine. 322043204-3207 at 3207 (US 20592).

1023. BATCo's acknowledgment of nicotine and addiction continued into the 1970s. In a June 30, 1971 memorandum titled "Comments on Nicotine," BATCo scientist R.R. Johnson reported on a Research & Development meeting held to discuss the results of nicotine research on “Project MAD HATTER" and "Project HIPPO." BATCo director Sir Charles Ellis led the meeting. According to Johnson:

> The purpose of the meeting was to discuss the results from Projects MAD HATTER and HIPPO, and to stimulate further discussion of the importance of nicotine to the industry. Sir Charles started the meeting by saying that he had first brought out the concept that we are in a nicotine rather than a tobacco industry and then set up the above projects to sell this concept to management.

2065128907-8909 at 8908 (US 85281) .

1024. In a November 9, 1972 report titled "Preparation and Properties of Nicotine Analogues," BAT Group scientists K.D. Kilburn and J.G. Underwood recommended, for commercial reasons, that work continue into finding nicotine analogs, or substitutes. The basis for this

recommendation, the researchers stated, was that, "Should nicotine become less attractive to smokers, the future of the tobacco industry would become less secure." Specifically:

> It has been suggested that a considerable proportion of smokers depend on the pharmacological action of nicotine for their motivation to continue smoking. If this view is correct, the present scale of the tobacco industry is largely dependent on the intensity and nature of the pharmacological action of nicotine. A commercial threat would arise if either an alternative product became acceptable or the effect of nicotine was changed.

750009046-9098 at 9049 (US 88066).

1025. An undated BATCo document, probably from the 1970s from scientist D.G. Felton titled "Smoking and Health Research in the U.S.A.," summarized some internal industry positions on scientific research and nicotine. The report noted that American Tobacco Company's Scientific Director, Dr. H.R. Hanmer, stated that it was "important to keep up the nicotine content of the smoke, while reducing anything that ought to be reduced," that RJR's scientific director Dr. Galloway stated that "a reasonable amount of nicotine was necessary in a cigarette," and that Liggett's position was that "people smoked because of the nicotine." 105407187-7190 (US 34738).

1026. In an undated document, S.J. Green, one of BATCo's top scientists in its Research & Development Department, provided advice to the corporate leadership as to the future direction the company should take with respect to smoking and disease, research, and even addiction. The presentation was delivered at the October 1972 BAT Group R&D Conference where B&W representatives were also in attendance. 680048899-8903 at 8903 (US 85284).

1027. In his presentation, Dr. Green stated that BATCo was aware that smokers compensated for lower nicotine products "by increasing the number of cigarettes smoked" and by

"changing the way they smoked." He then discussed the "health conscious smokers who chose the low delivery cigarettes," frankly telling the BAT Group executives (including B&W) that:

> A suggestion is made both for the health conscious smoker and the smoker whose prime smoking requirement is physiological satisfaction. Surely many nicotine-dependent smokers are health conscious. . . .
>
> Smoking is fairly irrational like other drug dependencies. If there is a positive side to smoking, and I think there is, it is not easy for the smoker to articulate. He "votes with his feet" and continues with this irrational act.

110069983-9987 at 9985 (US 20269).

1028. BAT scientists published the results of a study titled "The Effect of Smoking Deprivation on Smoking Behaviour," written by D.E. Creighton, in a report dated September 11, 1975. Both BATCo and B&W had copies of the report in their files. In assessing the behavior of the subjects, the research assumed that smokers need nicotine, that smokers experience withdrawal symptoms without it, and that smokers compensate to obtain the nicotine they need:

> It is probable that interference with an established behavioural pattern would cause different effects on different subjects according to their need for the stimulation of nicotine or suppression of the withdrawal symptoms that accompany a lack of nicotine. . . . If the subject is smoking for the pharmacological effects of nicotine he would be expected to take more smoke in a shorter time. He may do this by taking larger puffs, taking more puffs, reducing the interval between them or smoking more of the butt where the nicotine delivery is higher. He might also draw harder on the cigarette or for longer.

650014873-4901 at 4881 (US 53405).

In the discussion section of the report, the authors stated:

> These results may be interpreted on the basis that some subjects have a greater demand for nicotine than others. It is also clear that the dose of nicotine required per unit of time is very variable. Some subjects

> require a small intake of nicotine taken frequently . . . others require a large amount but infrequently. . . . These differences in nicotine demand and the pattern of nicotine intake may reflect metabolic differences between smokers.

650014873-4901 at 4885-86 (US 53405).

1029. BATCo, like the other cigarette company Defendants, undertook research in the 1970s and 1980s to manipulate or maintain nicotine delivery while reducing the tar in its cigarettes. This research was based on the corporate knowledge that nicotine delivery above some minimum level was an essential part of cigarette smoking for smokers. For example, the basis for studies carried out in 1973 to assess the use of additives to reduce tar but actually increase nicotine to smokers was stated, in a research report on additives' effect on smoke chemistry, as follows: "The increased importance being placed on the lowering of TPM [total particulate matter, or tar] and the controlling of nicotine delivery has made it necessary to investigate the different methods available for producing these changes in smoke." 402390265-0282 at 0268 (US 85288). For a more in-depth discussion of this subject. See Section V(C), infra.

1030. The 1973 study also utilized "ADDITIVES FOR NICOTINE CONTROL," including nicotine tartrate, sodium bicarbonate, and diammonium hydrogen phosphate to increase the "extractable nicotine" in the smoke. The researchers found that certain combinations of additives successfully reduced tar while "maintaining the impact and physiological strength levels" of nicotine. 402390265-0282 at 0280 (US 85288).

1031. As another example, BATCo's W.B. Fordyce circulated a report called "The Addition of Nicotine to Tobacco Products," written by company scientist Terry Mitchell, to BATCo Directors under cover memo dated May 2, 1980. In his paper, Mitchell discusses three methods for

intentionally increasing the nicotine content of cigarettes, including the use of specialized high nicotine tobaccos (such as N. rustica), direct addition of nicotine and nicotine extracts, and the chemical "augmentation of smoke nicotine." Mitchell noted that smoke nicotine could be augmented by improving the nicotine transfer to smoke and by increasing the alkalinity/pH of smoke. 110088143-8155 (US 34965).

1032. In 1975, BATCo Research Scientist A. Kay (Kinnard) Comer acknowledged that only those within the industry disputed the label addiction as applied to smoking and nicotine, and that the evidence showed the industry's denials were wrong. Comer stated that:

> In summary, it appears that most workers who are not directly concerned with the tobacco industry use the terms addiction or dependence rather than habituation and can be considered quite correct in doing so. If cigarette smoking is as addictive as the evidence suggests, it is not surprising that antismoking campaigns are so ineffective. . . .

105392361-2368 at 2366 (US 22038).

1033. BATCo's D.E. Creighton performed a "Restricted" written review of BAT's own "Group" research in January 1976, in order to evaluate the concept of compensation. The review found that compensation occurred -- for example, by taking larger puffs or inhaling the smoke deeper into the lungs -- when smokers of high-nicotine cigarettes smoked low-nicotine products and vice versa. Creighton found that, "On balance, it is concluded that many established smokers do compensate for changed delivery in an attempt to equalise nicotine delivery, when this is possible." 650008449-8480 at 8451 (US 76192).

1034. Creighton stated that compensation for reduced nicotine delivery was evidence that smokers smoked for nicotine, and evidence that regular smokers are "nicotine dependent":

> [T]he majority of smokers who actually buy cigarettes and smoke them regularly are directly or indirectly seeking the effects of the nicotine content of the smoke . . . . The majority of smokers who are smoking for the nicotine content of smoke may still be smoking for different effects of nicotine. They may seek the pharmacological stimulation of nicotine which has both peripheral and central stimulating effects or to allay the uncomfortable effects of not having nicotine in the system, which Russell describes as relief from or avoidance of withdrawal effects. Most smokers when deprived of nicotine for a period of time during the day feel an increase in stress, tension, restlessness and irritability. A cigarette quickly restores the equilibrium.
>
> A subject who does not suffer the mild withdrawal symptoms, when unable to smoke and only seeks the occasional stimulation of nicotine, or some other attribute of smoking, is less likely to compensate for changed nicotine delivery than a subject who is more nicotine dependent.

650008449-8480 at 8462-8464 (US 76192).

1035. Other sections of Creighton's 1976 report discussed an "estimation of self dosing with nicotine" and various factors that influence "the daily dose of nicotine taken by a nicotine dependent smoker." 650008449-8480 at 8465, 8468 (US 76192).

1036. In a memorandum dated March 29, 1976, BATCo scientist S.J. Green set forth his forecast for "The Product in the Early 1980s." In this document, Green addressed "the main threats to the smoking habit." One major threat to smoking was that lower nicotine products would lead to more smokers being able to quit: "Taking a long-term view, there is a danger in the current trend of lower and lower cigarette deliveries -- i.e. the smoker will be weaned away from the habit. . . . [W]e should be aware of the long-term dangers of following the crowd into ultra-low nicotine deliveries." 110069974-9982 at 9975 (US 20268).

1037. Green then evaluated "potential rivals," that is, "cigarettes in which nicotine has been replaced by an alternative pharmacological agent." In this context, he referred to smokers as "members of the nicotine-dependent majority." 110069974-9982 at 9975, 9977 (US 20268).

1038. In 1976, BATCo held a conference on smoking behavior. Its central theme was the pharmacological importance of nicotine on the central nervous system as the basis for smoking. In a conference report, Kay Comer wrote that tobacco is only used in ways that delivered unmetabolized nicotine to the brain:

> [C]igarette smokers who are forbidden to smoke, for instance in a lumber mill or down in a mine, will resort to chewing tobacco instead of smoking.
>
> The common factor in all the types of tobacco usage mentioned is nicotine, either absorbed through the lungs or the lining of the nose or mouth. Taken in these ways nicotine will quickly enter a direct route, in the blood, to the brain. Tobacco has never been used as a substance of ingestion. The probable reason for this is that when it is absorbed in the stomach or intestines, nicotine travels in the blood to the liver, where it is metabolised to cotinine before passing to the brain. It would therefore be surprising if nicotine, which is known to be pharmacologically active in the brain (unlike cotinine), and which is obtained in the ways most likely to enable it to reach the brain unchanged, were not involved in the reasons why people smoke.

650376684-6703 at 6694 (US 85289); 100430004-0005 (US 87115).

1039. BATCo also produced a November 24, 1977 report titled "A Note on Smoker Motivation and Dependency." In the introductory section of the report, the author stated that smoking can be characterized by "a dependency factor which is, in a restricted sense, independent of other motivational influences" that would keep a smoker smoking who desires to quit. The motivation to smoke even when one desires to quit "more closely resembles an urge or drive and

might be described as an addictive behaviour beyond cognitive control and likely to be associated with pharmacological dependency." 102698343-8361 at 8343 (US 85290).

1040. BATCo held an "International Smoking Behaviour Conference" from November 27-30, 1977 at Chelwood, England. The company invited its own scientists and executives, along with representatives of its affiliate companies (B&W, Imperial Tobacco, Gallaher Limited, Souza Cruz, Rothmans, BAT-Germany and others), industry trade groups, and industry-funded researchers to exchange information. Dr. Green, from BATCo, delivered the introduction, followed by presentations to the conference over the next several days about the central nervous system effects of nicotine, nicotine's impact on human attention span, the role of nicotine in maintaining smoking, and many other topics directly related to the central importance of nicotine to smoking behavior. 103505372-5399 (US 87116); 103505453-5513 (US 87117); 103518290-8401 (US 87118).

1041. A document by BATCo's P.L. Short dated February 22, 1978, titled "Product and Process Innovation," recognized that "the problem of addiction via nicotine [is] increasing." Two days later, his meeting notes recorded that, "Those seeking nicotine gratification where smoking is banned and the subsequent risk of purchasing tobacco by prescription or registration of addicts in the future, will lead to greater use of smokeless tobaccos . . . " He also wrote that there was a segment of smokers "wanting to quit but unable to, hooked onto cigarettes at present but seeking a cigarette/nicotine substitute." 100566925-6926 at 6926 (US 88765); 100566919-6924 (US 88766).

1042. In a June 27, 1978 document titled "Compensation for Changed Delivery," BATCo scientist D.E. Creighton stated that:

> Numerous experiments have been carried out in Hamburg, Montreal, and Southampton within the company as well as many other experiments by research workers in independent organizations, that

> show that generally smokers do change their smoking patterns in response to changes in the machine smoked deliveries of cigarettes. . . . In general, a majority of habitual smokers compensate for changed delivery, if they change to a lower delivery brand than their usual brand. If they choose lower delivery brand which has a higher tar to nicotine ratio than their usual brand (which is often the case with lower delivery products) the smokers will in fact increase the amounts of tar and gas phase that they take in, in order to take in the same amount of nicotine.

10553905-3915 at 3906, 3913 (US 76170).

1043. BATCo keenly appreciated the connection between addiction and profitability. In an August 28, 1979 memorandum titled "Key Areas -- Product Innovation Over Next 10 Years for Long-term Development," BATCo scientific director L.C.F. Blackman stated that nicotine dependence was the key to the company's future viability and profitability. In coming to this conclusion, Dr. Blackman charted the stages of smoking from "starting the habit" (Stage 1) to "acknowledgment of pleasure" (Stage 2) to "dependence on the smoking habit" (Stage 3). He flatly stated that nicotine "initiates a dependence in the confirmed smoker" and that "the high profits additionally associated with the tobacco industry are directly related to the fact that the customer is dependent upon the product." 109872505-2508 at 2508 (US 21530).

1044. BATCo continued its search for nicotine substitutes into the 1970s. A November 30, 1978 BATCo report titled "Alkaloids That Have a Pharmacology Like Nicotine" reviewed all relevant research in depth and concluded that, "For smoking products, nicotine is the alkaloid of choice." The BATCo scientists reached this conclusion by comparing the known physiological qualities of nicotine to other alkaloids, including nicotine's effect on the central nervous system, respiration, blood pressure, and heart rate. 680009683-9700 at 9684 (US 53979).

1045. The Appendix to the 1978 BATCo report, titled "The Effects of Nicotine," described nicotine as "the most abundant and potent of the several alkaloids present in tobacco." The Appendix also contained the following section:

> The Pharmacological Mechanisms of Nicotine
>
> The mode of action through which nicotine achieves its effects on the body is very complex. The complexity arises from nicotine's simultaneous and varying degree of activity on the different nerve centers, organs and muscles of the body. Nicotine causes its effects not only by central and peripheral stimulation (i.e., at the brain and spinal cord, and nerve organ or nerve muscle junctions, respectively), but also by the stimulation of intermediate nerve ganglia. . . .
>
> While smokers describe the effects of nicotine as calming and relaxing, all the accumulated evidence indicates that it causes physiological excitation and stimulation. One theory that attempts to explain this paradox suggests that the smoker becomes accustomed to the stimulated condition that nicotine produces; he then uses this condition as the norm from which to judge his well being. If the condition is not maintained, discomfort and anxiety are felt.

680009683-9700 at 9697-9698 (US 53979).

1046. In an undated BATCo document, probably created in the 1970s, an executive summarized the "usable data" on smoking and nicotine addiction and connected addiction to marketing plans for BATCo and the industry. The memorandum concluded that smokers are dependent on the pharmacological effects of nicotine, that smokers develop tolerance to and dependency on nicotine, and that smokers deprived of nicotine experience withdrawal symptoms:

> SUMMARY and IMPLICATIONS to the INDUSTRY
>
> The rush of nicotine into the blood stream and nervous system is short-lived; therefore, reducing consumption would cause withdrawal and all of its unpleasant side effects so long as the smoker is restricted from smoking. Nicotine vacates the system in 30 minutes or so and at that time withdrawal starts. . . .

> The sensorimotor manipulation aspect of smoking is important to people but perhaps not as important as nicotine. . . . Cigarettes allow people to self-administer nicotine at a self-determined rate.

680096095-6110 at 6096 (US 53993).

Later in the paper, when describing children and adults who were "regular smokers," the author wrote:

> Only an exceptional 2% smoke occasionally and intermittently. Nearly all regular smokers are nicotine dependent. . . . As the novice acquires tolerance to the irritation of the smoke over a period of two or three years, he becomes conditioned to a high and regular intake of nicotine.

680096095-6110 at 6099, 6101 (US 53993).

1047. One section of the BATCo memorandum was subtitled "Physical Dependence," in which the author described the process by which a smoker becomes addicted:

> Physical dependence involves changes which are physiological. Firstly, this is shown by the smoker's tolerance to the effects of nicotine. This is due to changes at the synapses. The smoker also has an increased capacity to metabolise and excrete the drug, mainly in the liver. . . .
>
> Secondly, when the intake of nicotine is reduced or discontinued, the smoker may experience withdrawal symptoms, resulting from the lessening of overactivity at the synapses. . . . Thus, withdrawal of cigarettes from heavy smokers may reduce them to a subjectively distressed state, with symptoms of anxiety, depression, irritability, restlessness, intense craving as well as difficulty in concentration. More will be discussed about the addictive quality of nicotine in the following section. . . .
>
> Research has shown that stimulation of the medial forebrain bundle of the hypothalamus can pleasurably occupy an animal to the exclusion of all other basic activities, e.g., eating, drinking, sexual activities. It seems likely that nicotine and other dependence-producing drugs owe part of their effectiveness to influencing this centre. . . .

> The blood-brain barrier is no barrier to nicotine which reaches the brain within a minute of a person lighting up. Its effect is short lived. In twenty to thirty minutes after the smoker has finished his cigarette, most of the nicotine has left his brain for other organs -- stomach, liver and kidneys -- and this is just about the time that the heavily dependent smoker needs his next cigarette.

680096095-6110 at 6103-6104 (US 53993).

1048. The BATCo memorandum once again documented the company's knowledge and acceptance of "compensation," that is, the means employed by smokers of lower nicotine cigarettes to obtain higher doses of nicotine:

> If the nicotine level of cigarettes fails to completely achieve the desired mood change, that cigarette will be drawn on deeper, the smoke held longer, and consumption will rise. . . . Reductions in nicotine are therefore compensated for by consumers but the limit to which they can compensate for the diminished nicotine/diminished therapeutic efficacy is unknown. R&D is studying this subject at the present time.

680096095-6110 at 6095 (US 53993).

1049. Like Philip Morris and R.J. Reynolds, BATCo internally acknowledged and understood smoker compensation. BATCo knew from scientific studies using its own employees that smokers smoked for nicotine and compensated, or changed their smoking behavior, when smoking lower nicotine cigarettes. Two such studies carried out by BATCo in 1974 and 1978, respectively, using reduced nicotine cigarettes demonstrated these conclusions. D.E. Creighton's report of these studies stated that smokers compensated for reductions in nicotine yield by smoking more intensely:

> Comparison of the two data sets shows that the lower delivery cigarette has been smoked more intensively. . . . It can be reasonably inferred that the smokers in this panel received similar amounts of nicotine from both cigarettes. . . .

> The fact that smokers have changed their smoking patterns to take more smoke from a cigarette with lower nicotine delivery but similar TPM [total particulate matter, or tar] delivery adds support to the contention that nicotine is a major determinant of smoking behaviour. . . .

650008946-8960 at 8948, 8954 (US 85318).

1050. A March 1, 1979 "Restricted" BAT report written by Creighton summarized a collaborative scientific study between BATCo and British scientist M.A.H. Russell at the "Addiction Research Unit." The research project studied smoker compensation to obtain more nicotine, and utilized a standard low nicotine/low tar cigarette and a modified high nicotine/low tar cigarette. BATCo and Russell determined that smokers compensate less when given high nicotine/low tar cigarettes, and compensate more when given low nicotine/low tar cigarettes. According to the report, while Dr. Russell's interest in the study was "from the health point of view," BATCo participated in the work "from a commercial point of view." 650010157-0193 at 0174, 0183 (US 85292).

1051. The BATCo/Russell study also reported that the high nicotine cigarettes produced "giddiness," a reflection of the intoxicating properties of nicotine:

> Some smokers, in fact, felt giddy while smoking the [high nicotine/ low tar] cigarette, presumably because they used the mouth sensations as cues to estimate their smoke intake. As a result of taking sufficient smoke to cause acceptable mouth sensations, they would receive nearly twice as much nicotine as usual, resulting in the feeling of giddiness.

650010157-0193 at 0179 (US 85292).

1052. In an April 11, 1980 BATCo document titled "What Three Radical Changes Might, Through the Agency of R & D, Take Place in this Industry by the End of the Century," a team of

BATCo scientists (composed of Crellin, Ferris, Greig, and Milner) forecast what the industry would have to cope with in the near future. The scientists stated that:

> B.A.T. should learn to look at itself as a drug company rather than as a tobacco company. The mood affecting drug requirements of the population will in the future increase but the range of requirements will encompass tranquillisers e.g. valium, endorphin/enkephalin (brain opiates), marijuana, nicotine analogues, etc. At present, the taking of many of these drugs is either medically prescribed or regarded as deviant behaviour, but could be "socialized" like alcoholic drinking and tobacco smoking.

109884190-4191 at 4190 (US 21557).

1053. According to the April 1980 typed notes of BATCo scientist Dr. Lionel Blackman, the company needed to address the anticipated issue that, "Although nicotine will be considered by some doctors to be less harmful than tar, there will be increasing recognition by some medical authorities that smoking is a nicotine dependent activity." 301140125-0128 at 0126 (US 85294).

1054. In a "Strictly Private and Confidential" document written in May 1980 by T.W. Kidd, a public relations officer at BATCo from 1948-1983, Kidd provided the following information to assist the company in formulating a new company position on smoking and health:

> <u>Addiction/Habituation</u>
>
> This is another aspect of the smoking and health issue which cannot be overlooked. Unlike dangerous sports and other high risk activities (except the drinking of alcohol) smoking is addictive/habituative in addition to being an additional risk and many smokers would like to give up the habit if they could. This does not mean that we must contribute to health education or to "quitting clinics" but it does mean we have to act even more responsibly than if the consumption of our products were purely involving a minority of consumers in an additional risk.

109881332-1335 at 1335 (US 34929). Despite Mr. Kidd's recommendations for a corporate position that reflected the addictiveness of cigarettes, no new company position was ever announced.

1055. A March 31, 1981 "Restricted" research report titled "Nicotine Studies: A Second Report, Estimation of Whole Body Nicotine Dose by Urinary Nicotine and Cotinine Measurement" documented BATCo's research into accurately measuring nicotine intake by rats forced to inhale cigarette smoke. The authors, BATCo scientists G. Read, I.G.M. Anderson, and R.E. Chapman, wrote that the studies were "particularly relevant to the development of an understanding of an individual smoker's daily nicotine requirement and the relationship between nicotine dose and smoking behaviour under conditions of brand switching/delivery modification." 650030769-0802 at 0779-0780 (US 53428). The March 31, 1981 report built on an earlier BATCo scientific study into "nicotine dose" dated May 21, 1980, titled "Method for Nicotine and Cotinine in Blood and Urine," written by the same scientists. In this earlier study into methods to measure nicotine in humans, the authors stated that "the pharmacological response of smokers to nicotine is believed to be responsible for an individual's smoking behaviour, providing the motivation for and the degree of satisfaction required by the smoker." 650032386-2428 at 2389 (US 87119).

1056. Under cover letter dated April 7, 1982, BATCo's G. O. Brooks forwarded an internal nicotine study by Creighton titled "Human Smoking Behaviour" to researchers at B&W. In Creighton's report, he restated the "sine qua non" role of nicotine in smoking and discussed withdrawal and compensation:

> Nicotine is the most pharmacologically active constituent in tobacco smoke and is probably the most usual factor responsible for maintaining the smoking habit. . . .

> Nicotine has pharmacological effects both in the brain and other parts of the body. Some of these effects are due to nicotine itself whereas others are due to nicotine causing a release of other substances within the body such as adrenaline. . . .
>
> The smoker . . . who smokes to maintain a constant blood level of nicotine is most likely trying to avoid the unpleasant sensations that he feels when he is not smoking. Without a cigarette he will become nervous, irritable and likely to make mistakes in his work. Such a smoker is likely to compensate for changed delivery if given a cigarette with different standard machine smoked deliveries to his usual brand so that as far as possible he maintains a constant blood level of nicotine. . . .
>
> It is possible to consider nicotine as the component of cigarette smoke that controls the amount of smoke that a smoker takes from a cigarette.

660913609-3633 at 3616-3618 (US 22763).

1057. Brooks's April 7, 1982 memorandum and the attached report also show the in-depth knowledge that both BATCo and B&W had of compensation as well as their goal to maintain addiction by maintaining a minimum delivery or "dose" of nicotine in their products:

> The simple answer would seem to be to offer the smoker a product with comparatively high nicotine deliveries so that with a minimum of effort he could take the dose of nicotine suitable to his immediate needs. . . . If delivery levels are reduced too quickly or eventually to a level which is so low that the nicotine is below the threshold of pharmacological activity then it is possible that the smoking habit would be rejected by a large number of smokers.

660913609-3633 at 3619-3620 (US 22763).

1058. The paper attached to Brooks's 1982 letter resembled and borrowed from the 1978 paper by Dr. Creighton titled "Compensation for Changed Delivery." See Section V(B)(3)(c)(¶¶ 1042), supra, and Section V(E)(2)(b)(¶2215), infra. In this earlier paper, Dr. Creighton stated that the company's knowledge of compensation by smokers of low nicotine yield cigarettes came from

research "carried out in Hamburg, Montreal, and Southampton within the company," research showing that "smokers do change their smoking patterns in response to changes in the machine smoked deliveries of cigarettes." 105553905-3915 at 3906 (US 34799).

1059. In a March 25, 1983 memorandum titled "Project Recommendations," which described the relationship of nicotine level to switching behavior, BATCo researcher Andrew J. Bellman stated that "nicotine is the addictive agent in cigarettes." 514110006-0009 at 0007 (US 21745).

1060. In a January 26, 1984 research paper, BATCo researcher Colin C. Greig stated that because nicotine "is the major or sole pharmacologically active agent in smoke, it must be presumed that this is the preferred method of absorption and thus why people inhale smoke." 650547777-7787 at 7786 (US 20950).

1061. A March 22, 1984 report titled "Receptors for Nicotine in the Central Nervous System," written by BATCo scientist W. W. Templeton, documented the company's research into the psychoactive effects of nicotine and specific sites (receptors) in the brain where nicotine binds within the central nervous system. The study "confirm[ed] the existence of specific binding sites for nicotine in the CNS" and speculated that the results "may help to explain the development of tolerance to nicotine." The Executive Summary described the research and its link to the design and manufacture of cigarettes:

> This report is the first in a series of studies designed to identify and characterize how nicotine derived from cigarette smoke can interact with the body, and in particular the active centres of the brain. This specific interaction is believed to form an essential element of a smoker's satisfaction. . . .

> The report describes in detail the development and application of techniques to identify and characterise regions within brain tissue where nicotine can bind and elicit a pharmacological response. . . .
>
> The findings will be used as appropriate in the process of developing lower delivery products with full smoking characteristics.

650000996-1034 at 0998, 1011, 1014 (US 53388).

1062. Later in the 1984 report, the author reviewed the evidence on smoking "motivation" and concluded:

> Taken together, the evidence suggests that self-administration of nicotine may be the primary motivation for smoking. While this may not be true for every smoker, each smoker (who inhales the smoke) absorbs a quantity of nicotine during each puff sufficient to have extensive physiological and pharmacological effects, regardless of the motivation for smoking. . . .
>
> Primarily, nicotine is taken for its effects on the CNS, the peripheral consequences of nicotine administration, such as increased heart rate and blood pressure, being unwanted side effects.

650000996-1034 at 1001-1002 (US 53388).

1063. In June 1984, BATCo held a three-day Nicotine Conference attended by representatives of BATCo and B&W. According to the conference agenda, one topic for discussion was "A Smoker's Requirement for Nicotine - A Smoking Behaviour and Marketplace View." The accompanying conference notes stated that

> Considerable indirect evidence has been accumulated that suggests inhaling cigarette smokers smoke for nicotine and presumably the pharmacological effects of nicotine.

512106427-6437 at 6428, 6433 (US 20846).

1064. Another topic at the BATCo Nicotine Conference was called "Product Modification for Maximal Nicotine Effects." Under this heading, the authors stated that in order to "maximise

nicotine effects," the company must understand "what constitutes an adequate and suitably 'packaged' dose of nicotine to satisfy a smoker's 'requirements.'" 512106427-6437 at 6435 (US 20846).

1065. BATCo prepared a final report on the Nicotine Conference. It contained summaries of many of the presentations made by BATCo researchers and executives to conference attendees. These summaries revealed BATCo's intimate knowledge of smoker regulation of nicotine (compensation), smokers' "threshold requirement" of nicotine, "product elasticity," "nicotine dose" measurements, "pharmacokinetics of nicotine," "the sensory and psychological effects of nicotine," central nervous system effects of nicotine, and "smoke manipulation involving pH modification" and other product design modifications. 101234971-5018 (US 21645).

1066. One month after its Nicotine Conference, BATCo held a conference on smoking behavior and marketing. In Session III of the July 1984 conference, again attended by B&W representatives, C. Ian Ayres, a BATCo Research Advisor, summarized information from the earlier nicotine conference, including the following:

> Many smokers appear to smoke to a constant intake of nicotine. As yet, however, we do not know whether most smokers are aiming to achieve a "satisfactory" average level of nicotine circulating in the body, or whether they are seeking an optimum peak nicotine level after each cigarette. . . .
>
> The presentation was concerned with summarising and outlining the central role of nicotine in the smoking process and our business generally. . . . The extent to which smokers smoke for nicotine was discussed and it was agreed that it is unlikely that all smokers smoke for nicotine. However, only products containing nicotine have widespread use. . . .

536000308-0507 at 0330-0332 (US 85298); 109869361-9369 (US 87120).

1067. Attendees at the July Conference were informed that, "[a]lthough intentions and attempts to quit are relatively high (30-40% of smokers) the actual success rate is relatively low and stable." 402426650-6677 at 6676 (US 87121).

1068. Nicotine was a major component of nearly every presentation and discussion. For example, BATCo Group Leader Graham Read delivered a presentation titled "Current Status and Future Direction of Smoking Behaviour Research." In his presentation, Read observed the "strong indirect evidence of smokers smoking for nicotine" as representing a "cause and effect" relationship. Read stated that the significance of his observation was that "smoking maintenance" is accomplished through nicotine, and that "in its simplest sense puffing behaviour is the means of providing nicotine in a metered fashion." 536000000-0090 at 0045-0063 (US 22338).

1069. A BATCo report on the company's Research and Development conference in September 1984, prepared by BATCo Scientist/Director Dr. Lionel Blackman, emphasized the need for further research related to smoker behavior and nicotine. The report advised that BATCo needed to research whether smokers smoked for the "transient peak effects" of nicotine or instead sought "threshold base-line levels throughout the day." The report also recommended research into means of "influencing nicotine transfer from the product to the smoker -- and the commercial viability of such means." According to the R&D conference report, "Nicotine remains a top priority." 109872430-2447 at 2439, 2443 (US 23340).

1070. A September 1984 BATCo document titled "Research Conference, GR&DC Research Programme" stated some objectives of BATCo's in-house behavioral/nicotine research. For example, the memorandum summarized planned nicotine/pH modification experiments, research focusing on the "mechanisms of nicotine interaction with the central nervous system," and human

studies to better determine "the minimum dose of smoke nicotine that can provide pharmacological satisfaction for the smoker." 109869520-9522 at 9521 (US 87122).

1071. All the evidence presented shows that BAT Group research was premised on the position that nicotine was the critical component of cigarettes that kept smokers smoking. In an October 15, 1985 memorandum from German BAT scientist E. Kausch to B&W's Vice President of Research and Development, Kausch followed up on a recent "Oxford Conference" with the statement: "There is no daupt [sic] that nicotin is the compound which makes tobacco use to [sic] such a widespread habit. This means that nicotin research should be a central part of BAT's research efforts.[sic]" 510000642-0644 at 0643 (US 85300).

1072. A June 1988 internal BATCo report titled "The Significance of pH in Tobacco and Tobacco Smoke" summarized BATCo's in-depth knowledge with respect to manipulating smoke pH and increasing "free base" nicotine in order to increase the nicotine delivery to smokers in the mouth and lungs. 500104402-4424 (US 21492).

1073. A 1988 BATCo document titled "A Meeting of Scientific Research Group, Montreal, August 6th-8th 1988" reported on the results of a U.S. smoking behavioral study that "strongly point[ed] to nicotine as the basis of the smoking habit." The document also demonstrated the existence of compensation, reporting that "plasma nicotine levels were almost constant, regardless of measured nicotine delivery levels, as were the number of cigarettes smoked per day". 100993169-3173 at 3169 (US 34677).

1074. A January 15, 1991 BATCo document titled "BATCo Operating Group Five Year Plan 1991-1995" contained a section on "The Fundamental Research Centre." In this section, when discussing key research projects regarding "tar/nicotine ratio reduction," the plan stated that:

> Basic research will continue into products delivering adequate levels of nicotine with minimum levels of other components, focusing on: tobacco treatments leading to reduced tar formation; novel sheet materials capable of controlled release of nicotine/flavourants; and enhancement of the transfer of nicotine/flavourants of smoke.

201752783-2899 at 2838 (US 85452).

1075. In an undated 1992 marketing document titled "Structured Creativity Group," BATCo's Product Developer, Colin Greig, described cigarettes as a "'drug' administration system for public use" with "very very significant advantages over other drugs." Because "nicotine is the lowest dose 'common' drug available," it compared favorably to other "slower" drugs such as marijuana, amphetamines, and alcohol." Greig wrote that, "Within 10 seconds of starting to smoke, nicotine is available <u>in the brain</u>." The memorandum also notes BATCo's acceptance that smokers of low tar products "compensate," or modify their smoking behavior, in order to obtain more nicotine. 100503495-3506 at 3496, 3499 (US 76168) (emphasis in original).

1076. Greig described tobacco as "a fast, highly pharmacologically effective and cheap 'drug'" contained within a "relatively cheap and efficient delivery system." At the close of his memorandum, Greig observed that because cigarettes leave smokers unsatisfied and always craving more, "all we [BATCo] would want then is a larger bag to carry the money to the bank." 100503495-3506 at 3497, 3505 (US 76168).

1077. An undated BATCo memorandum written by D.E. Creighton, titled "Structured Creativity Group Presentation," listed the following as one of smokers' needs:

> High on the list of consumer needs is nicotine, which I believe to be the main motivator and sustainer of smoking behaviour. Without nicotine in sufficient quantity to satisfy the needs of the smoker, the smoker can (a) give up altogether, (b) cut back to a low purchase level, (c) keep switching brands.

102690336-0350 at 0340 (US 21681).

1078. In his memorandum, Creighton was careful to distinguish the need for nicotine from the importance of flavor and quality to cigarette consumers. At the close, he noted that BATCo had "tried the low [nicotine] delivery product route with limited success. This might be because the nicotine in such products is below the pharmacological threshold of effectiveness." 102690336-0350 at 0345, 0350 (US 21681).

1079. BATCo conduct and/or funded voluminous internal studies on nicotine and its effect on the human body. The clear import of these studies, taken as a whole, was that BATCo knew that nicotine was essential to smoking cigarettes, essential to addiction, and therefore essential to its business of selling cigarettes. Many of these reports bear stamps indicating they were shipped to B&W. Such reports include: "Nicotine in Smoke and Human Physiological Response," dated March 26, 1970, 682638843-8864 (US 25454); "Relative Contributions of Nicotine and Carbon Monoxide to Human Physiological Response," dated November 15, 1971, 682638479-8516 (US 25451); "The Transfer of Nicotine From Smoke Into Blood Using a Perfused Canine Lung," dated February 28, 1967, 750003524-3551 (US 87125); "Subjective Evaluation of Select Flue-Cured Tip Grades," dated August 20, 1968, 750067063-7084 (US 87126); "The Absorption of Nicotine Via the Mouth: Studies Using Model Systems," dated May 9, 1965, 750004644-4702 (US 87127); "The Effect of Puff Volume on 'Extractable Nicotine' and the Retention of Nicotine in the Mouth," dated August 21, 1969, 750040142-0159 (US 87128); "Further Studies on the Effect of Nicotine on Human Physiological Response," dated June 5, 1973, 750009778-9808 (US 87129); "Acute Effect of Cigarette Smoke on Brain-Wave Alpha Rhythm - First Report," dated October 31, 1974, 750055087-5106 (US 87130); "Interaction of Smoke and the Smoker Part 3: The Effect of Cigarette Smoking

on the Contingent Negative Variation," dated December 12, 1974, 750012293-2319 (US 87131); "Some 'Benefits' of Smoking," dated January 26, 1977, 750016323-6339 (US 87132); "Further Work on 'Extractable' Nicotine," dated September 30, 1966, 83916527-6596 (US 55968); 650010113-0156 (US 53397); 566632813-3254 (US 87134); 110083654-3673 (US 87135).

d. Brown & Williamson

1080. Like the other cigarette company Defendants, B&W was also well aware of the addictive quality of smoking and nicotine. Despite the company's public denials, it has consistently admitted internally that smoking is an addiction, smokers need nicotine, and smokers suffer withdrawal when deprived of nicotine.

1081. Much of B&W's knowledge of nicotine and its addictive qualities originated with its parent company, BATCo, which, as has already been noted, regularly communicated its research results to B&W and other BAT Group affiliates. One of the earliest examples of the trans-Atlantic exchange of knowledge, was the forwarding, by Sir Charles Ellis of both BATCo's "Project HIPPO" results and the BATCo report titled "The Fate of Nicotine in the Body" to B&W's chief executives Bill Cutchins and Ed Finch under cover letter stamped "Received" on July 1, 1963. 689033419-3419 (US 87136).

1082. Shortly thereafter, B&W Executive Vice President and General Counsel Addison Yeaman commented in writing on the BATCo nicotine research carried out in England under the code names HIPPO I and HIPPO II, as already discussed. In a July 17, 1963 memorandum marked "Strictly Private and Confidential," Yeaman was persuaded by the findings of the research, in particular the researchers' conclusions on the "tranquillising" effects of nicotine. Most significantly, Yeaman also concluded that, “nicotine is addictive." He further wrote, as has been quoted many

times, in many places: "We are, then, in the business of selling nicotine, an addictive drug effective in the release of stress mechanisms." 689033412-3416 at 3415 (US 22034).

1083. B&W intentionally concealed Yeaman's conclusions, and the sophisticated nicotine research in the possession of both BATCo and B&W was not disclosed to the Surgeon General's Advisory Committee which was then in the process of writing the early drafts of the 1964 Surgeon General's Report. See Section V(A)(4), supra.

1084. On September 13, 1963, B&W scientist Robert B. Griffith wrote a letter to BATCo's John Kirwan responding to his questions about the importance of nicotine. Dr. Griffith wrote:

> [N]icotine is by far the most characteristic single constituent in tobacco and the known physiological effects are positively correlated with smoker response. . . . [W]e have a research program in progress to obtain, by genetic means, any level of nicotine desired.

102630333-0336 (US 23000).

1085. B&W participated in a Tobacco Chemists Conference in October 1964. According to the "CONFIDENTIAL" report of the conference, tobacco company scientists delivered a number of papers to conference attendees. One paper called "Do We Know What We Are Talking About?" was presented by W. S. Paige of the Imperial Tobacco Company.[14] In his presentation, Paige described the "Physiological Strength or Potency" of tobacco, suggesting very early knowledge among tobacco industry scientists of nicotine's psychoactive effects, and the connection to "subconscious" smoker compensation:

> S. Physiological Strength or Potency

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[14] BAT had a complex, but close, financial relationship with Imperial Tobacco Company.

> This is the property of tobacco which makes your head swim, and makes you feel 'weak at the knees' after rapid smoking. It is a direct effect on the metabolism which does not come through the sense organs. It affects muscular co-ordination, pulse rate and peripheral circulation. . . . It is very difficult to assess S by these reactions because a subconscious mechanism usually controls the rate of smoking to keep these effects small.
>
> [Physiological Strength or Potency] is usually assessed by considering whether the cigarette was "satisfying." "The cigarette satisfied my need for a cigarette (even though it may have tasted horrible), I did not want to light another cigarette immediately afterwards."

650378968-9132 at 9036 (US 85303).

1086. Representatives of Philip Morris, RJR, B&W, BATCo, Lorillard, and Liggett attended and presented papers at the same October 1964 conference. 2012614167-4279 at 4176-4182 (US 85304).

1087. In August 1967, B&W commissioned a report on addiction titled "A Psychological Map of the Cigarette World." The stated purpose of the report was "to provide a resource of information regarding those consumer needs, habits, and attitudes which shape the current cigarette market" and to "serve as a platform for the development of responsive marketing and advertising strategies." B&W's recognition of the important link between the addictiveness of its products and the shaping of the cigarette market exhibits, as far back as the mid-1960s, an acute understanding of smoker guilt, anxiety, and inability to control what is clearly perceived to be harmful, unhealthy behavior. 680282619-2668 at 2620 (US 85305).

1088. This 1967 report commissioned by B&W summarized the responses of some 1,400 smokers and included the following commentary:

> Most smokers see themselves as addicts. . . . Many fear they'd "fall apart" if they quit. . . . Interpretively, the typical smoker feels guilty

> and anxious about smoking but impotent to control it. Psychologically, most smokers feel trapped.
>
> Speculatively, the decision to smoke is psychologically motivated. Once that decision is made, smoking frequency is physiologically determined, with the addiction becoming more severe as smokers grow older.
>
> People who smoke plain cigarettes are strongly addicted but deny anxiety about smoking. . . . [They] hate to run out of cigarettes. . . . [They] admit they'd be a nervous wreck if they ran out of cigarettes.

680282619-2668 at 2625, 2632, 2635 (US 85305) (emphasis in original).

1089. The 1967 report focused in part on smokers of B&W's Viceroy and Kool brands. With respect to the Viceroy market, the report found that "attractions to Viceroy are strong, but its appeals represent a threat to the addicted mass." With respect to Kool, the report concluded that "The Kool smoker feels he smokes too much -- but does not want to stop . . . is 'hooked' and more openly anxious than menthol smokers generally." 680282619-2668 at 2656, 2660 (US 85305).

1090. B&W has long known that nicotine is the most important component of cigarettes, that nicotine is the most important component of addiction, and that without nicotine, people would not smoke. For example, B&W's Director of Research and Development, I.W. Hughes, gave the following response, on March 13, 1970, to an article raising questions about a link between nicotine and coronary heart disease:

> This section of the paper is of some interest in that (a) there is the lead to take pressure off nicotine. This is very important to us; we can cope with reducing carbon monoxide, however difficult, but reduction or deletion of nicotine could be death to us.

680252107-2109 at 2108 (US 85306).

1091. A February 22, 1972 "Private and Confidential" report by B&W researcher J.E. Kennedy, distributed to executives, including General Counsel Yeaman, was titled "Beneficial Aspects of Smoking." Kennedy's paper reviewed a number of studies, including studies focusing on nicotine's effects on animal behavior. Kennedy described studies showing that monkeys developed a "strong preference for tobacco smoke" over air, and would "spend time smoking in preference to other available activities," and even learned to self-inject nicotine. 690008455-8462 (US 54320).

1092. B&W was also privy to internal nicotine reports from other cigarette manufacturers. In a 1973 "Confidential" marketing long-term planning memorandum, the company summarized BATCo and Philip Morris research, as well as some secondary studies. The memorandum acknowledged the drug-like effects of nicotine, and that "cigarettes allow people to self-administer nicotine and at a self-determined rate." The memorandum flatly stated that "Nearly all regular smokers are nicotine dependent" and described the smoking behavior of addicted smokers. 680096095-6110 at 6096, 6099, 6106 (US 53993).

1093. As the following excerpts demonstrate, the Memorandum directly addressed a number of the criteria used to determine addiction. The 1973 "Confidential" memorandum described tolerance to nicotine:

> As the novice [smoker] acquires tolerance to the irritation of the smoke over a period of two or three years, he becomes conditioned to a high and regular intake of nicotine. . . .
>
> Physical dependence involves changes which are physiological. Firstly, this is shown by the smoker's tolerance to the effects of nicotine. This is due to changes at the synapses. The smoker also has an increased capacity to metabolise and excrete the drug, mainly in the liver.

Id. at 6095, 6101, 6103.

1094. The memorandum also accepted and described the adverse withdrawal symptoms experienced by smokers who abstain:

> The rush of nicotine into the blood stream and nervous system is short-lived; therefore, reducing consumption would cause withdrawal and all of its unpleasant side effects so long as the smoker is restricted from smoking. Nicotine vacates the system in 30 minutes or so and at that time withdrawal starts.

Id. at 6096.

1095. The memorandum further described the concept of nicotine compensation by smokers to obtain the desired amount of nicotine:

> If the nicotine level of cigarettes fails to completely achieve the desired mood change, that cigarette will be drawn on deeper, the smoke held longer, and consumption will rise. . . . Reductions in nicotine are therefore compensated for by consumers but the limit to which they can compensate for the diminished nicotine/diminished therapeutic efficacy is unknown. R&D is studying this subject at the present time.

Id. at 6095.

1096. Finally, the memorandum summarized external research suggesting smokers are, in effect, drug addicted:

> [M]onkeys can be trained to inject themselves with nicotine for its own sake, just as they will inject other dependence-producing drugs, e.g., opiates, caffeine, amphetamine, cocaine . . . in the 1970s and 1980s In twenty to thirty minutes after the smoker has finished his cigarette, most of the nicotine has left his brain for other organs -- stomach, liver, and kidneys -- and this is just about the time that the heavily dependent smoker needs his next cigarette.

Id. at 6104.

1097. Minutes taken at a 1974 B&W/BATCo conference included the conclusion: "Whatever the characteristics of cigarettes as determined by smoking machines, the smoker adjusts his pattern to deliver his own nicotine requirements." 2502272091-2096 at 2092 (US 45990).

1098. In January 1974, B&W hired an advertising agency to study the market for its new cigarette Raleigh Extra Milds. The specific goal of the study was to "aid in the development of future marketing and creative planning for the new Raleigh cigarettes." The advertising strategy presented to B&W included the following broad observations:

> obviously the negative aspects of smoking outweigh the positives, so much so that many of the men and women interviewed had attempted to quit or at least considered quitting smoking. Apparently the Surgeon General's warnings have had a considerable impact upon smokers' attitudes toward their habit if not their behavior.
>
> However, as additional evidence of the addictive qualities of smoking, those who tried to quit, both male and female, admitted great difficulties in overcoming the psychological and/or the physiological urge or craving to smoke. Their presence in these discussions attests to their lack of success.
>
> The inability to quit or even attempt to quit often results in some degree of guilt and the admission to one's self of a "dependency" on cigarettes or a lack of willpower.

680289650-9743 at 9665 (US 85307).

1099. In August 1975, B&W commissioned a marketing report titled "New Product Ideas Developed for B&W." One exhibit to the study created an "Addiction Profile" to describe the relative intensity of smoking motivation. The study then divided smokers into three groups, "Mainstream" smokers, "Compromisers," and "Justifiers." "Compromisers" were defined as those "heavily addicted" smokers who have made "many attempts to quit" and were "searching for a

solution to their problem." "Justifiers," in contrast, referred to those who were "less addicted" and who were "quick to rationalize." 680287748-7895 at 7770, 7773 (US 85308).

1100. In a section of the report titled "Background Information on Cigarette Smoking Habits," the report emphasized a smoker's "need" for cigarettes:

> At times, a person smokes because it is something he depends on to keep going, in order to be able to function and to face the problems in daily life. This is when a cigarette is needed. . . . Let's take first the situations where a cigarette is needed. This is usually characterized by its being smoked quickly, where the smoker is hardly aware that he is smoking. It serves to relieve tension, frustration, irritation, or insecurity. It has a calming effect. Here the relaxation is of the type of a quick, crucial shot in the arm.

680287748-7895 at 7835 (US 85308).

1101. In 1977, a B&W advertising conference was held at the company headquarters in Louisville to review company research and discuss the company's advertising for a "Low Tar High Nicotine Cigarette." The conference report included the following under the heading "Goals/Wishes":

- MULTIPLY NICOTINE RUSH
- get across to consumer that what he likes (NICOTINE) is not what hurts (TAR)
- have FREE NICOTINE as opposed to BOUND
- show VALUE OF NICOTINE (lift, A.M. Starter)
- market an ADDICTIVE PRODUCT in an ETHICAL MANNER

777125397-5403 at 5398 (US 54625).

1102. In the years that followed, according to M. Lance Reynolds, former Director of Product Development and Director of Research, B&W "did a lot of work on trying to develop a quote, low-tar, normal nicotine, closed quote, cigarette." Dr. Reynolds stated that from the beginning of his career at B&W in 1968, the company and other BAT Group member companies had "projects to try and increase nicotine delivery with respect to tar, for many years." Reynolds PD, Minnesota, 9/30/97, 137:10-137:15; 777125397-5403 at 5398 (US 54625).

1103. The importance of nicotine was also emphasized in the B&W Research and Development Department. In a November 28, 1977 memorandum by researcher G. E. Stungis titled "Long-Term Product Development Strategy," one of the overarching stated objectives was that "products must provide the appropriate levels of nicotine. . . ." 501011512-1515 at 1513 (US 85309) (emphasis in original). Moreover, a significant part of the overall B&W strategy was the ability to:

> Recognize that nicotine is a vital component to overall smoker satisfaction. Methods to optimize the mainstream smoke nicotine delivery with respect to pharmacological effects will be explored/developed.

Id. at 1513.

1104. An August 24, 1978 B&W memorandum to M. J. McQue from Assistant Brand Manager H. David Steele titled "Future Consumer Reaction to Nicotine" stated: "Very few consumers are aware of the effects of nicotine, i.e., its addictive nature and that nicotine is a poison." 665043966-3966 (US 21485); 776078962-8962 (US 87137).

> Is there not some way open now to use the knowledge we have gained in this area of tobacco and smoke research to give B&W a competitive advantage over its competition? It appears that we have sufficient expertise available to "build" a lowered mg tar cigarette which will deliver as much "free nicotine" as a Marlboro, Winston,

> or Kent without increasing the total nicotine delivery above that of a "Light" product.

654005805-5807 at 5806 (US 85447).

1105. B&W scientist Tilford Riehl, who later became Vice President of Research and Development, received Gregory's "file note" and commented on an alternative to Gregory's proposal to increase "free" nicotine to boost "physiological satisfaction." While accepting Gregory's data and concept, Riehl proposed maximizing the effects of nicotine on smokers in a different way. Riehl wrote in the margin:

> Several of us have proposed an alternative (almost opposite) approach -- design a low tar cig with high total nicotine/low to moderate % free nic. Theory: provide cig with "appropriate" level of sensory satisfaction/higher than usual "pharmacological" satisfaction. (emphasis in original)

510000667-0670 (US 51496).

1106. B&W was given a November 1995 document prepared by Shook, Hardy & Bacon compiling and quoting from company materials that admitted nicotine manipulation by increasing "free" or "bioavailable" nicotine delivered by cigarettes. The report commented on the two 1980 documents written by Gregory and Riehl, documents that supported accusations by the FDA that B&W (and the other cigarette manufacturers) intentionally made and marketed cigarettes with nicotine effects greater than the FTC machine-measured yields:

> Gregory appears to be urging that B&W engage in a manufacturing and marketing practice of which the FDA accuses the company -- that accusation being that the company designs, manufactures and markets cigarettes with a pharmacological impact which is greater than FTC yields imply. Thus, Gregory's comments are of interest in the regulatory and litigation context.

689201723-1770 at 1753-1754 (US 31049).

1107. With respect to Riehl's written comments on Gregory's memorandum urging a low tar product with high total nicotine with moderate "free" nicotine, the Shook, Hardy & Bacon report stated that: "[T]his marginalia comment, of course, raises an issue of the motivations of the company in designing cigarettes to provide 'pharmacological satisfaction' to smokers." Id. at 1754.

1108. In February 1980, BATUS, Inc. (B&W's holding company, also located in Louisville, Kentucky) commissioned a detailed marketing plan for a "less hazardous cigarette" tentatively named "Limit." The proposal reflected the company's belief that smoking was both hazardous and addictive. The new cigarette would address the problem of addiction by offering "higher nicotine content to satisfy smokers' needs with fewer cigarettes . . . thus less potential harm." The report proposed advertising to physicians that, "Recent studies show that even under optimal conditions, it is unlikely you will persuade more than 5% of smokers to quit. So for the other 95%, do the next best thing. Switch them to new LIMIT." 501025519-5609 at 5564-65 (US 85310).

1109. The background research underlying the 1980 BATUS marketing proposal found that physicians had a "little or no success in getting patients to stop smoking cigarettes" and even suggested that providing the smoker with a less harmful cigarette product is equivalent to providing a heroin addict methadone. The less harmful cigarette, like methadone, was referred to as the "lesser evil," a "compromise" for the smoker who cannot quit the addiction. The writers asked rhetorically, "Why won't we help a cigarette addict get his 'fix' in the least damaging way possible?" It was proposed that the "Limit" product would be made available only through pharmacies and would be introduced via physicians "in the same way that a new drug is presented." Id. at 5544-45, 5573.

1110. The 1980 BATUS proposal specifically recognized and emphasized the smoker's "physical need," "withdrawal" effects, and the high rates of recidivism. A sample promotion letter

to physicians instructed that, "Low nicotine cigarettes are not a viable compromise. Studies have shown . . . that when patients switch to low nicotine brands, they usually increase the number of cigarettes they smoke daily. . . . Finally there is an alternative . . . for those patients whose sincere and dedicated efforts to stop have ended, again and again, in frustration, self-deprecation, and recidivism[.]" Id. at 5560-5561.

1111. A January 1982 B&W market analysis of smokers of its Belair brand reported in the section titled "Smoking Behavior and Attitudes" that: "Overall, the evidence shows that Belair smokers are extremely addicted to smoking and they know it." Belair also scored very high in factors indicative of dependency and "[a]ddiction." In fact, 94% of Belair smokers surveyed agreed with the statement, "I get a real urge for a cigarette when I haven't smoked for a while." (emphasis in original) 514107196-7249 at 7225, 7228 (US 85311).

1112. In a similar January 1982 B&W market analysis for its Viceroy brand of cigarettes, the company was told that, "Smokers of brands in Viceroy's competitive set are more addicted to smoking than smokers in general." 514107251-7302 at 7281 (US 85312).

1113. Later, in 1982, B&W carried out a "Smoker Personality Study" that segmented the cigarette market in terms of the level of addiction of the smokers. The stated purpose of the study was to provide the company "new insights helpful in the development and positioning of new and/or established brands." With respect to the market segments, smokers who fit into Segment IV were described as "somewhat addicted" and smokers in Segment VI were described as "addicted to smoking and often wished they never started." Smokers in Segment VIII, however, were described as "heavily addicted to smoking. To run out of cigarettes would be a real problem for them . . . from the moment they wake up they smoke." 514107303-7417 at 7336, 7350, 7364 (US 85313).

1114. B&W Group Product Director A.J. Mellman wrote a project memorandum on March 25, 1983, to other industry executives, including Senior Vice President for Marketing R.A. Blott, stating explicitly that nicotine is "addicting." The memorandum proposed several project ideas for the company, including a low tar cigarette with free nicotine added to the filter, based on the underlying premise that:

> Nicotine is the addicting agent in cigarettes. It, therefore, seems reasonable that when people switch brands, if they have a certain smoking pattern (i.e. number of sticks/day), they will switch to a brand at the same nicotine level.
>
> I am currently examining all brands by nicotine level and by nicotine/tar ratio levels, comparing those correlations to switching patterns.

514110006-0009 at 0007 (US 21745) .

1115. According to the record of a January 4 and 5, 1988 meeting in New York, B&W scientists Tilford Riehl and Lance Reynolds met with scientists from BATCo's other affiliates to discuss the progress of internal company nicotine research code-named "Project GREENDOT" and "Project AIRBUS," and to chart the course of the research for the 1990s. "Project AIRBUS" sought to develop a device similar to a non-combustible nicotine delivery product manufactured by RJR. "Project GREENDOT" sought "to produce a highly modified cigarette which maintains the delivery of nicotine to the smoker whilst reducing the delivery of tar." The goal of "GREENDOT" was to modify a 10mg tar / 0.8 mg nicotine cigarette to deliver 1mg tar / 0.8 mg nicotine. 620208779-8784 at 8782-8783 (US 85317).

1116. BATCo regularly forwarded its nicotine research reports to the B&W Research and Development Department and the company library for use by the company and its employees. The

critical importance of nicotine to the companies is evident in the titles and content of these reports. See, e.g., "Preparation and Properties of Nicotine Analogues - Part II," October 11, 1973, 657006301-6327 (US 53532); "Alpha Waves and Smoking: The Effect of Cigarette Smoking on the Alpha Density of Subjects," December 6, 1974, 657007342-7416 (US 53535); "The Effect of Smoking Deprivation on Smoking Behaviour," September 11, 1975, 650014873-4901 (US 53405); "Compensation for Changed Delivery," January 30, 1976, 650008449-8480 (US 76192); Dr. M.A.H. Russell's "Safer Cigarette" Study Report No. RD. 1652 (Restricted), March 1, 1979, 650010157-0193 (US 85292); "Preparation and Properties of Nicotine Analogues - Part III," June 20, 1979, 657006435-6487 (US 53534); "A Comparison of Smoking Surveys Separated by Four Years," June 28, 1979, 650008946-8960 (US 85318); "Method for Nicotine and Cotinine in Blood and Urine," May 21, 1980, 6650032386-2428 (US 53430); "Nicotine Studies: A Second Report, Estimation of Whole Body Nicotine Dose by Urinary Nicotine and Cotinine Measurements," March 31, 1981, 650030769-0802 (US 53428) ; "Receptors for Nicotine in the Central Nervous System," March 22, 1984, 650000996-1034 (US 53388); "The Functional Significance of Smoking in Everyday Life," April 24, 1984, 650000563-0740 (US 85393).

1117. B&W's law firm, Shook, Hardy & Bacon, prepared a document titled "B&W -- Addiction Notebook" for the company. The Addiction Notebook identifies numerous company documents (both B&W documents and documents sent to B&W by BATCo) admitting that (1) smoking is addictive, (2) nicotine is the primary addictive drug responsible for making smoking addictive, and (3) BATCo and B&W conducted and funded research over decades into the physiological and pharmacological properties of nicotine as a drug, as an essential element of

smoking, and as a commercial element necessary to the profitability of the cigarette industry. 689103834-4108 at 3980-4078 (US 75988).

e. Lorillard

1118. Many internal documents show that Lorillard also has also been aware for decades of nicotine's addictive properties and the importance of nicotine to cigarette smokers.

1119. In an August 1964 national survey titled "A Market Target -- Buying Incentive Study of Cigarette Market," Lorillard found that 66% of qualified respondents gave habit/addiction as a reason for continuing to smoke. 03492841-3067 at 2884 (US 21432).

1120. In an August 7, 1964 memorandum regarding "Potassium Carbonate," H.D. Anderson told Lorillard's legal counsel that "[t]here seems no doubt that the 'kick' of a cigarette is due to the concentration of nicotine in the blood-stream which . . . is a product of the quantity of nicotine in the smoke and the speed of transfer of that nicotine from the smoke to the blood-stream." 100059066-9067 at 9067 (US 20102).

1121. Like the other cigarette manufacturer Defendants in the 1970s and 1980s, Lorillard knew that the issue was not only nicotine, but the amount of "free" nicotine actually delivered to smokers. In a February 8, 1973 report to research department executives, Lorillard scientist A. M. Ihrig concluded that nicotine in alkaline smoke (high pH) is absorbed in the mouth and lungs far more rapidly than nicotine in low pH smoke, and that this phenomenon was due to the fact that "free," or readily absorbable, nicotine increased dramatically with pH. According to Ihrig, "a change in pH from 5.7 to 8.0 results in an increase of free nicotine from 0.69% to 58.3%." 00776238-6250 at 6239 (US 21477).

1122. Ihrig also noted the importance of "free" nicotine to the company's financial success: "Furthermore, the cigarette brands which are enjoying the largest sales increase generally have smoke pHs in the 6.5-7.0 range." He later adds that, "The smoke pH for Kool and Marlboro are 7.12 and 6.98, respectively, confirming the relationship between high smoke pH and cigarette sales increase." 00776238-6250 at 6239, 6245 (US 21477).

1123. Alexander Spears, Lorillard's Vice President of Research and later Lorillard Chairman and CEO, wrote a paper on the "elements of product acceptance" dated November 13, 1973. In his paper, Dr. Spears stated that one of the main elements of cigarette acceptance was "Physiological, being comprised largely of the nicotine-induced stimulation and thought coordination effects." Dr. Spears then stated that "it would be useful to have a wider range of control over nicotine than now exists," and that "[i]t is our present intent to develop low nicotine brands, with the maximum physiological impact, within the next year." 80634635-4642 (US 21063).

1124. Lorillard knew that nicotine was distinct from and not essential to the taste of a cigarette. In a March 2, 1976 presentation, the Will Graham Company advised Lorillard that "the taste of tobacco may be one of the least significant reasons why a person smokes," adding that, "it certainly ranks well below the impact of nicotine" for smokers. 01771073-1207 at 1079 (US 20052).

1125. A 1976 Lorillard internal review of nicotine scientific literature by H.S. Tong reported the following with respect to smoker compensation:

> A review has been made of the literature on the pharmacology of smoke-dose nicotine with the goal of discovering some indications of threshold dose and optimum doses of nicotine in the average cigarette smokers. . . . It seems that, within limits, smokers can and do control their nicotine intake from smoke by varying their smoking techniques. Nicotine has numerous sites of action and the response is an algebraic sum of its actions. . . . It seems that smokers smoke

> for both calming and stimulant effects. In a subjective study, test subjects reported that they found cigarettes of 0.8 mg to be acceptable.
>
> Despite the lack of definitive knowledge, it seems probable that smokers choose cigarette smoking for sensual, psychological, social, cultural, and pharmacological effects. The pharmacological effects are most likely due to the action of nicotine since the presence of a variety of other chemical components in the smoke in all probability is below their threshold level. . . . It is well known that the pharmacologic effects of nicotine at various sites are dependent on the dose, the dose schedule, and duration of exposure. Smoke dose nicotine has a stimulant action. It stimulates ganglia, and, therefore, it activates both the sympathetic and parasympathetic nervous systems simultaneously, the ultimate effects are the algebraic sum of its actions. Research in drug addiction indicates that the CNS [central nervous system] is the prime site of drug action. In order to understand the precise action of nicotine in the smoke habit, the CNS should be the logical site for study. . . .
>
> The purpose of this review is to determine if there were data which would indicate a threshold dose and an optimum satisfaction dose of nicotine for the majority of smokers.

83250863-0873 at 0863-0865 (US 55673).

1126. In a June 16, 1976 Lorillard memorandum titled "Progress Report on Nicotine Augmentation Project," H. J. Minnemeyer, the lead researcher on the company's nicotine augmentation programs, updated Spears on the progress of efforts to solve "the problem of delivering more nicotine in the smoke of low tar cigarettes." The memorandum described the various research projects being conducted by Defendants as well as the medical and scientific research articles that had been published on the subject. 95539652-9655 (US 56825).

1127. A July 16, 1976 Lorillard research proposal memorandum to H.J. Minnemeyer from M. S. Ireland, titled "Research Proposal -- Development of Assay for Free Nicotine," again acknowledged the scientific consensus that nicotine was the source of the addiction to smoking:

> Cigarette sales are made for one reason. The customer is satisfied with the product either from the taste or the physiological satisfaction derived from the smoke. The consensus of opinion derived from a review of the literature on the subjects indicates that the most probable reason for the addictive properties of the smoke is the nicotine. Indications are that the smoker adjusts his smoking habits to satisfy the desire of nicotine either by frequent or large puffs on the cigarette, or smoking a large number of cigarettes. . . . [I]t is generally agreed at this time that a "small" amount of free nicotine is more desirable than a "large" amount of bound nicotine.

82396938-6939 at 6938 (US 22012).

1128. In the mid-1970s, Lorillard embarked on another project called the "Lowered Nicotine Project." According to a November 9, 1976 memorandum from company Vice President for Marketing R.E. Smith to the research department, the project was abandoned. However, the memorandum disclosed that, despite Lorillard's contrary public declarations, the company was well aware of the importance of nicotine in sustaining smoking:

> After discussing the 50% Lower Nicotine Project with Dr. Spears, I agree that we should discontinue work. We all understand that this concept has considerable consumer trial appeal; as quantified by the NPSS concept study. However, it is our judgment that a cigarette with substantially lowered nicotine could not deliver the smoking satisfaction to sustain consumer purchase.

01244504-4504 (US 20042).

1129. Lorillard knew that nicotine shared attributes of opiates, and sought to use this knowledge to its advantage. A March 16, 1978 memorandum by Lorillard scientist R.S. Marmor summarized a lecture given at Lorillard by industry-funded scientist Leo Abood titled "In Search of a Site and Mechanism for Nicotine's Action on the Brain." Marmor reported that:

> Prof. Abood's lecture here on "In Search of a Site and Mechanism for Nicotine's Action on the Brain" was well attended and well received. . . . Theorizing that nicotine's activity is due to an

> accidental mimicry of some normally present but as yet unknown brain peptide (analogous entirely to the recent opiate-enkephalin research findings), it might be possible to determine the structure of this peptide from information about the receptor site. In any case, information we gain on the mechanism of nicotine activity may be useful in determining how to adjust physiological impact in our cigarettes. We intend to support Prof. Abood by supplying samples and performing some synthetic and computer work.

00110371-0371 (US 34404).

1130. In a February 13, 1980 Lorillard memorandum stamped "SECRET," marketing vice president Smith described the goal of the ongoing Lorillard nicotine research project called the "RT Information Task Force." The memorandum provided Lorillard executives, including Dr. Spears, details of the secret project:

> Goal -- determine the minimum level of nicotine that will allow continued smoking.
>
> We hypothesize that below some very low nicotine level, diminished physiological satisfaction cannot be compensated for by psychological satisfaction. At this point smokers will quit, or return to higher T&N [tar and nicotine] brands.

01394380-4381 at 4380 (US 21543).

1131. Senior Lorillard researcher S. T. (Tom) Jones prepared a lengthy "confidential" report dated July 30, 1980, for the research leadership in Greensboro titled "Five-Year Plan Preparation," in which he reviewed current literature on the "psychology of smoking." Jones wrote in a section presenting "A Review of Behavioral and Psychopharmacological Factors in Smoking" that, "Undoubtedly, nicotine serves a primary role in cigarette smoking." He also noted that, "A real problem in this whole area is the diversity of terms employed to say essentially the same thing." He later stated that:

> Considerable research in both the relative importance and mechanistic pathway of nicotine have [sic] been conducted. Although the role of nicotine is not completely understood, it is obviously one of the major factors associated with tobacco usage. Consumption of nicotine, administered either orally, intravenously, or via smoking elicits numerous responses including increased pulse rate, variations in skin temperature, and changes in brain wave patterns. Hutchinson and Emely take the position that nicotine is a powerful chemical reinforcer which reduces stressful and unpleasant stimulation.

01105000-5021 at 5001, 5002, 5009 (US 20030).

1132. Lorillard scientists also knew and accepted the phenomenon of nicotine compensation. Jones concluded in his memorandum that smokers of low tar products compensated ("titrated") to achieve a greater "nicotine dose":

> The evidence to date clearly indicates that smokers titrate or regulate their intake of nicotine, e.g. smokers of cigarettes which deliver large amounts of nicotine will adjust -- when given low nicotine cigarettes -- their smoking to get a larger nicotine dose than the machine determined values indicate. Also, smokers regulate their nicotine intake over time when smoking their regular brand.

Id. at 5010.

1133. Finally, Jones summarized research findings that "withdrawal is an identifiable syndrome" characterized by "anxiety and irritability," "an inability to concentrate and an intense craving for tobacco." Id. at 5013.

f. American Tobacco Company

1134. American has known since the 1940s that nicotine was essential to its products and was responsible for the physiological responses to smoking. An April 1940 document written by H. R. Hanmer, American's Director of Research, was titled "Memorandum on the Nicotine Content of Lucky Strike and Other Leading Brands of Cigarettes." The document contained a section called

"Importance of Nicotine in Tobacco and Tobacco Products." Hanmer observed that the following "facts" were "long common knowledge" at the company:

> The presence of nicotine as a universal constituent of tobacco leaf differentiates it from other plant material. Nicotine contributes to the gratification of smoking. Tobacco substitutes, devoid of nicotine, have not been accepted. . . .
>
> That any physiological response to the constituents of smoke is due to nicotine is generally accepted and has recently been confirmed. The malaise after over-smoking is due to an excess of nicotine beyond one's individual tolerance. The pleasure, euphoria, or pacification from smoking are due to the sedative action of nicotine.
>
> With such facts long common knowledge to the Research Staff, the incorporation of nicotine control into the selection of tobaccos was a logical development.

ATX300006425-6468V at 6428 (US 85324).

1135. These "facts" and the company's ability to control nicotine were important to the development and maintenance of American's most popular brand at the time, Lucky Strike. Hanmer wrote in the same memorandum that its success was the result of the company's "nicotine control policy":

> A recognition of the facts presented above led to the institution of a method of scientific control of tobacco purchased by the Company. . . .
>
> That the favorable position of LUCKY STRIKE in comparison with other leading brands is not fortuitous but the result of a comprehensive nicotine control policy is demonstrated by the material exhibited in this memorandum.

Id. at 6440.

1136. Between 1940 and 1970, American sponsored 111 studies on the biological effects of cigarettes, with ninety-three, or over 80%, related to the effects of nicotine on the body. "Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents," 1996 FDA Jurisdictional Determination, HHA 0680950-1649 (US 33031); VXA1242326-3211 (US 64323).

1137. In a June 19, 1963 letter, American's Assistant to the President (and later company president) Robert K. Heimann labeled nicotine as "the characteristic and essential element in tobacco and tobacco smoke." Heimann asserted that the "reduction of nicotine to very low levels results in an unsatisfactory smoke." MNAT00787182-7182 (US 85325); ATC2471666-1666 (US 86691).

g. CTR

1138. Nicotine research funded by CTR also shows "that the cigarette manufacturers have acted like traditional pharmaceutical companies," studying the pharmacokinetics (absorption, metabolism, and excretion) of nicotine, the pharmacodynamics (effects on body chemistry) of nicotine, and the clinical effectiveness (whether drug is effective in producing the desired effects) of nicotine. VX1242326-3211 at 2806-2087 (US 64323).

1139. On November 22, 1977, CTR Associate Research Director Donald H. Ford stated the following in a proposal for further CTR-funded nicotine research:

> [I]t now seems evident that nicotine, like narcotics, influences the CNS in multiple ways involving effects related to most known neurotransmitters. Further, the dependence which develops to tobacco in humans (and withdrawal symptoms during the cessation of smoking) and the degree of tolerance to nicotine which occurs in certain animal paradigms strongly suggest that nicotine is a habituating agent.

1000041912-1918 at 1912 (US 20073).

1140. Ford presented his nicotine observations and proposed research at the November 1977 CTR meeting. His proposed avenues of research related to "Receptors and sites of nicotine action," neurochemical studies, the effects of nicotine on fetal development, neuroendocrinology, and behavioral responses to nicotine. 1000036584-6590 (US 21417); 01113272-3272 (US 85329); 01113280-3284 (US 85330).

1141. This November 1977 CTR presentation by Ford drew the concern of Philip Morris's Tom Osdene, who later wrote to Bob Seligman that the nicotine "work being taken by CTR is totally detrimental to our position and undermines the public posture we have taken to outsiders." 2022246952-6952 (US 36865).

1142. The November 1977 CTR meeting was attended by lawyers and executives from all the member cigarette manufacturers, along with several outside counsel (Don Hoel, Janet Brown, and Ed Jacob). According to notes of the meeting taken by Philip Morris's Tom Osdene, Dr. Ford explained his nicotine research in detail. This presentation was introduced by CTR scientific director Dr. Gardner, who told the attendees that, "Opiates and nicotine may be similar in actions," and that there was a "relationship between nicotine and opiates." The notes of attendees indicate that no one questioned Dr. Ford's premise or Dr. Gardner's introductory remarks. 1000036584-6590 at 6584 (US 21417); 01113280-3284 at 3280 (US 85330).

1143. Thereafter, as stated in the May 10, 1978 notes of the CTR Industry Technical Committee Chairman Preston Leake (also Scientific Director of American Tobacco) to American Tobacco general counsel Arnold Henson, the proposed nicotine work was “ruled out” by outside counsel Ed Jacob. Jacob claimed that the nicotine work had antitrust implications because it might

be subject to "misinterpretation as product development." 955017148-7154 at 7149-7150 (US 87142).

1144. A June 20, 1984 memorandum, written by Shook, Hardy & Bacon attorney Wendell L. Stone, summarizes the significance of CTR-funded nicotine research for industry clients. In his memorandum, Stone conceded that:

> Of the three areas pertinent to Cipollone[15] (lung cancer, emphysema, and addiction) the abstracts and CTR commentary regarding addiction are the most consistently adverse. Through the years, CTR has funded psychopharmacological and neuropharmacological studies which emphasize and leave clear the points that CTR views nicotine as a "psychoactive" or "psychotropic" drug (terms which CTR has used), and that the research approach most appropriate to studying smoking behavior involves the pharmacology of nicotine. Among the undesirable research claims which appear in abstracts which acknowledge CTR support: the identification of specific central nervous system structures (nicotine receptors) at which nicotine acts; effects of nicotine on a variety of different purported neurotransmitters involved in learning, memory, etc.; various behavioral effects of nicotine from which can be inferred central nervous system effects, some of which might be used to support assertions regarding "tolerance" and "withdrawal."

515709297-9340 at 9298 (US 20866).

1145. The evidence overwhelmingly shows that Defendants have for decades internally recognized that smoking is addictive and that nicotine is the key to that addiction.

4. Defendants Publicly Denied that Nicotine Is Addictive and Continue to Do So

1146. Despite the extensive and detailed knowledge possessed by Defendants for decades about the addictive qualities of nicotine and smoking, Defendants have publicly made false and

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[15] Cipollone v. Liggett Group, 505 U.S. 504 (1992), was one of the first tobacco lawsuits in which the industry was assessed damages. It was particularly significant to the industry because it involved the unprecedented use of thousands of internal industry documents.

misleading denials of the addictiveness of smoking, as well as nicotine's role in causing that addiction, and have suppressed the research results and data they produced and possessed contradicting such denials.

1147. As acknowledged by industry counsel Covington & Burling, in a once-confidential May 1988 summary, "Tobacco industry statements deal only sparsely with the issue of addiction. To the extent such statements exist they generally deny outright any addictive effect." BWX0007189-7297 at 7200 (US 36237).

1148. Defendants' statements denying addiction, as described in the May 1988 Covington & Burling memorandum, as well as the many other similar denials of smoking and nicotine addiction set forth, infra., were used to convey four important themes to the public:

1. Smoking cigarettes is not addictive because some smokers can, and have, quit smoking on their own;

2. Smoking cigarettes is not addictive because it does not produce physical "dependence";

3. Smoking cigarettes is not addictive because it does not produce "intoxication"; and

4. Smoking cigarettes is not addictive because cigarettes are not like other addictive drugs, i.e., they are not illegal and are not necessarily linked to an anti-social lifestyle; smoking cigarettes is merely a pleasurable "habit" like playing tennis, jogging, eating chocolate, listening to rock music, etc.

These statements are detailed below.

a. Philip Morris

1149. Philip Morris Chairman James C. Bowling denied that cigarette smoking was an addiction in a July 18, 1973 "60 Minutes" interview. Instead, Bowling compared the choice to stop smoking to the choice to eat eggs or not. 503665743-5757 at 5752 (US 50417).

1150. In a 1992 pamphlet, Philip Morris stated that "those who term smoking an addiction do so for ideological, not scientific, reasons." 2023916742-6776 at 6745 (US 20396).

1151. In 1994, counsel for Philip Morris prepared a document titled "Smoking and Health Questions and Answers," in which an attachment titled "Smoking and Addiction" stated that smoking could only be classified as "addictive" if addiction did not require physical dependence (as evidenced by withdrawal) and cited the ineffectiveness of nicotine gum and patches as evidence that nicotine was not addictive. 682639225-9281 at 9277 (US 21028).

1152. In a 1994 published statement in the New York Times, Philip Morris asserted that it "does not believe cigarette smoking is addictive." 2023011263-1263 (US 20371).

1153. On April 14, 1994, the President and Chief Executive Officer of Philip Morris, William I. Campbell, testified under penalty of perjury in a nationally televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Campbell affirmatively denied that nicotine is addictive:

Rep. Ron Wyden:	Let me ask you. . . . Do you believe that nicotine is not addictive?
Mr. Campbell:	I believe nicotine is not addictive, yes.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 (US 21990).

1154. Campbell's prepared written statement made the same claim that "cigarette smoking is not addictive" and that "Philip Morris has not hidden research which says that it is." In response to accusations of addiction by Dr. David Kessler, head of the Food and Drug Administration ("FDA") and others, Campbell wrote: "The presence of nicotine, . . . does not make cigarettes a drug or smoking an addiction" and "Smokers are not drug addicts." Campbell's statements made clear that he was speaking on behalf of both the industry and Philip Morris USA: "I would like to take this opportunity to set the record straight on charges that have recently been leveled against the industry and Philip Morris." ATC2746877-6887 (US 59009), Keane TT, 1/18/05, 10442:9-10442:24.

1155. On May 9, 1994, a telefax letter from Cathy Ellis, Director of Research at Philip Morris, was sent to Representative Henry Waxman, Chairman, Subcommittee on Health and the Environment, Committee on Energy and Commerce, denying nicotine's addictiveness under the definition of addiction which, although used in the 1964 Surgeon General's Report, was later rejected in the 1988 Surgeon General's Report. She claimed that nicotine could be described as addictive only if it caused smokers to experience "intoxication, pharmacological tolerance, and physical dependence in a manner that would impair the smokers' ability to exercise a free choice to continue or to quit smoking." 2029200293-0294 at 0294 (US 21537).

1156. After the 1994 hearing before the Congressional subcommittee, Philip Morris placed an advertisement in national magazines, as an open letter to "smokers and nonsmokers" titled

"FACTS YOU SHOULD KNOW." One of the "facts" was that "Philip Morris does not believe cigarette smoking is addictive. People can and do quit all the time." 2023011263-1263 (US 20371).

1157. In a lengthy August 2, 1994 submission to NIDA's Drug Abuse Advisory Committee, Philip Morris (along with the American Tobacco Company) once again asserted that "neither cigarette smoking nor the nicotine delivered in cigarettes is addictive" and denied that smoking was a "form of 'drug-seeking' behavior." 92486960-7040 (US 88560).

1158. Altria and Philip Morris Companies' employees Geoffrey Bible, Steve Parrish, Murray Bring, Marc Firestone, Victor Han, David Nicoli, and Charles Wall were all involved in crafting PM's 1994 submission to the FDA Drug Abuse Advisory Committee. 2047096727-6727 (US 26974).

1159. In Philip Morris's January 2, 1996 written submission in opposition to the FDA's assertion of jurisdiction over tobacco products, the company denied that it knew nicotine was addictive, denied that its documents showed that nicotine was addictive, and denied that smokers smoke to obtain nicotine. HHA0660489-0538 (US 87145).

1160. Philip Morris Companies' Corporate Affairs Senior Vice President Steven Parrish issued the January 2, 1996 "Industry Statement" accompanying the cigarette manufacturer Defendants' comments on the FDA rule; this statement also disputed the addictiveness of cigarettes. 2041220158-0163 (US 26936).

1161. In the May 12, 1997 issue of Time magazine, then President and CEO of Philip Morris, James Morgan, was quoted from his deposition testimony as stating, "If [cigarettes] are behaviorally addictive or habit forming, they are much more like . . . Gummi Bears, and I eat Gummi Bears, and I don't like it when I don't eat my Gummi Bears, but I'm certainly not addicted to them."

Myron Levin, Jury Views CEO's "Gummy Bear" Tobacco Deposition: Philip Morris Executive Testifies Cigarettes Aren't Any More Addictive Than Coffee or Candy," Los Angeles Times, July 18, 1997, at D3; Morgan PD, Broin v. Phillip Morris, et al., 4/17/97, 77:20-78:23.

1162. In the October 2, 1997 so-called "Hatch Statement" (actually titled "Philip Morris' Statement of Position), issued on PMC letterhead, Philip Morris once again denied addiction and claimed that cigarettes were addictive only under definitional changes that can be used to "describe many different kinds of behavior." However, Philip Morris did agree to cease all public debate on the issue. 2063123083-3084 (US 39734).

1163. In January 1998, Geoffrey Bible, CEO of Philip Morris Companies, submitted testimony that stated in part:

> We recognize that nicotine, as found in cigarette smoke, has mild pharmacological effects, and that, under some definitions, cigarette smoking is "addictive." The word "addiction" has been and is currently used differently by different people in different contexts, and the definition of the term has undergone significant changes over the past several decades. In 1964, for example, the Advisory Committee to the Surgeon General of the United States concluded that smoking, although "habit forming," did not fit within its definition of "addiction." However, in 1988, the Surgeon General redefined the term, and concluded that smoking is "addictive." We have not embraced those definitions of "addiction" which do not include such historically accepted and objective criterion, such as intoxication and physical withdrawal, as important markers.

Bible admitted that Philip Morris Companies' position was "at odds . . . with the public health community," and said that for the sake of a consistent public health message, Philip Morris Companies would no longer debate the addictiveness of nicotine except insofar as it was "necessary to defend ourselves and our opinions in the courts." 83623323-3347 at 3343-3344 (US 21820).

1164. As late as 2002, Philip Morris was admitting only that smoking, not nicotine, met the "physiological definition of addictiveness." Philip Morris's admission was premised on a broad definition of "addiction" to include anything that is habit-forming. Merlo PD, United States v. Philip Morris, et al., 6/12/02, 500:24-503:22.

1165. As of 2005, Philip Morris USA's website states that it now "agrees with the overwhelming medical scientific consensus that cigarette smoking is addictive."

b. R.J. Reynolds

1166. At hearings before a Congressional Subcommittee from March 5 through March 12, 1982, RJR Chairman and CEO Edward Horrigan stated under oath that "with regard to addiction, there is absolutely no proof that cigarettes are addictive." At the time of this statement, Horrigan was also chairman of the Tobacco Institute executive committee. 521056398-6557 at 6411 (US 85334); 201830983-0993 (US 36327).

1167. In a May 8, 1990 revised draft response to a letter from Elaine Moss, a cigarette smoker, Jo Spach, a Manager of Public Information for the RJR Public Relations Department, stated that: "The fact is that there is nothing about smoking, or about the nicotine in cigarettes, that would prevent smokers from quitting. Unlike heroin, cocaine or even alcohol, cigarettes do not impair a smoker's ability to think clearly -- about smoking or about quitting. If a smoker wants to quit, it may take will power, but that is all it takes." 507707454-7455 at 7455 (US 22069).

1168. In January 1992, two RJR employees, John Robinson and Walter Pritchard, published an article titled "The Role of Nicotine in Tobacco Use." The article compared nicotine to caffeine and absolutely denied that nicotine was addictive. The Robinson and Pritchard paper was cited in

industry submissions to Congress in 1994 and to the FDA in 1996. 190211472-1482 (US 88561); 190211719-1724 (US 88562); 2505597781-7998G at 7804 (US 23028*).

1169. The Cologne office of RJR International faxed a December 14, 1992 draft statement titled "Arguments Against The E. C. Cigarette Warning Label 'Smoking Causes Addiction'," which stated that "on an 'addiction scale,' nicotine is less addictive than food" and that "nicotine improves performance, renders the user more alert and increases the efficiency of performance and reduces anxiety." 400729374-9380 at 9376 (US 29354).

1170. Counsel for RJR prepared an anticipated "Q & A" for company Chairman and CEO James Johnston dated April 6, 1994, which said that nicotine was "not addictive," and that the term "addiction" was misused in the context of cigarette smoking. 512688562-8571 at 8564 (US 20849).

1171. On April 14, 1994, Johnston testified under penalty of perjury in a nationally-televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Johnston affirmatively denied that nicotine is addictive:

Rep. Ron Wyden:	Let me ask you. . . . Do you believe that nicotine is not addictive?
Mr. Johnston:	Congressman, cigarettes and nicotine clearly do not meet the classic definitions of addiction. There is no intoxication.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 at 5780-5781 (US 36975).

1172. An article in the August 2, 1994 New York Times reported that RJR scientist John Robinson "contests the consensus view of nicotine as addictive." Robinson stated that he could not

differentiate "crack smoking from coffee drinking, glue sniffing from jogging, heroin from carrots, and cocaine from colas." 970260581-0581 (US 85337).

1173. A November 1994 RJR document titled "Media Tips" denied that smoking was addictive by using factors that are not relevant to any accepted scientific definition. The "Media Tips" binder was intended to be used by RJR employees to answer press inquiries. With respect to addiction, the document stated that:

> Regardless of how you define addiction, cigarettes are clearly not in the same class as addictive, mind-altering drugs like heroin and cocaine. The physiologic, pharmacologic and behavioral effects of nicotine, like caffeine, are fundamentally different from drugs like alcohol, heroin and cocaine. . . .
>
> Smokers do not become intoxicated. Their smoking does not cause them to hallucinate, have blackouts, commit immoral or criminal acts, abuse their families, or cause trauma and psychological damage to their loved ones.

525412344-2488 at 2374 (US 88563).

1174. The company prepared and distributed a similar document, called "Issues Guide," for use by company representatives worldwide in responding to media, public, and government inquiries. In this document, employees were instructed to deny addiction. 510345185-5358 at 5232-5235 (US 88046).

1175. In a March 1995 article in the periodical World Tobacco, RJR scientist John Roinson stated that nicotine was not addictive because it did not cause any physical intoxication. 519274569-4573 at 4572 (US 85339).

1176. In a proxy statement filed with the Securities and Exchange Commission ("SEC") on April 12, 1995, the Board of Directors of RJR Nabisco Holdings Corporation publicly stated: A

group of shareholders filed a proposal to the Board that the company issue a public report regarding "whether nicotine content in and absorption from its tobacco products are deliberately controlled by the [c]ompany and if the reasons for any such control include the delivery of a reliable dose of nicotine to and/or the promotion of nicotine absorption by the customer." In recommending a vote against the proposal, the Board argued, "In RJRT's opinion, cigarette smoking does not meet the classic definitions of 'addiction,' and the forty-five million Americans who smoke are not 'addicts.' To call nicotine 'addictive' is to ignore significant differences between cigarettes and truly addictive drugs." The Board repeated these opinions in a proxy statement filed with the SEC in 1996, adding, "there is no accurate evidence establishing that any specific yield of nicotine causes 'addiction.'" Schedule 14A of RJR Nabisco Holdings Corp., -- Proxy Statement, Dated 4/12/95, Disclosure, 525735695-5730 at 5710 (US 88004); Schedule 14A of RJR Nabisco Holdings Corp., -- Proxy Statement, Dated 4/17/96, Disclosure; 2048767992-8041 at 8027 (87747*).

1177. An undated RJR magazine advertisement used industry-funded, CTR Special Account-4 recipient, psychologist Dr. Theodore Blau, to deny that smoking is addictive. In the advertisement, RJR not only denied any addictive aspects of smoking, but also blamed smokers for not being able to quit: "It's not that they can't stop; it's because they don't want to." 501926233-6233 (US 87148); 517214542-4557 (US 87149).

1178. Along with Philip Morris, B&W, Lorillard, and the Tobacco Institute, RJR filed a joint submission on January 2, 1996, opposing FDA's assertion of jurisdiction over cigarettes. In its public statement on the FDA submission, RJR stated that, "Under scientifically verifiable criteria, nicotine and cigarette smoking are not addictive." 522626648-6651 (US 87150).

1179. In a September 9, 1997 draft document, RJR stated that

> if you broadly define "addiction" as engaging in an activity that is hard to quit once you start, then certainly, smoking can be considered addictive. The simple fact is many people find that once they have started smoking cigarettes, it can be difficult to quit. And some people find it extremely difficult.

The document added that

> despite this difficulty, the number of Americans who have quit smoking is as large as the number who currently smoke. The 1990 Surgeon General's Report stated that nearly 45 million Americans had quit smoking, most of them on their own without any outside help. Based on this fact, we believe that any smoker with a sincere desire to quit smoking can -- and should -- quit.

RJR's position on addiction failed to mention nicotine at all. 522879046-9047 at 9046 (US 85340).

1180. A May 4, 1999 draft RJR document denied the addictiveness of smoking, stating that "the word addiction means different things to different people and to some people it is a very emotive word. It's true that some smokers may find it very difficult to stop smoking and there are some smokers who believe that they are addicted to cigarettes. But the fact is that cigarettes do not have the addictive qualities of hard drugs such as heroin." 321309118-9133 at 9118 (US 85341).

1181. RJR CEO Andrew Schindler testified in prior litigation and in this case in 1997 and 2000, respectively, that smoking is not an addiction like heroin or cocaine. Schindler WD, 31:22-32:18. RJR made the same statement in responding to discovery requests in this litigation. Schindler WD, 34:24-35:7.

1182. In a May 2002 RJR document titled "Guiding Principles," the company stated its position regarding addiction in a section called "Quitting and Addiction." In this section, the company again demonstrated the cigarette industry's refusal to make an unqualified admission that cigarette smoking is addictive: "Many people believe that smoking is addictive, and as that term is

commonly used today, it is. Many smokers find it difficult to quit and some find it extremely difficult." RJR later added that "[h]owever, we disagree with characterizing smoking as being addictive in the same sense as heroin, cocaine or similar substances." In addition, there was no mention of RJR's knowledge of the role of nicotine in maintaining addiction to smoking. 524946045-6088 at 6049 (US 52966).

c. BATCo

1183. In comments published in the Wall Street Journal on October 31, 1996, the CEO of BAT Industries and Director of BATCo, Martin Broughton, denied any concealment of research linking smoking and addiction, saying that, "We have no internal research which proves that . . . smoking is addictive." State of Minnesota v. Philip Morris, Inc., et al., C1-94-8565, Exhibit No. 2909, 700428854-8856 at 8854 (US 85342). This statement, made to analysts, investors, and journalists, was confirmed in a BATCo "Company Notice" to employees dated October 31, 1996.

1184. The statement by Broughton had been earlier released by BATCo as a Press Announcement. 800113810-3812 at 3810 (US 85343).

1185. BATCo, along with several other major international tobacco concerns (including Defendants Philip Morris and RJR), was a member of INFOTAB (International Tobacco Information Center), a Europe-based pro-industry association similar to the Tobacco Institute. In April 1990, INFOTAB published a pamphlet called "Children and Smoking: The Balanced View," which contained the following on the subject of addiction:

> Cigarette smoking is not addictive and cannot be equated to hard drug use. Many millions of smokers have been able to quit smoking.
>
> The smoker decides if, when and how much he wishes to smoke and is not motivated as is the hard drug user to get a "fix" by whatever

> means possible, including criminal acts. Most smokers are able to quit without assistance.

2070052572-2578 at 2577 (US 87151).

1186. In a December 3, 1990 document, BATCo prepared "Q&As" to respond to public inquiries. The answer to expected questions denied evidence of the addictiveness of cigarettes:

> Whilst the US Surgeon General has claimed that nicotine is addictive, he has also claimed that video games are addictive. This is a prime example of the misuse of the term "addiction". . . . [C]igarette smokers bear no resemblance to addicts . . . . Smokers smoke because they enjoy smoking.

536502262-2266 at 2262 (US 20930).

1187. In a similar 1992 document titled "Smoking Issues; Claims and Responses," BATCo denied that smoking was addictive and asserted that, "Smokers do not experience most of the symptoms of addiction." 601037850-7862 at 7853 (US 85345*).

1188. In a June 29, 1994 letter to the editor of The Daily Telegraph, responding to an earlier article published by the paper concerning the addictiveness of smoking, BATCo scientist Dr. Sharon Boyse (Blackie), stated the company's public position on addiction:

> As to the claim that smoking is addictive: this has been widely challenged by scientists working in the field. Those working with drug addicts in the USA, for example, complained that the US Surgeon General's claim that smoking was as addictive as heroin and cocaine back in 1988 trivialized the whole problem of drug addiction. It is easy to see why. Tobacco is not intoxicating, in direct contrast to any other substance that has been claimed to be addictive, from heroin and cocaine through to alcohol. Smokers are perfectly capable of continuing a normal social and family life and holding down a job -- there is little evidence of this with users of drugs of dependence. Nicotine does not induce physical dependence or tolerance (a fact recognised by the US Surgeon General when he attempted to redefine addiction to incorporate nicotine and decided to relegate these two previously crucial criteria to the bottom of the list!) and as even the

> Surgeon General acknowledged, millions of smokers all around the world have given up without any professional help.

500810940-0941 at 0940 (US 23036).

1189. In this same document, Dr. Boyse wrote that

> It has been suggested that smoking must be addictive because it contains nicotine. So do many common vegetables, including tomatoes, aubergines and potato skins. Are vegetable eaters also drug users -- physically dependent on their ratatouille, perhaps, in the same way that heroin addicts are dependent on their heroin?

Id. at 0941.

1190. In 1994, BATCo spokesperson Michael Prideful stated that BAT's current position on nicotine was that cigarette smoking was habit forming, but not addictive. British Tobacco Companies Hushed up Health Dangers, The Independent, June 19, 1994 502576028-6030 (US 86882).

1191. BATCo promulgated a company notice on January 4, 1997, in response to Liggett's settlement obligation with a group of state attorneys general. The notice contained the following:

> As to addiction, of course you can construct a broad subjective definition of addiction that includes cigarette smoking. Equally, under a meaningful objective definition, cigarette smoking is not an addiction. Regardless of the definition, smokers who want to quit do.

321007259-7260 (US 85344).

1192. In a March 21, 1997 statement posted for its staff on the British American Tobacco electronic bulletin board, BATCo again criticized Liggett's concession that nicotine was addictive, stating that Liggett's CEO was "simply brokering this deal in a desperate attempt to force one of the cigarette manufacturers to take over his financially troubled and failing tobacco interests." The statement added that "Liggett's action is not based on any new scientific discovery and does not

affect British American Tobacco's attitude to its defense of litigation in either the US or other parts of the world." 321007261-7262 (US 46651).

d. American Tobacco Company

1193. On April 14, 1994, the Chief Executive Officer of American, Donald S. Johnston, testified under penalty of perjury in a nationally televised hearing before the House Subcommittee on Health and the Environment. During this hearing, Johnston denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you . . . . Do you believe that nicotine is not addictive?
>
> Mr. Johnston: And I too, believe that nicotine is not addictive.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 at 5780-5781 (US 21990).

e. Brown & Williamson

1194. While B&W knew internally that smokers were addicts who smoked for nicotine, the company understood that the industry's "free choice" argument in litigation would be undermined by any suggestion that smoking and nicotine were addictive. In the words of long-time general counsel Ernest Pepples, in a February 14, 1973 "Confidential" memorandum to public relations director John Ballock, one of the "salient problems now facing the cigarette industry" was:

> ADDICTION - Some emphasis is now being placed on the habit forming capacities of cigarette smoke. To some extent the argument revolving around "free choice" is being negated on the grounds of addiction. The threat is that this argument will increase significantly and lead to further restrictions on product specifications and greater danger in litigation.

696001196-1199 at 1198 (US 85346).

1195. On April 14, 1994, the Chairman and Chief Executive Officer of B&W, Thomas Sandefur, also testified under penalty of perjury in a nationally televised hearing before the House Subcommittee on Health and the Environment. At this hearing, Sandefur, consistent with his fellow CEOs, denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you . . . . Do you believe that nicotine is not addictive?
>
> Mr. Sandefur: I believe nicotine is not addictive.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 at 5780-5781 (US 21990).

1196. In a 1994 press release titled "The Media Frenzy. Truth vs. Distortions," B&W attacked the press coverage of its CEO's testimony before Congress, stating that he was merely providing his personal opinion that nicotine is not addictive. 800335973-5975 (US 31913).

1197. In its January 2, 1996 supplemental submission to the FDA in opposition to the FDA's assertion of jurisdiction over tobacco products, B&W (speaking for itself and BATCo) denied addiction and the prominence of nicotine in the smoking habit. The supplemental comments, signed by B&W's Director of Scientific and Regulatory Affairs Scott Appleton, stated, "[U]nder scientifically verifiable criteria, neither cigarette smoking nor the nicotine in smoke is addictive." 490107317-7366 at 7364 (US 87152).

1198. In 1999, B&W posted on its website a document called "Hot Topics: Smoking and Health Issues." While this document did admit that "by some definitions, including that of the

Surgeon General in 1988, cigarette smoking would be classified as addictive," it went on to state that:

> Brown & Williamson believes that the relevant issue should not be how or whether one chooses to define cigarette smoking as addictive based on an analysis of all definitions available. Rather, the issue should be whether consumers are aware that smoking may be difficult to quit (which they are) and whether there is anything in cigarette smoke that impairs smokers from reaching and implementing a decision to quit (which we believe there is not.)

Response of Brown & Williamson Tobacco Corporation to the United States' First Set of Requests for Admission to All Defendants, RFA# 390, April 19, 2002, USX6390001-0400 at 0094 (US 89555).

f. Lorillard

1199. On April 14, 1994, the Chairman and CEO of Lorillard, Andrew H. Tisch, also testified under penalty of perjury in a nationally televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Tisch also denied that nicotine is addictive:

> Rep. Ron Wyden: Let me ask you . . . . Do you believe that nicotine is not addictive?
>
> Mr. Tisch: I believe that nicotine is not addictive.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 at 5780-5781 (US 21990).

1200. In 1996, a group of shareholders filed a proposal with the Board of Directors of Loews Corporation, the parent company of Lorillard, stating, "virtually every major health

organization in the United States of America as well as throughout the world has concluded that cigarette smoking and smokeless tobacco-use [sic] are addictive." In responding to the proposal, the Board countered, that "the use of the term 'addiction' ignores the well-known fact that millions of people have stopped smoking in recent years." Schedule 14A of Loews Corp., - Proxy Statement, Dated 5/14/96, Disclosure, 91762567-2592 at 2586-2587 (US 22080).

1201. In an October 1, 1997 letter to Senators Edward Kennedy and Orrin Hatch, Lorillard Chairman and CEO Alexander Spears denied the need for a warning on cigarettes stating that cigarettes are addictive. Spears wrote, "Although Lorillard does not believe that cigarettes are 'addictive' in a stricter pharmacological sense, as the use of cigarettes does not result in euphoric intoxicating effects, we have no desire to engage in a public debate over the definition of the word 'addiction.'" 83699666-9668 (US 85348).

1202. According to Lorillard CEO Martin Orlowsky, Lorillard has recently "accepted" that cigarette smoking is addictive, but that "acceptance" is dependent on a loose definition that includes any "pleasurable activity that can be difficult to stop." Orlowsky WD, 116:14-23.

1203. With respect to nicotine, CEO Orlowsky stated that Lorillard does not "take a public position one way or the other" on whether nicotine is an addictive drug and that the company still does not know whether nicotine is addictive or not. Orlowsky WD, 121:15-22.

1204. Dr. Christopher Coggins, Lorillard's Senior Vice President of Science and Technology agreed that cigarette smoking falls only within the loose definition of addiction relied on by Orlowsky and added that cigarette smoking is only as addictive as "sugar and salt and Internet access." Coggins PD, United States v. Philip Morris, 8/16/01, 116:22-117:14.

1205. Coggins claimed the same lack of knowledge of whether nicotine was addictive, adding that nicotine may or may not be an addictive agent in tobacco. In fact, according to Dr. Coggins, the addictiveness of smoking may be the result of a "simple physical repetitive pleasurable activity." Coggins PD, United States v. Philip Morris, et al., 8/16/01, 117:15-120:11.

g. Liggett

1206. On April 14, 1994, the Chairman and Chief Executive Officer of the Liggett Group, Inc., Edward A. Horrigan (formerly of RJR), also testified under penalty of perjury in a nationally televised hearing before the House of Representatives Subcommittee on Health and the Environment. During this hearing, Horrigan denied that nicotine is addictive:

Rep. Ron Wyden:	Let me ask you . . . . Do you believe that nicotine is not addictive?
Mr. Horrigan:	I believe nicotine is not addictive.

Regulation of Tobacco Products (Part I) Hearings before the Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, 103rd Congress April 14, 1994, 2023195738-5892 at 5780-5781 (US 21990).

h. Tobacco Institute

1207. The Tobacco Institute was by far the Defendants' most vocal spokesperson in the industry's campaign to deny addiction and conceal internal research and knowledge. Over the decades, the Tobacco Institute, on behalf of the cigarette company Defendants, publicly disseminated countless false, deceptive, or misleading statements denying the addictiveness of nicotine and cigarette smoking. The following instances exemplify the many statements made by TI employees in the organization's attempts to deceive and mislead the American public about smoking, the role

nicotine played in smoking, why quitting was so difficult, and whether people who could not quit smoking merely lacked will-power.

1208. When the Director of NIDA, Dr. William Pollin, testified before the Senate Committee on Labor and Human Resources in 1982 that the agency had concluded that nicotine met all the standard criteria used by NIDA, the Drug Enforcement Administration ("DEA"), the FDA, and the WHO, to define a dependence-producing drug, Defendants did not come forward with their internal research, as detailed in the preceding Section, supporting NIDA's conclusion. Instead, Defendants, through the Tobacco Institute and outside counsel, sent representatives and paid researchers to testify that NIDA was wrong and that nicotine did not cause addiction or dependence. (US 58808); Henningfield WD, 132:10-134:22.

1209. One of the witnesses Defendants produced at the Congressional Committee hearing was Theodore Blau, who stated on behalf of the Tobacco Institute and its members that, "There is no scientific basis for a statement that cigarette smoking is addictive." 680584197-4204 at 4201 (US 85349); TIMN0170757-0765 (US 85351).

1210. On March 12, 1982, the Tobacco Institute's William D. Toohey issued a press release summarizing the tobacco company-funded testimony of Blau before a Congressional Subcommittee. According to the release, Blau criticized the characterization of smoking as addictive, claiming that he placed the "attachment" to smoking in the same category as "tennis, jogging, candy, rock music, Coca-cola, members of the opposite sex and hamburgers." The press release went on to claim that "removal of these activities, persons or objects can cause sleeplessness, irritation, depression and other uncomfortable symptoms, similar to those felt by some with abstinence from tobacco." TIMN0120729-0730 (US 65625).

1211. The March 1982 Tobacco Institute press release failed to state that Blau was paid by the cigarette company Defendants to testify and that he was a member of, in Tobacco Institute President Sam Chilcote's words, the "Tobacco Institute Team." Instead, the press release indicated only that Blau was a "Florida psychologist," leaving the false impression that he had no ties to the tobacco industry. TIMN0120729-0730 (US 65625).

1212. In fact, as noted earlier, Blau was a CTR Special Account 4-recipient of thousands of cigarette company Defendant dollars through the law firm of Shook, Hardy & Bacon. Moreover, he was one of the many industry-funded scientists whose testimony was reviewed and approved by Shook, Hardy & Bacon prior to presentation before Congress. 1005125796-5796 (US 36096); 01335087-5087 (US 85352); 01335086-5086 (US 26842); TIMN197541-7581 (US 85353); 1005064612-4612 (US 85354); 01335102-5102 (US 26483); 1005061616-1625 (US 35959); 03746309-6316 (US 85355); 503655215-5215 (US 85356); 1005125795-5795 (US 85357).

1213. The April 1982 edition of TI's newsletter, The Tobacco Observer, also quoted Dr. Blau's addiction denial before Congress in an article titled "Smoking Said Not Addictive." TIMN0126427-6438 (US 85358).

1214. When the Department of Health and Human Services' Office on Smoking and Health produced a pamphlet stating that cigarette smoking was addictive, the Tobacco Institute went to the media with a statement denying addiction. The Tobacco Institute President informed industry general counsel in a memorandum dated March 7, 1983, that the Tobacco Institute "drilled" the media with the industry message that cited "substantial refutation of the addiction claim," including the 1982 testimony of Blau. Once again, the Tobacco Institute press release failed to reveal that Blau

was an industry paid spokesman for the Tobacco Institute and its members. TIMN0350773-0775 at 0773 (US 85359).

1215. The Tobacco Institute then sent Curtis Judge, Lorillard President and Chairman of the Tobacco Institute Executive Committee, to speak for the industry before the Senate Committee on Labor and Human Resources on March 12, 1983, in opposition to legislation that would require additional warnings on cigarette packages, including a warning that smoking was addictive. Accompanying Judge were several industry-paid scientists, including Blau, who once again denied and disputed addiction and the mounting scientific evidence behind the NIDA pamphlet and the basis for the warning. TIMN0049411-9548 (US 85360).

1216. On March 17, 1983, Blau submitted a written statement denying addiction to the House of Representatives Subcommittee on Health and the Environment considering the same issue. In the statement, he made no mention of his tobacco industry funding and ties. TIMN0384222-4231 (US 85361).

1217. On the same date, the Tobacco Institute distributed a press release to newspapers and other news outlets across the United States, quoting Blau, with no industry attribution, again denying the addictiveness of cigarette smoking. TIMN0138444-8446 (US 85362).

1218. A May 12, 1983 Tobacco Institute press release quoted Dr. Blau's apparently "independent" denial of addiction. He had again been paid by the industry to testify before a Senate Committee on Labor and Human Resources: "Dr. Theodore H. Blau, a clinical psychologist in Tampa, Florida, and past president of the American Psychological Association, sharply disputed an assertion in pending legislation that cigarette smoking is 'addictive.'" The Tobacco Institute did not

tell the general public that Blau had testified on behalf of the tobacco industry and the Tobacco Institute. TIMN0120772-0773 (US 85363).

1219. The Tobacco Institute also denied that smoking and nicotine are addictive in its submissions and testimony leading up to the 1988 Surgeon General's Report. Henningfield WD, 134:23-136:1.

1220. In 1988, the Surgeon General released a report titled "The Health Consequences of Smoking: Nicotine Addiction." While the issuance of the 1988 Surgeon General's Report certainly represented a consensus in the scientific and public health community, there can be no doubt that the industry had reached an internal consensus on the addictiveness of smoking decades earlier. See Section V(B)(3), supra. The Tobacco Institute quickly responded to the Report with a series of advertisements, press releases, and public statements attacking and denying the Surgeon General's findings, even though these findings reflected the overwhelming medical and scientific consensus on the subject. For example, on May 16, 1988, the Tobacco Institute, on behalf of the cigarette company Defendants, issued a press release stating:

> CLAIMS THAT CIGARETTES ARE ADDICTIVE CONTRADICT COMMON SENSE . . . Smoking is truly a personal choice which can be stopped if and when a person decides to do so. . . . The claim that cigarette smoking causes physical dependence is simply an unproven attempt to find some way to differentiate smoking from other behaviors. In fact, any feelings persons might have upon giving up smoking are those that would be expected when one is frustrated by giving up any desired activity. . . . The claims that smokers are "addicts" defy common sense and contradict the fact that people quit smoking every day.

TIMN0019963-9963 (US 21239); Dawson WD, 38:18-23.

1221. A second Tobacco Institute press release dated May 16, 1988 carried the headline, "CLAIMS THAT CIGARETTES ARE ADDICTIVE IRRESPONSIBLE AND SCARE TACTICS." This press release also attacked the Surgeon General's Report and specifically denied any dependence on nicotine, stating:

> After years of well-funded research, it has not been established that cigarette smoking produces a physical dependence to nicotine. In fact, it has been impossible to establish that the feelings persons have upon giving up smoking are anything but that which would be expected when one is frustrated by giving up any desired habit.

TIMN0019964-9965 at 9964 (US 85366).

1222. In a July 29, 1988 press release, the Tobacco Institute stated that the Surgeon General's declaration that smoking is an addiction was "[an escalation of anti smoking rhetoric . . . without medical or scientific foundation." TIMN0125189-5189 (US 77065).

1223. The 1988 press release also utilized Tobacco Institute spokesmen/scientists Blau and Stephen Raffle to deny addiction. For example, the Tobacco Institute quoted Raffle in the press release, stating, "Clinically, cigarette smoking does not result in addiction-like behavior." Blau was quoted in the press release as saying that the Surgeon General's report was "misleading and unfortunate." TIMN00125189-5189 (US 77065).

1224. Raffle also provided a statement to the House subcommittee denying addiction. The statement was made at the Tobacco Institute's request, but contained no mention of any Tobacco Institute connection or sponsorship. TIMN207378-7384 (JD-080049).

1225. The July 29, 1988 press release failed to indicate in any way that Raffle and Blau were industry selected, managed, and paid consultants to Defendants and their law firms. Nor did the press release mention that their statements to the House subcommittee had been reviewed by

Covington & Burling lawyers and several Defendants prior to being delivered to Congress. Instead, the press releases implied that both scientists testified independently before the House Subcommittee. TIMN0125189-5189 (US 77065); 506419103-9103 (US 85372); 87701893-1903 (US 32065); 2025875995-5997 (US 85375).

1226. In a 1989 nationally broadcast interview on "Good Morning America," Tobacco Institute spokesperson Brennan Dawson stated: "I can't allow the claim that smoking is addictive to go unchallenged. . . . The majority of people who smoke make that decision, they can quit if they want to do it. It's a matter of willpower." TIME 389474-9479 at 9476 (US 21286).

1227. The Tobacco Institute published a brochure in March 1989 titled "The Anti-Smoking Campaign: Enough is Enough." In this document, the Tobacco Institute denied that smoking is addictive, emphasizing that: "The fact is that there is nothing about smoking, or about the nicotine in cigarettes, that would prevent smokers from quitting. . . . If a smoker wants to quit, it may take will power, but that's all it takes." TIMN0130559-0578 at 0574 (US 85376).

1228. In another nationally-broadcast interview, in 1990 on "Larry King Live," Ms. Dawson stated on behalf of the Tobacco Institute:

> About 95 percent of those people have quit cold turkey. They've walked away from cigarettes and they've not gone through formal treatment centers or anything else. It's not like alcoholism or drug abuse. It's not an addiction. . . .
>
> There's nothing about nicotine that prevents you from quitting. And that's the whole difference.

TIMN341405-1422 at 1420 (US 21363).

1229. On February 20, 1990, the Tobacco Institute issued a press release stating that Charles Whitley had appeared before the Senate Committee on Labor and Human Resources on behalf of

the Tobacco Institute, had criticized proposed legislation, and had stated that requiring an addiction warning label on cigarette packages and advertisements "defies all logic, when, according to the Surgeon General, nearly half of all Americans who ever smoked have quit and most of the 41 million smokers who quit did so without formal treatment programs or smoking cessation devices." TIMN341503-1504 (US 85377).

1230. During a February 27, 1990 appearance on the program, "Nightwatch," Ms. Dawson stated on behalf of the Tobacco Institute that

> Well, the fact is that now in the United States there are as many ex-smokers as there are smokers. And 95 percent of the people who have quit smoking have done it cold turkey. That is, they've just put down their cigarettes and walked away. And that's not the picture of the addictive drugs that we see, at least certainly not with the illegal substances, much less alcohol, that we see in terms of problems in society.

CORTI1731-1738 (US 87735).

1231. The Tobacco Institute published another press release dated July 12, 1990, stating that Blau had once again testified before a House Subcommittee denying the addictiveness of cigarettes. The Tobacco Institute provided the following in its press release, once again omitting any mention of the tie between Blau and the cigarette manufacturer Defendants:

> The proposed "addiction" warning label is likewise unjustified. Dr. Theodore H. Blau, a practicing clinical psychologist from Tampa, Florida, said that, "In my view, labeling tobacco use 'addictive' is misleading and potentially harmful to the American public." Blau noted that -- unlike heroin addicts, cocaine addicts and alcoholics who are in the process of giving up these drugs -- the alleged "withdrawal symptoms" which some smokers report when giving up smoking are "generally the same kinds of frustrations that one would expect to see when someone discontinues any well-established and well liked habit. Such symptoms as missing the habit and mild

> irritability are similar to the reactions experienced by those who give up coffee or sweets.

TIMN0026755-6757 at 6757 (US 85379).

1232. The Tobacco Institute paid Dr. Raffle to speak out again in 1994 following the sworn testimony of FDA Commissioner Dr. David Kessler that smoking was addictive. In a March 25, 1994 Tobacco Institute press release, the Tobacco Institute Media Relations department restated Raffle's industry-funded and industry-prepared comments that smoking was not "truly addicting" and that "in order to include smoking as an addiction, one must redefine that term, water down its meaning, and ignore critical differences involving every aspect of these behaviors." The press release did not disclose any connection between Raffle and the Tobacco Institute or the cigarette manufacturer Defendants. TIMN328214-8215 (US 77090).

1233. During the nationally broadcast news show "Crossfire" on March 10, 1994, Brennan Dawson, Vice President of Public Affairs at the Tobacco Institute, was asked by host Michael Kinsley, "Is nicotine addictive?" Dawson responded, "Absolutely not. Nicotine is first of all- I mean nicotine occurs naturally in cigarettes. Nicotine is also found in things as scary as potatoes." TI10720452-0464 at 0455 (US 87155*).

1234. During this same interview, Ms. Dawson admitted making the following statement regarding the addictiveness of nicotine:

> Well, first of all, let's understand that -- that sometimes we use the word "addiction" in very broad terms. We talk about being, you know, news junkies. We talk about being chocoholics. We -- you know, we -- we put all these broad terms[.] . . . But when we talk about addiction in a classical sense, we're talking about things like, you know, heroin and alcohol, for example, where you're either intoxicated and you can't make a decent decision, or you're in such

> physical withdrawal that you're probably in the hospital. And there's nothing about nicotine specifically that classifies it as such.

Id. at 0459-0460; Dawson WD, 45:7-48:23.

1235. She added that "[t]here is no chemical addiction" to nicotine. TI10720452-0464 at 0460 (US 87155*), Dawson WD, 45:7-48:23.

1236. During the nationally broadcast news show "Face the Nation" on March 27, 1994, Ms. Dawson was asked by host Robert Schieffer, "[D]oes the industry take the position that cigarettes are not addictive?" She responded, "The industry does take that position." (US 89319).

1237. During an April 1, 1994 appearance on the "MacNeil/Lehrer Newshour," when asked, "[d]o you -- do you, in the industry, concede that nicotine is an addictive drug?" Ms. Dawson responded, "[n]o we don't." (US 89300), Dawson WD, 45:7-48:23.

1238. On April 13, 1994, Dawson again appeared on the CNN program "Larry King Live." When she was asked whether nicotine was addictive, she responded, "No, nicotine is not addictive." TIMN0010649-0650 at 0650 (US 62778).

1239. In this litigation, Ms. Dawson testified that the Tobacco Institute's public position was that smoking and nicotine were not addictive and that this position remained unchanged over the years. Dawson WD, 36:8-13; Dawson TT, 1/12/05, 9938:3-9940:19.

1240. Dawson, on behalf of the Tobacco Institute, also admitted that there was no scientific basis for the public statements denying the addictiveness of nicotine, Dawson WD, 49:5-50:4, and that the cigarette manufacturer Defendants never provided the Tobacco Institute with information that nicotine was a drug with a variety of physiological effects and was thought to be responsible for

the addictive properties of cigarette smoking. Dawson WD, 53:9-12, 54:8-12, 55:10-14; Dawson TT, 1/12/05, 9958:1-11.

1241. The Tobacco Institute joined Defendants Philip Morris, RJR, B&W, Lorillard, and Liggett in opposing the Food and Drug Administration's assertion of jurisdiction over cigarettes as drug (nicotine) delivery devices in 1996. In Volume III of the filing prepared and submitted on behalf of the Tobacco Institute and the cigarette manufacturer Defendants, the group denied that nicotine in tobacco was addictive, denied any significant pharmacological effects of nicotine, denied that smokers smoke primarily for nicotine, denied any "threshold" amount of nicotine necessary for addiction, and denied compensation by smokers of low tar products. 2505597781-7998G (see, e.g. 7793-7795) (US 23028*).

1242. The submission of the Tobacco Institute and the five manufacturers named above was publicized at a Tobacco Institute press conference on the morning of January 2, 1996. While the Tobacco Institute's Brennan Dawson led the press briefing, she was accompanied by Philip Morris' Steven Parrish, RJR's Charles Blixt, and Lorillard's Arthur Stevens. TI01750819-0820 (US 87156).

i. CTR

1243. Sheldon Sommers, Research Director of CTR and member of CTR's Scientific Advisory Board, told a Congressional subcommittee in hearings held in April 1969 that "smoking tobacco is not considered an addiction." 500925974-5998 at 5976 (US 85382); BWX0007189-7297 (US 36237).

1244. Robert Hockett, a subsequent CTR Research Director, stated during Congressional hearings held October 5 and 6, 1978, that while "there is an adjustment " to smoking over time, the issue of tobacco dependence was "a very tough question." 500925974-5998 at 5976 (US 85382).

1245. Statements such as these were misleading and are contradicted by decades of scientific research conducted by or funded by Defendants, and by a myriad of internal statements by company representatives.

j. Defendants' Conduct Continues

1246. Even today, although certain Defendants have acknowledged, to varying degrees, the overwhelming evidence that smoking is addictive, no Defendant accepts the Surgeon General's definition of addiction, no Defendant admits that nicotine is the drug delivered by cigarettes that creates and sustains addiction, and no Defendant acknowledges that the reason quitting smoking is so difficult, and not simply a function of individual will power, is because of its addictive nature.

1247. In 1999, Philip Morris first posted on its website a statement that "[w]e agree with the overwhelming medical and scientific consensus that cigarette smoking is addictive" and that it can be difficult to quit smoking. However, there is no mention of the established fact that the nicotine in cigarettes is what causes the smoker's addiction. TLT0770066-0088 (US 72408); Szymanczyk WD, 63:3-7; Parrish TT, 1/25/05, 11038:23-11039:8.

1248. On its current website, BATCo states that "[w]e accept the common understanding today that smoking is addictive." Yet, when discussing quitting smoking, the company makes no mention of the role nicotine plays in maintaining the addiction, downplays the success of nicotine replacement therapy in helping smokers quit, and still states that the most important factor in successful quitting is "having the motivation and the self-belief that you can quit." http://www.bat.com/oneweb/sites/uk3mnfen.nsf/wwPageswebLive/BEDB4BB/FDD4F7CE8025 6BF4000ee157?open document, TLT0231984-1984 (US 86692); (US 89563).

1249. On its current website, RJR states that, "Many people believe that smoking is addictive, and as that term is commonly used, it is." However, RJR later equivocates on this statement, stating its disagreement with the opinion in the health and scientific communities that smoking is as addictive as heroin or cocaine. RJR does not disclose the role of nicotine in the addiction. TLT0770095-0128 (US 72410); Beasley WD, 67:16-23.

1250. On its current website, B&W recites its new public position that it "agrees that, by current definitions of the term 'addiction,' including that of the Surgeon General in 1988, cigarette smoking is addictive." Two paragraphs down from this, however, B&W reverts to its former denials, omitting any reference to nicotine and stating the following :

> Although smoking can be very difficult to quit, we do not believe that the term "addiction" should be used to imply that there is anything in cigarette smoke that prevents smokers from reaching and implementing a decision to quit. Smoking may indeed be difficult to quit, but people can quit and do so in large numbers. The scientific literature demonstrates that smokers who believe they can quit, and who believe that the benefits of quitting outweigh the enjoyment of continuing to smoke, can do so.

TLT1020158-0158 (US 87157); Ivey WD, 94:16-96:1.

1251. B&W's current Nicotine and Addiction section does not even discuss nicotine or its effects on the human body. In sum, the B&W current, post-MSA position continues to deny that any aspect of smoking "prevents" a smoker from quitting. Moreover, this position continues to confuse and distort the facts on addiction, namely that smoking is very difficult to quit primarily because of nicotine and that quitting is not simply a question of willpower and motivation. At the same time, the position refers to "the enjoyment of continuing to smoke," suggesting that smokers smoke simply

for continued "enjoyment," as opposed to a physiological craving or need for nicotine. TLT1020158-0158 (US 87157); Ivey WD, 94:16-96:1.

1252. Susan Ivey, former president and CEO of B&W and current CEO of RJR and Reynolds American, stated in 2004 that while B&W believed that nicotine is a "significant contributor to addiction," the company would not agree that nicotine is an addictive drug. Ivey TT, 11/16/04, 6194:21-6195:5.

1253. Lorillard's current position, as of 2005, is that smoking is addictive but only in the same way as "repetitive pleasurable activities that can be difficult to stop." Lorillard believes that smoking is not addictive in a "pharmacological sense." Orlowsky WD, 116:14-117:18. With respect to nicotine, President and CEO Martin Orlowsky stated, on behalf of Lorillard, that the company does not take a public position" and does not know if nicotine is an addictive drug or not. Id. at 121:15-22.

1254. The Lorillard website has recently added a statement that includes the sentence, "Cigarette smoking can also be addictive." However, this statement does not define the term "addictive," and omits any reference to nicotine. (JD-024979).

1255. Martin Orlowsky agreed that Lorillard's position was that smoking is addictive, but he "did not know what a 'drug addiction' is." Orlowsky WD, 119:21-121:6. Orlowsky would only say that "nicotine is an important part of smoking" and refused to accept the fact that nicotine was the ingredient in cigarettes that made cigarette smoking addictive. Orlowsky WD, 119:21-121:6, 121:15-122:6. Orlowsky was a particularly evasive and unresponsive witness in this litigation. His testimony was not credible.

1256. While Philip Morris now appears to have accepted that smoking and nicotine are addictive, that new position was not adopted until 2000, after the filing of this lawsuit. After decades of consistent public denials by different corporate executives, Philip Morris USA President and CEO Michael Szymanczyk first admitted in June 2000 that nicotine was addictive. Philip Morris USA subsequently added a statement to its website in October 2000 agreeing that "cigarette smoking is addictive, as that term is most commonly used today." That statement has since been modified to read, "We agree with the overwhelming medical and scientific consensus that cigarette smoking is addictive." However, the Philip Morris USA website still omits any information on nicotine. Szymanczyk PD, United States v. Philip Morris, et al., 6/13/02, 249:15-254:8, 267:10-270:3.

1257. Philip Morris International changed its public position to agree with the public health community's conclusions that smoking is addictive at the same time (October 2000) that Philip Morris USA did so. 2078850517 (US 45218).

1258. Philip Morris adopted its current position that nicotine when found in cigarette smoke is addictive for the first time in January 2003, in a pleading filed in this case. USX639001-0400 (US 89555). The company's present definition of addiction is "a repetitive behavior that's associated with an adverse outcome." The "adverse outcome" is disease associated with smoking. Philip Morris believes that if the risk of disease were eliminated, cigarette smoking would no longer be an addiction. In addition, Philip Morris continues to dispute that nicotine is in and of itself an addictive drug. Carchman PD, United States v. Philip Morris, et al., 6/6/03, 14:6-15:12, 22:3-23:3, 23:19-20, 25:4-26:24, 29:1-13, 85:17-86:10.

1259. According to Denise Keane, general counsel for Defendant Philip Morris USA, Philip Morris never publicly explained its position that cigarette smoking is not addictive because the

company believes it should properly be characterized as a drug dependence. Keane TT, 1/18/05, 10447:23-10448:7.

1260. Ms. Keane also admitted that when Philip Morris purchased three Liggett brands in 1999, L&M, Lark, and Chesterfield, it removed the pre-existing package labels stating that smoking is addictive. Keane TT, 1/18/05, 10457:5-10460:16.

1261. While Philip Morris replaced the pre-existing package labels with onserts, these onserts did not contain the statement that Philip Morris agrees that smoking is addictive, even though Philip Morris had publicly stated this view in 2000 as already noted. Keane TT, 1/18/05, 10460:17-10462:15.

1262. While Philip Morris told people that it agrees that cigarette smoking is addictive, it has not told the public that it agrees that it is the nicotine delivered in cigarette smoking that is addictive. Ms. Keane, Philip Morris' general counsel, admitted this was material information that the public should possess. Keane TT, 1/18/05, 10533:5-10534:4.

1263. In spite of the overwhelming medical and scientific evidence, only one cigarette manufacturer Defendant, Liggett, has placed a warning on its packages flatly and clearly stating that nicotine is addictive. Liggett advertising and packaging state, "Smoking is Addictive." LeBow TT, 2/7/05, 12375:21-12376:1.

1264. Moreover, no cigarette company Defendant other than Liggett and Philip Morris, has admitted that nicotine in cigarette smoke is addictive. Liggett is the only Defendant to do so publicly.

1265. Geoffrey Bible, former CEO of Philip Morris Companies, was the ultimate authority on the content of public statements on smoking and health made by Philip Morris Companies'

subsidiaries, including Philip Morris USA. Bible PD, United States v. Philip Morris, et al., 8/22/02, 83:9-84:9, 85:22-86:25.

5. Defendants Concealed and Suppressed Research Data and Other Evidence that Nicotine Is Addictive

1266. As demonstrated, Defendants' internal documents reflect a sophisticated understanding of nicotine and its role in creating smoking addiction -- an understanding that is totally inconsistent with their long-standing public denials that nicotine is addictive. In addition, it is clear that Defendants intentionally withheld from public dissemination, from the public health community, and from government authorities, accurate and important information regarding the addictiveness of nicotine in cigarettes. Henningfield WD, 87:10-88:20, 161:23-167:6.

1267. Defendants suppressed their own extensive research findings discussed in Section V(B)(3), supra, supporting the conclusion that nicotine is addictive, and fostered controversy about the extent of scientific knowledge concerning nicotine and its addictive effects that was publicly available. Henningfield WD, 134:23-136:9, 161:23-167:6.

1268. As that evidence shows, Defendants themselves possessed, from their own in-house and external research, information that led them to conclude, long before public health bodies did, that the primary reason people keep smoking cigarettes is to obtain the drug nicotine, which is addictive. Defendants intentionally withheld this data (including many of studies on the physiological effects of nicotine in animals and humans, and much of their research on the determinants of nicotine dosing in cigarettes) when there were major public efforts to review and synthesize all available information. This occurred with the preparation of both the 1964 and 1985 Surgeon General's Reports and numerous congressional investigations. Defendants also engaged in

a decades-long, elaborate, sophisticated, well-funded public relations offensive, denying and attacking the consensus conclusion they had long ago reached internally, but that the less well-funded public health community was belatedly reaching, that smoking is addictive primarily because cigarettes effectively deliver nicotine. Henningfield WD, 87:10-103:13, 104:14-110:8, 134:23-136:1, 150:14-159:8, 161:23-167:6. See also 490010042-0044 at 0043 (US 79285) (presenting "Addiction Statement," prepared by Shook, Hardy & Bacon, deciding the company's position must be that smoking is not addictive and that, "Statements in company documents cannot refute this conclusion.").

1269. A September 9, 1980 Tobacco Institute internal memorandum revealed the recognition by the member companies that a public admission that nicotine was addictive would undermine their litigation defense that a person's decision to smoke is a "free choice":

> [T]he entire matter of addiction is the most potent weapon a prosecuting attorney could have in a lung cancer/cigarette case. We can't defend continued smoking as "free choice" if the person was "addicted."

TIMN0107822-7823 at 7823 (US 21275).

1270. A second reason Defendants denied addiction was to avoid regulation by the FDA. None of the companies' internal research and evidence about addiction was submitted in 1996 when the FDA sought to assert jurisdiction over cigarettes as drug (nicotine) delivery devices. Instead, Defendants vigorously denied every aspect of addiction. 25055597781-7998G (US 23028*).

1271. The following are examples of the actions Defendants undertook to either block or limit the nature and dissemination of nicotine-related research, as well as any evidence suggesting addiction.

a. Philip Morris

1272. As already discussed, Philip Morris intensively studied nicotine and both its pharmacological and physiological effects on smokers (sometimes called addictive, dependence-producing, or reinforcing effects) in an effort to increase its market share within the industry. However, Philip Morris withheld from the public its internal knowledge and acceptance that smoking, because of nicotine, was addictive. Similarly, Philip Morris's research demonstrating the addictive impact of nicotine on the bodies of animals and humans was suppressed, and in some cases terminated.

1273. In a 1992 memorandum titled "Philip Morris Behavioral Research Program," the company's long-time outside counsel, Shook, Hardy & Bacon, reviewed and summarized much of Philip Morris's nicotine research conducted from 1969 to 1984 under the direction of Principal Scientist William L. Dunn. The research into nervous system effects and smoking behavior was conducted both internally (by scientists such as Dunn, Berntson, Gullotta, DeNoble and others) and by outside researchers (including scientists Hutchinson, Abood, Egle and others). 2021423403-3497 at 3406-3409 (US 36743).

1274. The funding for the Behavioral Research Program, or Nicotine Program as it was sometimes called, was terminated without explanation in 1984. 2025768108-8166 at 8113 (US 36743).

1275. Discussing Philip Morris's research into the pharmacological effects of nicotine, Dr. Dunn wrote the following in a "CONFIDENTIAL" memorandum to Research & Development Vice President Helmut Wakeham on February 19, 1969: '[D]o we really want to tout cigarette smoke as

a drug? It is, of course, but there are dangerous F.D.A. implications to having such a conceptualization go beyond these walls." 1003289921-9922 at 9921 (US 20167).

1276. Dunn wrote a "CONFIDENTIAL" memorandum dated October 19, 1977 titled "Smoker Psychology Program Review" summarizing his program for Tom Osdene. Dunn made three observations that represented the Philip Morris position on smoker behavior and nicotine research. First, the mission of the Philip Morris program was to "study the psychology of the smoker in search of information that can increase corporate profits." Second, Dunn admitted that while "[t]here is a general realm of psychological inquiry that would not make our lawyers nervous were the findings to be made public," there is "legal concern" with any scientific inquiry into the dependency-producing compound, or "reinforcing mechanism," of smoking. Third, Dunn stated that his research assumed that nicotine was the compound in question, a compound without which "the cigarette market would collapse, P.M. would collapse, and we'd all lose our jobs and consulting fees." 1000046538-6546 at 6538-6542 (US 26074); 2021423403-3497 at 3488 (US 36743).

1277. Dunn also compared smokers seeking nicotine to Pavlov's dogs and to hungry laboratory rats who press levers seeking food pellet "rewards":

> Consider the smoker. Smoking the cigarette is the lever press. The effect of that smoking act upon the person is the reward. That effect reinforces the smoking act. He comes to push the smoking lever 10 to 60 times per day.

1000046538-6546 at 6543 (US 26074); 2021423403-3497 at 3485 (US 36743).

1278. Shortly thereafter, in a November 3, 1977 memorandum, Dunn revealed his strategy for concealing any unfavorable nicotine research results. Regarding a proposed study of nicotine withdrawal in rats to be undertaken by Philip Morris scientist Carolyn Levy, Dunn stated that he

approved it. However, he cautioned that, "If she is able to demonstrate, as she anticipates, no withdrawal effects of nicotine, we will want to pursue this with some vigor. If, however, the results with nicotine are similar to those gotten with morphine and caffeine, we will want to bury it." 1003293588-3588 (US 20168).

1279. The terms of Levy's "Proposed Study of Nicotine Withdrawal in Rats" are contained in a November 1, 1977 memorandum from her to Dunn, where Levy states her hypothesis that her research would show that there are no withdrawal symptoms associated with nicotine. Levy intended to compare known morphine and caffeine withdrawal symptoms to nicotine's effects. Levy stated, however, that while she predicted favorable results, she understood that "it is dangerous to set out to prove the null hypothesis." 1003293589-3591 (US 21421).

1280. Robert Seligman, Vice President of Research & Development at Philip Morris, wrote a memorandum to company general counsel Alex Holtzman dated June 27, 1978, attaching Dunn's report of a conference Seligman and Dunn attended called "Cigarette Smoking as a Dependence Process." The conference was apparently put on by the National Institute on Drug Abuse. Seligman prophetically warned Holtzman that:

> It is my impression that at some time in the future, nicotine will be listed as a dependency drug (or smoking will be listed as a dependence process). Thus, it might be wise to contemplate the future legal ramifications of such an inevitability. Additionally, you might want to consider some mode of action which might forestall such a designation by the drug abuse community.

1003726420-6420 (US 85384) (emphasis in original).

1281. A memorandum to Seligman from J.I. Seeman, dated March 18, 1980, provided additional commentary on the Philip Morris "Nicotine Receptor Program." In Seeman's

memorandum, he implied that any outside scientist working with Philip Morris had to share the company's interest. He wrote that, "An additional, and perhaps fundamental, requirement was that the individual(s) chosen to work with us is acceptable from a 'political' perspective." 1003289974-9975 (US 87078).

1282. Dunn wrote an internal memorandum to Seligman dated March 21, 1980, describing Philip Morris's "Nicotine Receptor Program," an internal company research program focusing on the psychopharmacology of nicotine. The research was "aimed at understanding that specific action of nicotine which causes the smoker to repeatedly introduce nicotine into his body." While Dunn stated that the nicotine research would likely produce "significant scientific developments," he noted that it was "a highly vexatious topic" that company lawyers did not want to become public because nicotine's drug properties, if known, would support regulation of tobacco by the FDA. Dunn wrote, "Yet this is where our attorneys least want us to be." Moreover, lawyers were concerned that new "knowledge of nicotine" might permit "therapeutic breakthroughs to reduce the incidence of smoking." 0000127789-7792 (US 35152).

1283. Consequently, Dunn observed that while Philip Morris would continue its research program "to study the drug nicotine, we must not be visible about it." And while the program depended on a "heavy commitment" by Philip Morris, Dunn wrote that "our attorneys, however, will likely continue to insist on a clandestine effort in order to keep nicotine the drug in low profile." Dunn mentioned Shook, Hardy & Bacon's Don Hoel and Jacob & Medinger's Ed Jacob by name in his memorandum. 0000127789-7790 (US 21794).

1284. A March 16, 1983 memorandum from researchers James Charles and Victor DeNoble concerning their critiques of the Public Health Service's Report titled "Why People Smoke"

acknowledged that Philip Morris had research results with implications contrary to the company's publicly stated opinions on nicotine, but that Philip Morris had not disseminated those findings publicly: "Recent experiments in Vic's [DeNoble's] project have shown that there is a behavioral component to tolerance (a learned phenomenon), but this work has not been published." 1005061346-1346 (US 20199). This was the work, described below, led by Drs. DeNoble and Mele. Mele WD, 11:6-15:4.

1285. Under the guidance of Drs. DeNoble and Mele, the Philip Morris Biochemical Research Division developed an important method for demonstrating that rats press levers and will work for nicotine. Such studies had been done earlier with monkeys, but there had not previously been a good rat model. Philip Morris was one of the first to develop a valid rat model for nicotine intravenous self-administration. As outlined infra, Philip Morris prevented the publication and presentation of this important new work, claiming the methodology was flawed. Henningfield WD, 161:23-167:6; DeNoble WD, 17:1-18:6, 22:6-23:18, 39:12-45:11; Mele WD, 20:3-22:12, 28:13-32:4.

1286. Drs. DeNoble and Mele had also demonstrated, by administering nicotine to rats, the existence of both physiological and behavioral tolerance to nicotine. Mele WD, 11:6-13:5. Behavioral tolerance -- when tolerance develops to a behavioral effect of a drug -- had not been shown prior to this research. Id. at 12:16-13:10. When Dr. Mele sought to publish this groundbreaking research in 1983, Philip Morris informed him that the tolerance study could not be published "because the study showed tolerance and physical dependence to nicotine." Id. at 14:2-10. Instead, Philip Morris would only allow Dr. Mele to write for internal consumption. Id.; 1000413881-3964 (US 20100).

1287. Shook, Hardy & Bacon commented on an unpublished manuscript from Drs. DeNoble and Mele titled "Development of Behavioral Tolerance Following Chronic Nicotine Administration," that "[t]he bottom line is that the authors are maintaining that there is tolerance to nicotine, which involves both behavioral and physiological factors." The memorandum noted that such a finding would be detrimental to the cigarette industry:

> It is obvious that such a report has undesirable implications for smoking and health litigation. Tolerance is frequently cited as one of the hallmarks of addiction. It is the industry's position that one of the classic criteria for addiction is tolerance, and that such has not been demonstrated in the case of nicotine. While it is true that the Mele and DeNoble paper does not discuss smoking in particular or attempt to extrapolate their experimental findings beyond the laboratory, there is nevertheless the implication simply by the fact that Philip Morris is doing this research, that it is viewing this research as relevant to smoking behavior.

2021424402-4412 at 4404-4405 (US 22847).

1288. In the same memorandum, Shook, Hardy & Bacon pointed out the legal implications of the "unfavorable" Philip Morris internal nicotine research:

> Research engaged in, as well as some possibly under consideration, by Philip Morris has undesirable and dangerous implications for litigation positions the industry takes in regard to smoking behavior. The pharmacological nature of the research implies strongly a view of the importance of nicotine. What is worse, research reports under Philip Morris' sponsorship contain claims of unequivocal demonstrations of reinforcement by nicotine in animals. This kind of research is a major tool of our adversaries on the addiction issue; the irony is that industry-sponsored research is honing that tool. In the final analysis, the performing and publishing of nicotine related research clearly seems ill-advised from a litigation point of view.

2021424402-4412 at 4412 (US 22847); 2021423403-3461 at 3422 (US 87038*).

1289. The intravenous self-administration rat model is considered a classic indicator that a substance has abuse potential. Using that model, and the same procedure that NIDA used to demonstrate abuse potential, the Philip Morris DeNoble study demonstrated the abuse potential of nicotine. DeNoble WD, 17:9-20:2; See also, 2023963269-3341 at 3312-2213 (US 20398) (DeNoble testimony at 1994 Waxman hearings).

1290. DeNoble's rat studies on self-administration and tolerance succeeded where others had failed and clearly were very significant at that point in history. DeNoble WD, 17:9-18:6. As DeNoble explained in his testimony before the Waxman Subcommittee in 1994:

> The work that we did with nicotine was clearly some years ahead of the external community, scientific community. It wasn't until 1989 that Bill Corgal (sp) demonstrated that nicotine would function as an intravenously delivered reinforcer for rats, using the same models that I used -- that Paul [Mele] and I used. The work that we did on self administration, on dependence, on tolerance, on frustration, clearly would have moved the scientific community much further along than it had been moved by that work not getting out.

2023963269-3341 at 3285 (US 20398). This assessment echoes Dr. Henningfield's view about the adverse impact that Philip Morris's concealment had on the scientific research community. Henningfield WD, 162:10-167:6.

1291. DeNoble's research colleague at Philip Morris, Dr. Paul Mele, also agreed with this analysis in his testimony before the Waxman Subcommittee in 1994:

> . . . [S]ome of these studies were the first to be done with nicotine. I have no doubt that other people would have performed these studies subsequently just as has been done recently in Toronto. But they weren't being done at the time, and to quote a recent review article in Science . . . it basically took six or seven years for the nicotine self-administration model to be developed and come out. Whereas, it would have been out much earlier had this work been allowed to go out and stay out.

2023963269-3341 at 3286 (US 20398).

1292. Philip Morris management fully appreciated the scientific significance of the DeNoble rat self-administration nicotine study. At first, Dr. DeNoble obtained approval to submit it to a leading peer review scientific journal, Psychopharmacology, and there were plans to present results of the study at the 1983 American Psychological Association meeting in Anaheim, California. 2023963269-3341 at 3303 (US 20398).

1293. Prior to publication, at a 1982 presentation at corporate headquarters on the activities of the behavioral pharmacology laboratory including the results of the rat self-administration nicotine study, DeNoble was asked only one question, by the President and CEO of Philip Morris, Ross Millhiser: "Why should I risk a billion-dollar industry on rats pressing a lever to get nicotine?" DeNoble WD, 24:8-25:1.

1294. The saga of the Philip Morris Nicotine Program is summarized in detail in a lengthy 1992 document prepared by outside counsel Shook, Hardy & Bacon titled "Philip Morris Behavioral Research Program." In this report, counsel describe many aspects of the program and cite specific documents showing a major internal research initiative that lasted from 1969 to 1984, involving many scientists, including DeNoble and Mele. The report makes clear that the program generated results and was still generating data in 1984 related to nicotine receptors, analogs, peripheral nervous system effects, central nervous system effects, effects on animal behavior, and differences between high nicotine delivery and low nicotine delivery cigarettes. 2021423403-3497 at 3408-3409 (US 36743).

1295. In a July 27, 1983 letter to the head of Philip Morris, Shook, Hardy & Bacon attorney Patrick Sigrid summarized the nicotine research being conducted by DeNoble and recommended its suppression. 2046754720-4731 (US 20476).

1296. In April 1984, a few months after a top Philip Morris executive and lawyer visited the behavioral pharmacology lab, DeNoble's laboratory was suddenly, with no warning, preparation, or explanation, shut down and the animals killed. DeNoble WD, 38:4-16, 39:3-9; Mele WD, 25:19-26:21. In DeNoble's own words, "[O]ur laboratory was terminated in one day." 2504099642-9666 at 9660 (US 22708).

1297. Subsequently, DeNoble was told by several representatives of Philip Morris management that his lab was producing information that the company did not want generated internally. As DeNoble testified at a Congressional hearing:

> Apparently, at that same time, some litigation had come out, some law suits, and we were told that the data we were generating, the types of studies that we were doing would not be favorable in that litigation. . . . They just said that if the work were removed from the company connecting it back to the company would be, you know, more difficult to do than if it's being done right in the company itself.

2023963269-3341 at 3305-3306 (US 20398); See also, DeNoble WD, 38:12-14.

1298. In 1986, Dr. DeNoble and Dr. Mele presented their findings on behavioral tolerance development to nicotine in rats to the Federation of American Societies for Experimental Biology in St. Louis, Missouri. In April that year, Philip Morris Companies Assistant General Counsel Eric A. Taussig sent each scientist a letter which stated in part:

> As you are aware, upon your employment at Philip Morris . . . you signed an agreement (a copy of which is enclosed) requiring you to keep confidential, unless expressly permitted otherwise, research developed while an employee of the Company. The disclosure of

> such information as a result of your employment at Philip Morris without permission constitutes a breach of your agreement with the Company. In the future, you are expected to comply with the terms of the agreement.

DeNoble WD, 39:12-42:20; Mele WD, 28:13-30:22; 2047340350-0350 (US 22772); 2077541354-1354 (US 44603).

1299. DeNoble perceived this letter to be a threat of future litigation. In a September 10, 1986 letter, Taussig again threatened DeNoble and Mele with litigation if they published, or presented, their findings on nicotine self-administration and brain effects, accusing DeNoble of disclosing "information relating to research on a project titled 'Brain Sites Involved in the Mediation of Behavioral Effects of Intraventricularly Administered Nicotine." Taussig wrote that Philip Morris was aware that they had on two occasions already presented the results of their nicotine research, allegedly in violation of their employment termination agreement. He informed them that "the Company cannot tolerate this type of conduct," and reiterated that "if you wish to publish or otherwise utilize research from Philip Morris, you must request and receive permission from the Company." He ended the letter by stating that "[a]ny further breach of your agreement will result in action being taken." 2023192361-2362 (US 20380). DeNoble was released from his confidentiality agreement with Philip Morris in 1994. DeNoble TT, 1/6/05, 9043:19-23.

1300. An April 1994 Shook, Hardy & Bacon report titled "Philip Morris Research of Nicotine Pharmacology and Human Smoking Behavior" pinpoints exactly which research was never made public and the relationship of that research to Philip Morris products. When describing the "Nicotine/Acetaldehyde" research conducted by DeNoble in 1982, research that showed that

acetaldehyde and nicotine functioned as "positive reinforcers," the Shook, Hardy & Bacon report admitted that the research was never published:

> CAVEAT: This research has never been published. There is nothing in the literature regarding the synergistic effects of nicotine and acetaldehyde. In addition, see description below re: Frank Ryan data on predicting sales.
>
> Upon learning that acetaldehyde functions as a positive reinforcer, they endeavored to study the combined effects of nicotine and acetaldehyde on self-administration. Results indicated that reinforcing effects of these agents are additive.
>
> Research done by Frank Ryan indicated that acetaldehyde and nicotine data could be used to predict cigarette sales at a 96% accuracy. . . . Frank Ryan ran a program and was able to predict blindly which cigarettes would sell and which wouldn't based on the combination of nicotine and acetaldehyde delivery.

2046819241-9268 at 9249-9250 (US 85265*).

1301. In a later section of the 1994 report, Shook, Hardy & Bacon described how nicotine research undermined Philip Morris's public position denying addiction, and could invite regulation by the FDA:

> D. Why Was Research Stopped
>
> 1. Sensitivity. [CAVEAT: Significance is self-evident.]
>
> According to DeNoble, "we were the only tobacco company that I knew of, or that anybody else knew of, doing work with whole animals, live whole animals, and because of the nature of the research, that is, looking at self-administration, looking at the effects of nicotine on the brain function, the research was held restricted to upper management only."
>
> DeNoble discussed the effect of his research on the company with Dr. Charles, Dr. Osdene, Dr. Pages, Mr. McDow, Max Hausermann, Mr. Pollock, and Jim Remington. . . . "The downside was that we were

> doing whole animal research, which looked to them like we were doing Federal Drug Administration [sic] research."
>
> DeNoble understood that the research he was doing could undermine the public posture Philip Morris was taking with outsiders.
>
> DeNoble discussed with Jim Charles and Tom Osdene the potential damage to the company of continuing animal research.

2046819241-9268 at 9256 -9257 (US 85265*) (citations omitted).

1302. The 1994 Shook, Hardy & Bacon report also acknowledged the sudden DeNoble "Laboratory Shutdown," adding "[CAVEAT: Significance is self-evident.]." The report then acknowledges that DeNoble's research was suppressed: "[H]e was not allowed to publish the research regarding the effects of nicotine and acetaldehyde." This occurred "after a letter from Shook, Hardy to the Philip Morris Legal Department and discussions between [attorney] Alex Holtzman and [scientist] Jim Charles." 2046819241-9268 at 9258-961 (US 85265*).

1303. None of the results or conclusions from the Philip Morris Nicotine Program or Behavioral Research Program were made public or were included in Philip Morris's and the industry's collective submission to the FDA in 1996. In fact, Volume III of the industry's "Comments" deny FDA assertions that research existed showing that nicotine is addictive. 2505597781-7998G (US 23028*).

1304. Philip Morris was not only interested in suppressing research that suggested nicotine addiction, but consumer products that combated nicotine addiction as well. In 1984, Philip Morris became aware that one of its major suppliers of a humectant (a chemical added to tobacco to keep it moist), Merrell Dow Pharmaceuticals, was marketing a new smoking cessation gum called

Nicorette. Philip Morris understood the threat Nicorette posed, namely allowing nicotine-addicted smokers to quit, and took action:

> Dow was told that we were discontinuing all humectant purchases because of Dow-Merrell's attack on cigarette smoking associated with the introduction of Nicorette, a nicotine-containing prescription chewing gum which reportedly aids patients in quitting smoking. . . .
>
> Through a series of meetings over the past few years, Dow had been repeatedly advised of our displeasure over the anti-smoking nature of Dow-Merrell's Nicorette Program. . . . Dow was informed that the recent spate of activity can only be interpreted as a conscious corporate decision that Nicorette is more important than the Philip Morris (and other tobacco) business. That is, they cannot realistically expect a customer to spend millions of dollars for materials, when the profits from those sales, directly or indirectly, are used to attack that customer's product and perhaps reduce the customer's sales.

2023799799-9800 at 9799 (US 26801).

1305. Philip Morris's representatives met with Merrell Dow on several occasions and attempted to shut down the marketing and sale of Nicorette. An October 25, 1984 Philip Morris document recorded the following threat at one of the Philip Morris/Dow meetings: "It was reiterated that Dow had been a superior supplier and that we desired to maintain our relationship. However, future purchases would be predicated on Dow's performance as a supplier as well as the course of the Nicorette program." 2023799801-9802 at 9802 (US 37048); Henningfield WD, 167:7-168:22. See also 2023799804-9804 (US 26802); 2023799803-9803 (US 37049).

b. BATCo

1306. BATCo's efforts to conceal the nicotine research it carried out at Battelle Labs dates back to at least 1963. In a May 29, 1963 letter to the Tobacco Research Council ("TRC"), the English equivalent of CTR, Sir Charles Ellis enclosed several nicotine research reports, but stated

that the BATCo Board "wish me to ask you that these reports should be kept strictly confidential" by the TRC executive committee. Ellis's letter is marked "STRICTLY PERSONAL AND CONFIDENTIAL." 105620759-0761 (US 85387).

1307. In an October 25, 1978 memorandum titled "Notes on BAT/ITL Joint Meeting," Ed Jacob, a longtime tobacco industry counsel in the United States, advised that there be "a total embargo on all work associated with the pharmacology of nicotine and the benefits conferred by smoking for three reasons," including "a pending California lawsuit which indicted nicotine as an addictive substance," and another lawsuit "against [HHS Secretary] Califano to show cause why tobacco should not be brought under the powers of the FDA." 110083647-3650 at 3649-3650 (US 76174).

1308. At a February 16, 1983 meeting of tobacco company directors, attended by Manny Bourlas of Philip Morris, L.C.F. Blackman, a BATCo board member and former head of research, and representatives from several European tobacco companies, the participants discussed how to respond to the impending Independent Scientific Committee on Smoking and Health ("ISC") Report. The participants agreed that the tobacco industry should not cooperate with the ISC and should respond to government requests by falsely stating that it had no relevant expertise. The participants agreed on the need to avoid any "sensitive" studies, including research into nicotine's role in "perpetuating the smoking habit":

> 3. <u>The effect of nicotine at the levels achieved through smoking.</u> While animal experiments could probably be designed to study the effect of nicotine (either by itself or as 'spiked' additions) our response to the ISC should be that we have nothing to offer. The little information we have is already in the public domain, and we have no idea as to a worthwhile research programme . . .

> 5. The role of nicotine, at the relevant lower range of nicotine dosage, in perpetuating the smoking habit. While much information already exists in the literature (Russell, Ashton and Stepney etc) this is a particularly sensitive area for the industry.
>
> If any future study showed that nicotine either was, or was not, associated with perpetuating the smoking habit, industry could well be called upon to reduce or eliminate nicotine from the product. (A heads we lose, tails we cannot win situation!)
>
> We must not become involved in any collaborative study with the ISC.

109840698-0702 at 0699-0700 (US 21733) (emphasis in original).

c. Brown & Williamson

1309. In 1963, as the following facts demonstrate, B&W, acting in concert with its parent BATCo and RJR, concealed nicotine and addiction research from the Surgeon General's Advisory Committee, which was then in the process of preparing the Surgeon General's 1984 Report on smoking and health.

1310. The 1959-1964 BATCo nicotine research, carried out under code names "MAD HATTER," "HIPPO," and "ARIEL," was provided to B&W. This was research that, in the words of BATCo's lead scientist Sir Charles Ellis, was designed to determine "what constitutes the hold of smoking, that is, to understand addiction." 301083820-3835 at 3826 (JE-46579). Ellis also acknowledged that the BATCo secret nicotine research gave the industry "knowledge of the effects of nicotine far more extensive than exists in published scientific literature." 301083820-3835 at 3828 (JE-46579).

1311. Moreover, B&W executives were present at a 1962 BAT research conference where Ellis declared the group's position that "smoking is a habit of addiction." This copy of the

conference report is stamped "Property of Brown & Williamson Research Department." 650344433-4493 at 4439 (US 53468).

1312. PROJECT HIPPO I was completed in January 1962, finding that rats developed tolerance to nicotine and that nicotine shared many similarities with tranquillizers. The final report on PROJECT HIPPO II, dated March 1963, concluded that nicotine had many more beneficial physiological effects than tranquillizers, benefits that support "the pleasure of smoking" and lead to withdrawal. 105620620-0683 (US 20247); 105620569-0605 (US 20246).

1313. General Counsel Addison Yeaman, in a "STRICTLY PRIVATE AND CONFIDENTIAL" memorandum dated July 17, 1963, reviewing PROJECT HIPPO I and II, agreed that "nicotine is addictive" and that "we are in the business of selling nicotine, an addictive drug." Yeaman also advised that the company should develop filtered products that still delivered the necessary "nice jolt of nicotine." 682764441-4461 at 4455 (US 21030).

1314. On May 14, 1963, B&W's President William S. Cutchins received a request for information from the Surgeon General's Advisory Committee regarding smoking and health matters. In a response to the Assistant Surgeon General James Hundley, Cutchins simply stated that B&W contributed to smoking and health research via its contributions to the TIRC. 680249780-9781 (US 85390); See also, 680249799-9799 (US 85389). No information about PROJECT HIPPO I or II was supplied.

1315. Cutchins' letter was the carefully crafted product of industry legal advice. In a letter dated May 6, 1963, to B&W in-house counsel DeBaun Bryant, outside counsel J.M. Johnson recommended that the company respond to the Surgeon General's Advisory Committee in an intentionally vague and confusing manner:

> I am of the further opinion that any description in the letter to the Committee of the methods and steps involved in the various scientific research programs conducted by Brown & Williamson must necessarily be so vague and incomplete as to be irksome to the reader. . . . Therefore, it is my suggestion that we state simply that we have conducted no medical research, having left that to TIRC. . . . I repeat it is unfortunate that Brown & Williamson must submit anything, but this approach seems to me to be the most innocuous of the alternatives.

680249785-9786 (US 85391)).

1316. Johnson concluded his letter with the advice that B&W's submission to the Surgeon General's Advisory Committee must protect the company's litigation position, and must contain only material that had already been published: "From a litigation standpoint I believe it is axiomatic that it is best to submit the least scientific material possible consonant with the objective of not irritating the Committee. As I mentioned on the telephone I would prefer to see only previously published material submitted . . . ." 680249785-9786 (US 85391).

1317. In a June 19, 1963 document titled "Note for Mr. Cutchins," BATCo president Ed Finch told his counterpart at B&W that BATCo had sent B&W copies of all the BATCo-sponsored nicotine research conducted at the Battelle Labs. Finch stated that because the reports were "sound piece[s] of research . . . it might be desirable to get them submitted to the U.S. Surgeon General's Committee." Finch also informed Cutchins that the Tobacco Research Council in Britain was sending copies of the nicotine research reports to the TIRC (CTR's predecessor) as well, "with a request that they consider whether it would help the U.S. industry for these reports to be passed on to the Surgeon General's Committee." 689033429-3429 (US 54274).

1318. A letter from BATCo's Sir Charles Ellis to B&W's Yeaman ,dated June 28, 1963, recalled that B&W had already received the "HIPPO" research reports, and enclosed the May 1963

BATCo report from Dr. Haselbach titled "A Tentative Hypothesis on Nicotine Addiction." MTP0013569-3569 (US 76159).

1319. The "Tentative Hypothesis" document, quoted in detail at Section V(B)(3)(c)(¶1009), supra, closed with the following: "In conclusion, a tentative hypothesis for the explanation of nicotine addiction would be that of an unconscious desire to restore the normal physiological equilibrium of the corticotropin releasing system in a body in which the normal functioning of the system has been weakened by the chronic intake of nicotine." 536480912-0914 (US 20928).

1320. BATCo also forwarded its report titled "The Fate of Nicotine in the Body" to B&W under cover letter from Sir Charles Ellis to chairman Bill Cutchins (stamped "Received") on July 1, 1963. In his cover letter, Ellis wrote:

> I feel sure you will agree that a knowledge of the fate of nicotine in the body is a necessary accompaniment to studying the physiological effects that nicotine can produce. I hope you will be interested in the experiments which in my opinion add considerably to the published knowledge in this subject.

689033419-3419 (US 54271).

1321. At some point in 1963, B&W was considering providing BATCo-funded Battelle Labs research on the addictiveness of nicotine to the Surgeon General prior to the first Report on Smoking and Health in 1964. B&W changed its mind, as evidenced by a July 3, 1963 cable to BATCo Chairman A.D. McCormick, in which B&W General Counsel Addison Yeaman stated his intention to withhold the research results from the Surgeon General:

> Hoyt of TIRC agreed to withhold disclosure Battelle report to TIRC members or SAB until further notice from me. Finch agrees submission Battelle or Griffith developments to Surgeon General undesirable and we agree continuance of Battelle work useful but disturbed at its implications re cardiovascular disorders. . . .

> We believe combination Battelle work and Griffith's developments have implication which increase desirability [of] reevaluation [of] TIRC and reassessment fundamental policy re health.

689033422-3422 (US 22734).

1322. BATCo and B&W shared their PROJECT HIPPO I and II reports with RJR General Counsel Henry Ramm and outside industry counsel Ed Jacob. In an August 5, 1963 letter from B&W General Counsel Addison Yeaman to Ramm and Jacob, B&W enclosed "herewith the three volumes of "Project HIPPO I and II." 689033411-3416 (US 31044).

1323. There is no evidence that the report or its findings were ever shared with the Surgeon General's Advisory Committee. Despite BATCo and B&W's keen interest in nicotine and its impact on smokers' bodies and the extensive research Battelle Labs had conducted for BATCo, B&W never disclosed to the Surgeon General its knowledge that nicotine was addictive, or the research it possessed showing craving, tolerance, withdrawal, and the many physiological effects of nicotine on the body.

1324. The Surgeon General's Report was published in January 1964. The Report did not identify nicotine as an "addiction," finding instead that nicotine was a "habit." This finding was based on the Surgeon General's Advisory Committee's conclusion (1) that smoking created a "desire" but not a "compulsion;" (2) that smoking did not result in a "tendency to increase the dose;" and (3) that smoking did not create a psychological and physical dependence on nicotine. Report of the Surgeon General (1964) at 350-51, VXA1601844-2232 (US 64057).

1325. These findings of the Surgeon General's Advisory Committee, and the Report's ultimate characterization of smoking as a "habit" instead of an "addiction," were in direct conflict with the extensive and sophisticated nicotine research in the possession of B&W in 1963 -- research

which was intentionally kept from the Advisory Committee. Moreover, the 1964 finding of "habituation" is in conflict with the internal consensus of opinion at both BATCo and B&W, as stated by Sir Charles Ellis, Addison Yeaman, and company scientists, that nicotine and smoking produced an "addiction," not a mere "habit."

1326. There is certainly a possibility, although it is impossible to say from hindsight, that had the Surgeon General's Advisory Committee had full knowledge of Defendants' research and the conclusions to be drawn from such research, his 1964 Report may have accurately identified nicotine as addictive long before that conclusion was reached 14 years later in 1988. Henningfield WD, 114:13-122:19.

1327. In later years, B&W limited its involvement in nicotine research to studying the effects of nicotine on the central nervous system, work done in Europe under BATCo's supervision. This was done, as the following facts show, because of B&W's concern that research demonstrating nicotine addiction or dependence contradicted the industry's public position and might lead to regulation.

1328. Following a visit to B&W in October 1979, BATCo scientist D.G. Felton described the situation as follows:

> There is said to be a general nervousness in the U.S. Tobacco Industry (apart from Philip Morris) in working on the effects of nicotine, because of the risk of demonstrating nicotine dependence or addiction. There are fears that this would result in the Industry coming under the Food and Drug Administration. This view was given me both by the CTR administration and separately by [outside industry counsel] Mr. Tim Finnegan. In the latter's opinion, any work concerned with the central effects of smoking or of nicotine would run this risk legally.

650032772-2786 at 2783-2784 (US 85385).

1329. In an August 16, 1984 memorandum to BATCo counsel Earl Kohnhorst, B&W Senior Vice President and General Counsel Ernest Pepples advised against the use of a report by BATCo scientist R.P. Ferris titled "The Functional Significance of Smoking in Every Day Life" because of the report's concession that "many potential criteria for addiction identification are met by smoking behavior," and its reference to smoking as "one form of 'drug usage', 'psychoactive substance usage,' or 'psychoactive drug usage.'" Pepples called any use of the report by the company "not appropriate or advisable." 682015254-5255 at 5254 (US 23022); 650000563-0740 (US 85393).

1330. In his memorandum to Kohnhorst, Pepples described the "more serious problems" with the Ferris report, which referred to nicotine as a drug, admitted "tolerance and withdrawal," and concluded that the pharmacological effect of nicotine is the "primary motivation" for smoking. Overall, Pepples was very concerned that the report would be used in litigation as evidence that cigarette smoking is addictive, and as a basis for regulation by the FDA. 682015254-5255 (US 23022).

1331. B&W's efforts to block the presentation or use of Ferris's study went further. Soon after, in an August 28, 1984 letter to BATCo deputy chairman Ray Pritchard, Pepples expressed B&W's objection to using the study, its concern that the Ferris study could seriously harm the industry, and its recommendation that BATCo legal counsel be involved in the planning of further research and drafting of reports related to nicotine and addiction. In his letter, Pepples implicitly asked Pritchard to conceal the Ferris study, and stop Ferris from making a presentation on the report at an upcoming research conference, in light of "the current legislative and litigation environment in the U.S." and "the possibility for involvement by the U.S. Food and Drug Administration." Pepples explained that the industry needed to oppose any concessions that nicotine and smoking are

addictive "in order not to give a claimant an unjustified weapon to use against the company or the industry." 680583069-3070 (US 23024).

1332. As in his earlier memorandum to Kohnhorst, Pepples' letter to Pritchard expressed "great concern" about Ferris's report because it conceded that smoking is addictive. Pepples did not deny any of Ferris' observations or conclusions regarding nicotine and smoking; indeed, he admitted that Ferris' use of authorities and references was "generally accurate." Fearing involvement by the FDA, Pepples then recommended closer involvement by lawyers in scientific projects in the future. He wrote:

> [T]he report seems to concede that many potential criteria for addiction identification are met by smoking behavior. For example, the report urges the position that the primary motivation for smoking is ultimately tied to a pharmacological "psychoactive" function of nicotine. . . .
>
> Throughout the report, unfortunate concessions appear regarding "tolerance and withdrawal." The report frequently expresses that smoking has certain "therapeutic properties" and nicotine is compared to the action of tranquilizers, alcohol, etc. In addition, smoking is referred to as one form of "drug usage," psychoactive substance usage," or "psychoactive drug usage."
>
> As you know in the current legislative and litigation environment in the U.S., claims of addiction have been and will be used against Brown & Williamson by our adversaries. Such claims have been vigorously opposed in order not to give a claimant an unjustified weapon to use against the company or the industry.
>
> In addition, the possibility for involvement by the U.S. Food and Drug Administration would be heightened by company or industry promotion of the theme of this report, as it will be generally perceived.
>
> If such matters as the “Functional Significance” document and the Conference binders, enclosed herewith, are not already routinely vetted with BATCo lawyers, you may want to consider involving

> them more closely in both the conceptual and the drafting stages of these projects. Thank you very much for your help in this area of great concern for us.

521016786-6786 (US 22129).

1333. With respect to the Ferris report, B&W attorney J. Kendrick Wells emphasized in a November 12, 1984 letter to BAT attorney Anne Johnson why the BAT study must not be publicized:

> A plaintiff in a smoking and health products liability lawsuit in the U.S. could use the paper to support its argument that smoking is difficult to quit ("Addiction"). The plaintiff could argue that the paper contradicts the voluntary assumption of risk defense. It is doubtful whether editing can transform the paper into one which would not be helpful to the plaintiff in a products liability action.

680583045-3045 (US 85395).

1334. Around this same time, B&W intervened to edit adverse references to addiction out of another BATCo report, titled "The Controversy on Smoking and Health -- Some Facts and Anomalies" by BAT scientist Dr. L.C.F. Blackman. By letter dated October 25, 1984, B&W attorney J. Kendrick Wells wrote BATCo counsel Alec Morini that "review" of BATCo publications by B&W was necessary in light of ongoing smoking and health litigation; Wells went on to provide 45 paragraphs of revisions to Blackman's draft report in a marked-up report These included:

> 2. Delete Donald Gould reference. The article identifies cigarettes as a drug.
>
> 3. Delete reference to Dr. W.S. Cain. The article identifies short term and longer term pharmacological and physiological factors as important in the derivation of "habitual cigarette smoking" . . . .
>
> 5. Delete. The point made here might be said to run counter to arguments that cigarette smoking is not addictive . . . .

680582499-2507 at 2500 (US 54052).

1335. The three paragraphs referenced above bearing adversely on the company's position on addiction were ultimately stricken from the report. 107332541-2574 at 2545 (US 26281); compare to 680582512-2512 (US 85396).

1336. In a May 10, 1994 B&W press release, the company made the following claims -- claims that are patently false in light of the company's pre-1964 acknowledgment that nicotine is addictive and the company's decision not to disclose to the Surgeon General BATCo's internal nicotine research showing addiction prior to the 1964 report:

> It has always been B&W's position -- and still is -- that cigarette smoking is not addictive under the standards set forth in the 1964 Surgeon General's Report. Calculated misrepresentations of the company's position merely encourage ill-informed grandstanding.
>
> Brown & Williamson was acknowledged by the Surgeon General for its "substantial cooperation and assistance" in connection with the 1964 Report. Contrary to the recent media reports, B&W had not concluded that cigarette smoking was addictive prior to the release of the 1964 Report.

202337394-7394 (US 21965).

d. American Tobacco Company

1337. American attempted to keep its limited nicotine research hidden as well. For example, in a September 16, 1938 letter, H.R. Hanmer of American's R & D Department informed George W. Hill, an American Vice President, that research performed on dogs had demonstrated an increase in blood pressure due to the cigarette's nicotine. Mr. Hanmer added that while this was "very clear-cut biological evidence," "nothing of this sort could ever be used in presenting facts to the public." MNAT00115492-5499 (US 21401).

e. Tobacco Institute

1338. The Tobacco Institute attempted to ensure that any potentially adverse nicotine and addiction research would not be performed. In a May 17, 1983 memorandum from Fred Panzer to David Henderson, Panzer wrote that certain legislation needed to be amended to make it favorable to the industry by preventing addiction research: "We need language for a rider to the appropriation bill for the National Institute on Drug Abuse (NIDA) that would prevent the use of appropriated funds for a study of the addictive properties of tobacco." TIME 370968-0968 (US 62769).

f. CTR and Other Defendant Funded Research Groups

1339. CTR-selected and funded nicotine research was intended to be favorable to the industry. See Sections III(C)(2) and III(E)(2-3), supra. Lawyers played an important part in carefully considering all nicotine and "psychopharmacology" research before it was started to insure it would stay "pro-industry." Id. Nicotine/behavioral research was discussed by the CTR Director and industry counsel at a July 28, 1976 meeting of the industry Research Liaison Committee, where long-time industry counsel Dave Hardy (of Shook, Hardy & Bacon), American Tobacco counsel Cyril Hetsko, and others commented:

> Hetsko: Concerned that such a study [on the benefits of smoking] might play into hands of F.T.C. subpoena fishing for information [regarding] smoker motivation. Would like to see conference proposal checked out before we go ahead. This program goes beyond the organizing committee and should be considered by "committee of counsel."
>
> Hardy: Smoking behavior should be part of C.T.R. program as long as it is not "pro-company" but is kept "pro-industry."
>
> Hetsko: No problem if it is generated by SAB. This is a totally different area from what SAB has been dealing with. Doesn't want

> another book "to haunt us," as the one from the "Caribbean Caper" did.
>
> Yeaman: We take our direction from our members – the industry members. C.T.R. so far is clean of F.T.C. investigation, except possibly for the St. Martin conference.
>
> Hardy: Dr. Gardner should proceed with planning but not take any action.
>
> Hetsko: Decision for action should be made by lawyers, not C.T.R. or Organizing Committee. Chronologically, this meeting might be occurring just at a time that some of these experts are also being questioned by F.T.C. about motivation. This convergence might result in intensification of the conflict. Suggests Dr. Gardner present his program for review by all the lawyers. No records of such a review are to be kept.

1003719175-9179 (US 86406).

1340. The book from the "Caribbean Caper" that, according to Hetsko, "haunted" the tobacco industry, was a book edited by Philip Morris's Dunn and titled "Smoking Behavior: Motives and Incentives." The book was the result of the 1972 nicotine conference on the Caribbean island of St. Martin, where Dunn recalled that, "The majority of the conferees would go even further and accept the proposition that nicotine is the active constituent of cigarette smoke. Without nicotine, the argument goes, there would be no smoking." 2023193286-3304 at 3289 (US 22967). See discussion at Sections III(E)(2)(b)(¶¶264-265) and V(B)(3)(a)(¶¶903-905), supra.

1341. The book contained some outside researchers' views that smoking and nicotine had characteristics suggesting addiction. For example, Murray Jarvik's article in the book acknowledged evidence that nicotine was "the chemical underlying the smoking habit," and stated his personal opinion that "nicotine is the reinforcing agent in smoking." Another writer, Caroline Thomas, recognized "addictive smoking" as one type of smoking. A third author, Neal Miller, alluded to

"anecdotal evidence" that nicotine administration in rats leads to withdrawal symptoms. The conference and the book were sponsored by CTR. LD90011031-0330 (US 87320).

1342. In November 22, 1977, CTR Associate Research Director Donald H. Ford stated the following with respect to nicotine in a proposal for in-depth CTR-funded nicotine research:

> [I]t now seems evident that nicotine, like narcotics, influences the CNS in multiple ways involving effects related to most known neurotransmitters Further, the dependence which develops tobacco in humans (and withdrawal symptoms during the cessation of smoking) and the degree of tolerance to nicotine which occurs in certain animal paradigms strongly suggest that nicotine is a habituating agent.

1000041912-1918 at 1912 (US 20073).

1343. Dr. Ford presented his nicotine observations at a November 1977 CTR meeting. His proposed avenues of research related to "Receptors and sites of nicotine action," neurochemical studies, the effects of nicotine on fetal development, neuroendocrinology, and behavioral responses to nicotine. Id.

1344. In response to Dr. Ford's presentation and other CTR nicotine research, Philip Morris's Tom Osdene wrote to Robert Seligman on November 29, 1977, that "we are in the process of digging our own grave." He wrote further: "I am very much afraid that the direction of the work being taken by CTR is totally detrimental to our position and undermines the posture we have taken to outsiders." 2022246952-4952 (US 36865).

1345. Janet Brown, long-time outside industry counsel for American, reported on Ford's CTR research in her minutes of a February 1, 1978 meeting of industry counsel. Her detailed notes of the meeting revealed Defendants' knowledge about the importance of nicotine for smoking, and the importance of stopping Ford's nicotine research, when she discussed her opposition to Ford's

central nervous system study. She wrote that while CTR President Addison Yeaman told her that Ford's nicotine research, which included the goal of finding a "nicotine blocker or substitute," was "mere speculation," she nonetheless responded as follows:

> I said the "speculation" was dangerous and the work had some important commercial implications. A nicotine "blocker" or "substitute" could put the industry out of business overnight. Any information about it, or about CNS reasons "why people smoke," reaching one member before the others could give that member an enormous competitive advantage in developing a 'blocker' for the "blocker," or in producing a "substitute" product, or a purely "tranquilizing" or purely stimulant product. I do not know what all the commercial ramifications are, but they suggest themselves to me as vast. These are arenas that CTR has traditionally steered well clear of and it must continue to do so.

968148608-8639 (US 88840).

1346. Industry counsel quickly made sure that Dr. Ford's proposal never received funding. As recited in the May 10, 1978 notes of the Industry Technical Committee Chairman Preston Leake (scientific director for American) to Arnold Henson (General Counsel for American), the proposed nicotine work was "ruled out" by outside counsel Ed Jacob. 955017148-7154 at 7149-7150 (US 87172).

1347. Philip Morris's Osdene and Seligman met with CTR Directors Gardner and Hockett at CTR in New York on January 5, 1978. Osdene's memorandum of the January 5 meeting states:

> Dr. Seligman brought up the [CTR] grant by Dr. Abood in which one of the stated aims was to make a clinically acceptable antagonist [or blocker] to nicotine. This goal would have the potential of putting the tobacco manufacturers out of business.

1000286213-6214 at 6213 (US 35204).

1348. A series of CTR documents illustrate the attempts, and ultimate failure, of Dr. Avram Goldstein and Dr. Leonard Cornell to obtain CTR funding for a new addiction research facility. Dr. Goldstein's and Dr. Cornell's research specifically proposed an investigation by his Addiction Research Foundation of "nicotine receptors in the brain" and "the mechanism(s) of dependence on nicotine." It was the opinion of CTR chairman Addison Yeaman that "Dr. Goldstein's scientific credentials are of the highest." Dr. Seligman of Philip Morris was impressed by Dr. Goldstein's objectivity and intelligence. 03740559-0567 (US 88548); 686052326-2335 (US 88549); 686052262-2263 (US 88550); 026474-6475 (US 88551); 1003177412-7413 (US 88552); 1003728001-8007 (US 88554); 686052267-2289 (US 88555); 85681034-1034 (US 88556); 686052258-2259 (US 88557); 686052293-2296 (US 88558).

1349. Despite these views of the scientists' abilities, the industry decided to give no support to Dr. Goldstein, Dr. Cornell, and the Addiction Research Foundation. The rationale for the decision was spelled out in a September 19, 1978 memorandum from C.I. Waite to H.R. Kornegay (of the Tobacco Institute), with copies to Bill Shinn (of Shook, Hardy & Bacon) and Ernie Pepples (of B&W):

> Mr. Cornell's foundation actually assumes tobacco (nicotine) is addictive and costs the U.S. citizen 42 billion dollars a year.
>
> He also believes tobacco causes 300,000 premature deaths each year.
>
> And he wonders if this is why we might not be interested.

686052246-2246 (US 88559).

1350. BATCo scientist D.G. Felton visited CTR in October 1979, where he was escorted by industry counsel Tim Finnegan from Jacob & Medinger. In his typed notes of the trip to CTR, Felton recorded the following:

> I then asked about possible legal problems arising from work on beneficial effects of smoking. In Mr. Finnegan's opinion, any work concerned with central effects of smoking or nicotine would run the risk that FDA would become involved with tobacco, something that was to be avoided, if possible.

100651251-1312 at 1299 (US 85402*).

1351. Shortly thereafter, in a larger meeting with CTR President Yeaman, Scientific Director Gardner, and CTR scientists, Felton also inquired into Leo Abood's nicotine work. He was told of the Defendants' decision to terminate his research given the risk of demonstrating addiction:

> The discussion passed to effects of nicotine and the reasons why CTR did not continue their grant to Leo Abood. There is a general nervousness in the US Industry (apart from Philip Morris) in working on the effects of nicotine, because of the risk of demonstrating nicotine dependence or addiction.

100651251-1312 at 1299-1300 (US 85402*).

1352. A June 20, 1984 memorandum written by Shook, Hardy & Bacon attorney Wendell L. Stone chronicled much of the CTR-funded nicotine research, and concluded that Defendants' termination of Abood's "nicotine receptor" work could be used by plaintiffs "to make a point regarding CTR that when research by its grantees appeared to be incriminating of smoking, then the CTR grants were terminated." 515709297-9340 at 9299 (US 20866).

1353. On the other side of the Atlantic, the industry's Tobacco Advisory Council (TAC), which was the European counterpart of the Tobacco Institute, was also screening research results to ensure that “anti-industry conclusions” were not made public. One particular example will suffice.

1354. Long-time tobacco industry-affiliated/funded scientists Francis Roe and Jeffrey Cohen were asked to prepare a "Nicotine Monograph" in 1977 for the member companies of the Tobacco Advisory Council (including Philip Morris, RJR, and BATCo). 2501160364-0371 at 0369 (US 87173).

1355. Dr. Roe forwarded the first draft of the monograph to D.H. Beese at the TAC under cover letter dated July 30, 1979, for review by the member companies; BATCo produced a copy of the draft "monograph" and Roe's letter, which stated that "It may well be that parts of the text will need to be expanded and the 'conclusions' section given a new title or omitted. . . . I shall look forward to hearing from you and having a reaction from the Companies in due course." 1000138177-8237 at 8177 (US 87174).

1356. Roe and Cohen stated the following in a draft "Monograph" section titled "Smoking Behaviour: Role of Nicotine in the Smoking Habit":

> There is now increasing evidence that the presence of nicotine may be the major factor responsible for the widespread use of tobacco in all human societies. . . . Whilst smoking fulfils a psychological need in certain individuals it is only the inhaling cigarette smoker who is likely to gain psychopharmacological satisfaction from nicotine and become dependent on it. Nicotine has been described as a psychoactive agent with tranquillizing, antianxiety, stimulant, depressant, antiagression, mood stabilizing and stress-attenuating properties.

1000138177-8234 at 8219 (US 87174).

1357. In the "Conclusions" section of Roe and Cohen's draft "Nicotine Monograph," the authors emphasized that:

> The present worldwide campaign toward low-tar, low nicotine cigarettes faces the problem that nicotine-seeking smokers will need to inhale more smoke to obtain their nicotine requirement and in

> doing so inhale more tar. . . . Because of the weak absorption of nicotine from buccal and alimentary systems, chewing nicotine gum as a possible alternative vehicle to smoke inhalation would prove much less satisfying to the craving cigarette inhaler .

1000138177-8234 at 8221 (US 87174).

1358. These observations and conclusions did not survive review by the TAC and its member companies. Roe and Cohen's "Nicotine Monograph" was eventually published in 1981 by the TAC on behalf of the tobacco industry under the title "Monograph on the Pharmacology and Toxicology of Nicotine." In the published version of the "Monograph, the "Smoking Behaviour" section quoted above was edited dramatically. The statement that nicotine may be the "major factor responsible for the widespread use of tobacco in all human societies" was deleted entirely. The fact that an "inhaling cigarette smoker" will become "dependent" on smoking was deleted. In the "Conclusions" section, there is no mention of "nicotine-seeking smokers" or the "craving cigarette inhaler." The TAC and its member companies controlled the "Monograph" scientific review, and made sure that Roe and Cohen's document was industry-favorable on the issues of nicotine and addiction. 2021585328-5378 at 5365-5368 (US 87175).

6. Conclusions

1359. For approximately forty years, Defendants publicly, vehemently, and repeatedly denied the addictiveness of smoking and nicotine's central role in smoking. They made these denials out of fear that public acknowledgment of what was so well documented and widely accepted internally within their corporate offices and scientific laboratories could result in governmental (i.e., FDA) regulation, adverse liability judgments from addicted smokers suffering the adverse health effects of smoking, loss of social acceptability of smoking, and the ultimate loss of corporate profits.

The evidence spelled out above is simply overwhelming that Defendants knew that smoking is addictive and knew that nicotine is the agent creating and sustaining that addiction. There is also overwhelming evidence that even though Defendants have known internally about addiction for decades, they have endeavored to keep the extensive research and data they had accumulated out of the public domain and out of the hands of the public health community by denying that such data existed, by refusing to disclose it, and by shutting down or censoring laboratories and research projects which were investigating the mechanisms of nicotine.

1360. Defendants assert that the public health community and the public itself has known for decades that nicotine produced dependence. For example, Defendants cite to the 1962 publication of the well respected Larson, Haag and Silvette compendium, Tobacco Experimental and Clinical Studies, which described nicotine's effects on the human nervous system and summarized existing research suggesting that people smoke to obtain nicotine, that nicotine has pharmacological effects, and that nicotine is addictive or habituating. (no bates) (JD-000500). Defendants also cite to the United States Supreme Court comment that, when Congress enacted the Federal Cigarette Labeling Act in 1965, "the adverse health consequences of tobacco were well known, as were nicotine's pharmacological effects." Food and Drug Admin. v. Brown & Williamson Tobacco Corp., 529 U.S. 120, 138 (2000). Even if there is truth to Defendants' speculation that "everyone knew" of nicotine's addictiveness, there is no question that the public health community lacked the substantial and sophisticated understanding of nicotine's effects and role that Defendants possessed. Put quite simply, if the Surgeon General of the United States possessed the information and data Defendants possessed prior to publication of his 1964 Report, it is simply not possible that he would have ignored it.

1361. Moreover, there is a basic inconsistency in Defendants' position. If, in fact, "everybody knew" that smoking and nicotine were addictive, then why were Defendants publicly, vehemently, and repeatedly denying it?

1362. Defendants' denials misled the public about why quitting smoking is so difficult, exactly how difficult it is, and about why failure to quit is not simply a function of personal weakness or lack of willpower. In short, after reassuring the smoker that smoking was not bad for her health, and was not addictive, Defendants then blamed her for being unable to stop using the product they had so successfully marketed with false information.

1363. Defendants did not simply deny that smoking warranted the label "addiction"; they denied the entire concept of physiological dependence. The semantic battle Defendants have waged in the public realm and at trial is a distraction from the fact that, whether using the word "dependence" or "addiction," the core concept is the compulsive and uncontrollable use of nicotine reflected in drug-seeking and drug-taking behavior, all of which Defendants deny exist.

1364. Based on the extensive individual Findings of Fact set forth in this Section, the Court finds that Defendants have known for decades that cigarette smoking was addictive, and that nicotine is the addicting element in smoking behavior. Defendants' false and misleading statements relating to addiction continue even today.

1365. Moreover, Defendants deliberately and intentionally hid this information from the public and closed down research laboratories and on-going projects in order to ensure secrecy. Time and time again, Defendants falsely denied these facts to smokers and potential smokers, to government regulatory authorities, to the public health community and to the American public.

C. Nicotine "Manipulation": Defendants Have Falsely Denied That They Can and Do Control the Level of Nicotine Delivered In Order to Create and Sustain Addiction

1366. As demonstrated in the previous Section, Defendants have long known that nicotine creates and sustains an addiction to smoking and that cigarette sales, and ultimately tobacco company profits, depend on creating and sustaining that addiction. Section V(B)(3), supra. Given the importance of nicotine to the ultimate financial health of Defendants, they have undertaken extensive research into how nicotine operates within the human body and how the physical and chemical design parameters of cigarettes influence the delivery of nicotine to smokers. Using the knowledge produced by that research, Defendants have designed their cigarettes to precisely control nicotine delivery levels and provide doses of nicotine sufficient to create and sustain addiction. At the same time, Defendants have concealed much of their nicotine-related research, and have continuously and vigorously denied their efforts to control nicotine levels and delivery.

1367. Defendants, individually, jointly, and through third parties, have extensively studied smoking intake and inhalation, compensation, addiction physiology, smoker psychology, the pharmacological aspects of nicotine, the effects of nicotine on brain waves, and related subjects. As a result of this research, cigarette company Defendants have been aware for decades that cigarettes are addictive and that smoking addiction is caused primarily by the delivery of dependence-producing levels of nicotine.

1368. The typical cigarette contains far more nicotine than an individual will inhale as he or she smokes. Farone WD, 86:16-19; Henningfield WD, 35:16-36:16. Every aspect of a cigarette is precisely tailored to ensure that a cigarette smoker can pick up virtually any cigarette on the market and obtain an addictive dose of nicotine. Farone WD, 3:12-22. Most cigarettes are manufactured

using reconstituted tobacco material, additives, burn accelerants, ash conditioners, and buffering substances, all of which affect nicotine levels and delivery. Other cigarette design features used by Defendants to control nicotine delivery include filter design, paper selection and perforation, ventilation holes, leaf blending, and use of additives (such as ammonia) to control the PH of cigarette smoke.

1369. During the 1960s and 1970s, the public health community urged development of low-tar cigarettes as a healthier alternative to the "full-flavored" cigarettes which then dominated the market. In response, cigarette company Defendants developed low-tar cigarettes. They then falsely maintained that nicotine levels were inextricably linked to tar levels, and that nicotine levels would, of necessity, proportionately fall, as fast and as far as the tar levels in the newer low-tar cigarettes.

1370. In the early 1970s, the Federal Trade Commission developed a machine to measure tar and nicotine levels. Even though it became the accepted mechanism for taking such measurements, it became widely known in both the public health community and by the cigarette company Defendants that the FTC method did not accurately measure the amounts of nicotine and tar which a smoker actually ingested. Cigarette company Defendants, with the benefit of their much more sophisticated understanding of smoker compensation, as well as their knowledge of nicotine control, then intentionally developed and marketed cigarettes which, in actuality, delivered higher levels of nicotine than those measured by the FTC method. Those levels of nicotine were sufficient to create and sustain addiction in smokers.

1. For Decades, Defendants Have Recognized that Controlling Nicotine Delivery, in Order to Create and Sustain Smokers' Addiction, Was Necessary to Ensure Commercial Success

a. Defendants Recognized the Need to Determine "Minimum" and "Optimum" Nicotine Delivery Levels in Order to Provide Sufficient "Impact" and "Satisfaction" to Cigarette Smokers

1371. During years of research, cigarette company Defendants sought to identify what they often referred to as an "optimum" amount of nicotine: one that would meet smokers' demand for lower nicotine and tar products, while still providing enough nicotine to create and sustain addiction. Defendants' efforts often centered on attempting to identify a particular dose of nicotine that would "satisfy" smokers' need for nicotine and thereby assure continued smoking.

1372. As Defendants' knowledge and understanding of nicotine delivery evolved, they identified and developed more sophisticated product design techniques that would assure the delivery of the minimum dose of nicotine to provide smokers with sufficient "impact" and "satisfaction," regardless of the type of cigarette.

1373. Defendants' internal documents demonstrate that, based on their knowledge of nicotine's pharmacological properties and addictive nature, they incorporated physical and chemical design techniques into their commercial products that would assure delivery of the precise levels of nicotine necessary to assure taste, impact, and satisfaction, i.e., to maintain addiction. Henningfield WD, 35:16-36:16, 41:18-42:7, 54:7-15, 66:23-67:12.

1374. In their research reports, studies, and memoranda, Defendants used different terms to describe or identify the attributes of nicotine which were so desirable to smokers. Those terms include the words "impact," "satisfaction," "hit," "optimum," "optimal," and "minimum." These terms were not used in a uniform or consistent manner, and were often used interchangeably.

1375. Based on thorough examination of the many documents discussed in this Section, and the context in which the terms in issue were used, the Court finds that, in most instances, the word "impact" has been used by Defendants to refer to the immediate sensory effect that the delivery of nicotine has on a smoker. This sensory response occurs through nicotine's stimulation of the afferent nerves in the back of the throat when cigarette smoke is first inhaled, causing a peripheral nerve effect that is recognized by the brain. Benowitz TT, 11/2/04, 4800:21-4801:19; Dixon WD, 11:7-18.

1376. Defendants' internal documents indicate that they were well aware that impact was significant to smokers, and that a particular cigarette's impact was a function of its nicotine delivery. For example, B&W defined impact to mean "[t]he sensory attribute most associated with nicotine," noting that "[t]he higher the nicotine delivery per puff of a product the higher the Impact felt by the inhaling smoker." 500104403-4425 at 4409 (US 47966).

1377. The Court also finds that, in most instances, the word "satisfaction" has been used by Defendants to refer to the pharmacological attributes associated with a cigarette's level of nicotine delivery. As found in industry documents, the word describes the "hit" of nicotine an individual receives when smoking a cigarette and the effect produced by that nicotine on the central nervouse system when it reaches the brain. Henningfield WD, 87:10-16, 96:17-97, 97:5, 97:13-20; TLT0730001-0850 at 0083 (US 77011).

1378. For example, Lorillard has stated that smokers "want some acceptable level of smoking satisfaction; which among other attributes means some acceptable level of nicotine delivery." 87410132-0144 at 0139 (US 88060). Reynolds also discussed "the minimum level of nicotine required for smoker satisfaction." 505243357-3365 at 3365 (US 86944); see also

51170312103124 (US 51575); 500994992-4941 at 4934 (US 85405); 504223322-3327 at 3322 (US 50614); 536000308-0507 at 0334 (US 85298); 602759-2759 (US 53297).

1379. Defendants have claimed that the terms "impact," "satisfaction," "hit," etc., as used in their internal documents, refer only to the taste characteristics of cigarettes. This claim is rejected because the documents themselves prove otherwise. Even though, as noted earlier, the scores of writers of these hundreds of documents do not always use the terms in a consistent manner, the numerous internal documents quoted and discussed infra, usually differentiate taste and impact from satisfaction or "hit," and the context makes clear when reference is being made to the taste and sensory attributes of nicotine as opposed to its physiological or addictive effects.

(1) Philip Morris

1380. Philip Morris has been aware of the need to effectively measure and control the amount of nicotine in cigarettes since as early as the 1940s, when it first conducted studies on controlling nicotine in its Parliament cigarettes. In a 1954 document titled, "An Outline of Current and Proposed Quality Control, for example, Development and Research for Benson and Hedges," Philip Morris discussed its program to "ensur[e] the over-all quality and uniformity of the finished Parliament cigarette and thus maintain[] its appeal for discriminating smokers." The program was focused on "nicotine content, tar content, acid-base balance, and content of taste and aroma factors." The memorandum described Philip Morris's efforts to use "informally constituted smoking panels and the results of nicotine analyses performed on the blends . . . to establish a desirable level of nicotine concentration in the blend and hence also in the smoke." 1001761472-1484 at 1472-73 (US 35556).

1381. Philip Morris was concerned that complaints relating to smoking and health might pressure the tobacco industry to reduce levels of nicotine to such a low level that the smoking market might be eliminated. In 1961, Helmut Wakeham, Philip Morris's Director of Research, wrote: "Even though nicotine is believed essential to cigarette acceptability, a reduction in level may be desirable for medical reasons. . . . How much nicotine reduction will be acceptable to the smoker?" 1000277423-7447 at 7441 (US 20088).

1382. That same year, Wakeham conducted a seminar titled, "The Big Picture for 1961," in which "Aim 2" was described as: "Define the potential of nicotine control as a cigarette improvement. . . . Determine optimum levels of nicotine in smoke. . . . Perfect processes for controlling nicotine content of filler." 100277468-1000277482 at 7481 (US 35201).

1383. From the 1950s and 1960s through the 1980s and 1990s, the most senior levels of executive leadership at Philip Morris considered various mechanisms for controlling the amount of nicotine delivered to smokers, from determining the optimal level of nicotine delivery to the control of nicotine levels through leaf blending and increasing nicotine delivery to cigarette smoke. 1001896774-6776 at 6774 (US 20122); 1003294245-4261 at 4246 (US 20170); 2023186690-6690A at 6690A (US 20379); 511223463-3484 (US 20480); Henningfield WD, 94:6-13, 95:22-96:9; 98:4-99:15.

1384. An October 19, 1977 report titled, "Smoker Psychology Program Review," postulated the following questions: (1) what is the optimum nicotine/tar ratio? (2) given a fixed quantity of nicotine in tobacco, what factors in the cigarette design determine its availability for delivery to the smoker? and (3) how important is the form of the delivered nicotine? 1000046538-6546 at 6543 (US 26074).

1385. In 1990, Philip Morris researchers explained in an inter-office memorandum that the question of whether there was an optimal amount of nicotine to be delivered to the smoker had been answered by Philip Morris's Electrophysiological Studies Research Group, which explored and measured the brain effects of nicotine. Listed among the various achievements of the group was that it had "shown that there are optimal cigarette nicotine deliveries for producing the most favorable physiological and behavioral responses." 2028813366-3368 at 3366 (US 20430), (no bates) (US 76179); Henningfield WD, 102:2-10.

(2) R.J. Reynolds

1386. By 1971, Reynolds also was studying the optimal amount of nicotine to deliver to smokers. 504210018-0018 (US 50577).

1387. In a February 2, 1973 research and planning memorandum, titled "Some Thoughts about New Brands of Cigarettes for Youth," scientist Claude Teague recommended that "[n]icotine should be delivered at about 1.0-1.3 mg/cigarette, the minimum for confirmed smokers." 502987357-7368 at 7361 (US 21475).

1388. A November 9, 1976 memorandum from W.M. Henley to D.H. Piehl on the subject of "Nicotine Research" reviewed discussions among Reynolds's scientists concerning the physiological action of nicotine in the body and the factors that influence the presence of nicotine in the tobacco leaf and in tobacco smoke. The memorandum also identified issues for further research:

> C.R. Green and D. Lynm raised the questions concerning the minimum level of nicotine required for smoker satisfaction.
>
> R.L. Rowland asked if every possible variable had been investigated for its effect upon nicotine delivery to the smoker. It may be

> generally accepted that the delivery of nicotine is changed by changing the type of tobacco leaf which is used in the cigarette. But, holding constant the tobacco which makes up the cigarette, are we cognizant of all other factors in cigarette manufacture which would change the nicotine delivery, particularly any factors which would allow a decrease in tar delivery without the accompanying proportional decrease in nicotine delivery.

505243357-3365 at 3357, 3359, 3360, 3362 and 3365 (US 86944).

1389. A July 1977 report by A.H. Laurene emphasized Reynolds's concerns regarding its ability to keep smokers using cigarettes with reduced tar levels, stating:

> Faced with gravitation of most of our products to the low tar or very low tar category, the problem of keeping in our products those desirable attributes which keep our smokers smoking becomes a matter both difficult and important.

Laurene described Reynolds's strategies of maintaining "physiological satisfaction" in low tar cigarettes as follows:

> -- Develop means to increase the nicotine content in the smoke of our lowered tar products through agricultural methods, selective leaf purchasing, blending and casing techniques, process improvements, and increased transfer efficiency of nicotine from tobacco into smoke.
>
> -- Improve method to control pH and free nicotine in smoke.

Laurene reported that "efforts are already underway on each of these approaches to improve nicotine delivery and impact." 500884922-4941 at 4933-34 (US 85405); see also 502314530-4547 at 4538 (US 21917); 502967936-7944 at 7944 (US 76188).

1390. In a memorandum dated January 4, 1978, titled "Nicotine and Smoker Satisfaction," D.H. Piehl wrote to Alan Rodgman that an objective of the 1977-1978 research was to "[d]efine the optimum nicotine level in cigarette smoke required to maximize smoker satisfaction. Determine the

existence of a minimum or threshold value of nicotine required for satisfaction." 504423322-3327 at 3322 (US 50614) (emphasis in original). In addition, the document clearly distinguished between taste and satisfaction. Id.

1391. From 1978 to 1984, R. J. Reynolds had a "nicotine optimization" program. 507028876-8876 (US 20771). During this time, potential optimum levels of nicotine were identified and circulated among company scientists. In 1978, the "optimum 'nicotine strength'" for Winston filters was identified as smoke pH 6.2-6.3 and 0.12-0.13 milligrams of nicotine per puff. 504462513-2513 (US 20728). In 1979, the "maximum satisfaction" for Winston King Size was believed to be delivered at 1.0 milligrams of nicotine per cigarette. 503851759-1759 (US 21508). In 1980, R. J. Reynolds reported data from a fuller-flavor low tar consumer satisfaction study, which concluded that there was both an "optimum and minimum nicotine level required to maximize smoking satisfaction. . . . Camel Lights is in the optimum range. Merit 85 is just above the minimum." 500250599-0599 (US 20621).

1392. RJR's efforts to identify an optimal amount of nicotine focused not only on its own products, but also involved evaluating other manufacturers' brands. A September 20, 1979 memorandum from W.J. Casey to R.A. Lloyd discussed the findings of RJR's in-house studies regarding the nicotine content in Philip Morris cigarettes. The studies produced a "striking" conclusion -- that even though Philip Morris brand cigarettes contained significantly less nicotine in the smoke than the RJR brands, Philip Morris was somehow able to maintain more constant nicotine levels in their products. 517701734-1735 (US 85407). A 1980 competitive brand analysis found that Philip Morris's full-flavor brands were delivering close to 1.0 milligram of nicotine per

cigarette. This amount approximated the "optimum nicotine level in that ‘tar' range" indicated by RJR's own research studies. 504675253-5282 at 5257 (US 20734).

1393. A March 31, 1989 report prepared by Calvin L. Neumann, an employee in the Cigarette Technology Division, reviewed the consumer studies conducted by RJR between 1979 and 1984 in which nicotine was a major variable. In the consumer studies reviewed by Neumann, "nicotine, or nicotine and ‘tar,’ was varied in a systematic controlled manner. . . ." Neumann concluded that "[t]he studies show that as nicotine was lowered from optimum values, key consumer attribute ratings for satisfaction . . . were lowered significantly." 508282165-2191 at 2165 (US 51362).

1394. In a November 26, 1990 document on the subject of "Project XB," one of Reynolds's projects devoted to the study of nicotine control (discussed in Section V(D)(4)(b)(2)((b)), infra.), an employee with the initials GRD identified a series of questions to be answered by Project XB. These questions included:

> 1. How much nicotine do we need in a 5± mg product to satisfy normal smokers?
>
> 2. How much free nicotine of the total do we need to get the proper organoleptic [sensory] feel?
>
> 3. What are the limits round the amount of free nicotine before the product is either to harsh or too smooth -- ±mg?
>
> * * *
>
> 6. How good do we feel that legal group will allow us to sell product we visualize -- i.e., take out tar vs. add nicotine?
>
> 7. Should we look at using tobacco high in nicotine, remove, treat, add back?

511703121-3121 (US 51575). See also 511223463-3484 (US 20840).

(3) Brown & Williamson and BATCo

1395. BATCo began research on nicotine levels at least as early as the 1950s. 100099115-9117 (US 20112). By the early 1960s, BATCo and B&W scientists were confident that they could design cigarettes to deliver optimum doses of nicotine. A September 16, 1963 letter to BATCo from Robert Griffith, Director of Research and Development at B&W, discussed "optimum levels" for nicotine and correlated the nicotine level in cigarettes with consumer acceptance. The letter recognized that the nicotine levels of B&W cigarettes were not obtained "by accident" and admitted that "we have a research program in progress to obtain . . . any level of nicotine desired." 102630333-0336 at 0334, 0335-0336 (US 23000).

1396. Reports, memoranda, and other documents from BATCo throughout the 1970s and 1980s confirm that the company's goal was to establish and deliver "the optimal levels of nicotine [to] smokers." 100051935-1948 (US 34587); 660913609-3633 (US 22763); 110069974-9982 at 9975 (US 20268); 400993160-3215 (US 75975*).

1397. On June 6-8, 1984, BATCo held a comprehensive conference on nicotine. 101234971-5018 (US 21645). Topics at the conference included "Nicotine Dose Requirements," "Nicotine Dose Estimation," and "Product modification for maximal nicotine effects." Id. at 4974-4975; 512106427-6437 at 6428-9 (US 20846). BATCo concluded that if nicotine delivery fell below a certain level (believed at that time to be 0.4 mg nicotine), the cigarette would fail to "satisfy" the smoker. 101234971-5018 at 4978, 4981 (US 21645). BATCo also believed that it was important "to enhance our ability to maximise nicotine effects from a lower delivery base." 101234971-5018 at 4978 at 5013 (US 21645). Finally, BATCo concluded the conference with sessions on product

modifications that could be made to produce optimal nicotine effects. Id. at 4974-5. The primary objectives of these sessions were to: (a) identify the extent to which nicotine contributes to product satisfaction; (b) understand the "significance of [] different levels of nicotine interaction with the body to smoking behavior and product satisfaction"; and (c) identify a "research programme to meet the criteria for maximising nicotine effects to satisfy consumer needs from a minimum dose of nicotine." 512106427-6437 at 6435 (US 20846).

1398. At a 1984 Smoking Behavior-Marketing Conference in Montreal attended by representatives of BATCo affiliates from the U.S., the U.K., Australia, and Germany, a presentation claimed that individuals who smoked required twelve to fourteen milligrams of nicotine a day, and at least .7 milligrams of nicotine in a cigarette in order for it to provide "satisfaction." 536000308-0507 at 0334 (US 85298); 682637850-7928 (US 88063).

1399. A document recording the "conclusions" of the 1984 conference refers to the concepts of "satisfaction" and "impact." The conclusions included that "'satisfaction' must be related to nicotine. Many people believe it a 'whole body response' and involves the action of nicotine in the brain." They also stated:

> If we are to make better use in product terms of the levels of nicotine in smoke currently available -- and even more so if we are forced to market cigarettes with reduced levels of nicotine -- then it is important to significantly increase our understanding of impact/satisfaction.

602759-2759 (US 53297).

(4) Lorillard

1400. Lorillard pursued research seeking to identify an optimal range of nicotine delivery throughout the 1970s. As part of its Nicotine Augmentation Project, Lorillard conducted an

extensive review of the literature on the "pharmacology of smoke-dose nicotine with the goal of discovering some indications of threshold dose and optimum doses of nicotine in average cigarette smokers." In a December 10, 1976 report relating to the project, H.S. Tong, a scientist at the Lorillard Research Center, recommended that, in light of Lorillard's knowledge of smoker compensation,"[i]t would seem desirable to have a low tar cigarette with a nicotine content between the threshold and optimum doses level." Tong also set forth the results of Lorillard's extensive review of scientific literature on the subject of determining the optimum nicotine dose and summarized, "[n]o single parameter appears to offer a reliable handle for measuring optimum satisfaction dose of nicotine at the present time. . . . In a subjective study, test subjects reported that they found cigarettes of 0.8 mg to be acceptable." 00045061-5071 at 5061, 5063, 5068 (US 34210); Henningfield WD, 94:6-8, 97:6-12; Farone WD, 132:18-133:12.

1401. Like the other manufacturers, Lorillard's search for the best way to ensure effective and adequate nicotine delivery evolved through the years, but always had the same goal -- determine the amount of nicotine delivery necessary to sustain addiction and produce cigarettes that ensure such delivery. A February 13, 1980 internal memorandum from Richard E. Smith described how Lorillard undertook an internal project to "[d]etermine the minimum level of nicotine that will allow continued smoking." Company scientists hypothesized that there was a nicotine threshold below which "smokers will quit, or return to higher T&N brands." 526321269-1270 at 1269 (US 85323).

(5) Liggett

1402. An April 30, 1985 memorandum from J.C. Turner to R.L Kersey reporting on Liggett's various ongoing research and product development projects reported that "[w]e are making progress in adjusting tar and nicotine yields where necessary on brands utilizing the consolidated

blend," and "[w]e are still working with paper suppliers to find an appropriate paper to put us exactly on target on Full Flavor Generic tar and nicotine delivery." LWDOJ9272790-1791 at 2790 (US 86947) (Confidential).

b. Defendants Have Long Recognized that Controlling the Nicotine to Tar Ratio Would Enable Them to Meet Minimum and Optimum Nicotine Delivery Levels

(1) Philip Morris

1403. Philip Morris understood more than forty years ago that a high nicotine to tar ratio was important in formulating a successful cigarette strategy. A February 9, 1960 memorandum from L.L. Long, Research and Development Engineer, to A.B. Clarke, Research and Development Scientist, and copied to Robert Seligman, who became Vice President of Research and Development, discussed Philip Morris's ongoing efforts to control the amount of nicotine received by a smoker through concentration of nicotine in tobacco smoke while maintaining lower levels of tar. Long wrote:

> One of the objectives of the 1960 cigarette project is the control of TPM ["total particulate matter," or tar] at a low level while maintaining the nicotine level in the smoke at its current level of about 1 mg/cigt. Several years ago some work was conducted along these lines. Nicotine Maleate was added to a low nicotine filler with a resulting increase in nicotine in the smoke. It would be most helpful if you could conduct some investigation in this area along with your work on nicotine control through extraction.

1001919958-9958 (US 85460). This issue received further attention throughout 1960. 1001919941-9941 (US 21753).

1404. In 1962, Philip Morris President Hugh Cullman instructed Helmut Wakeham, Vice President and Director of Research and Development, to evaluate Reynolds's processing methods

because Cullman had determined that Reynolds's cigarettes were "significantly lower in TPM [tar] for a given [n]icotine level than all other cigarettes tested, including those of Philip Morris." Cullman had also concluded that Reynolds's method of controlling TPM did not involve "any of the variables generally tested," was likely not "accomplished through leaf selection," but rather was most likely "the result of a method of tobacco processing, or the use of certain additives, not yet generally known to the rest of the industry." Cullman instructed Wakeham to research the issue further. 1000235191-5193 at 5191 (US 20082). Philip Morris scientists conducted that research and concluded, among other things, that to match the "high nicotine to T.P.M. ratio" found in RJR's brands, "[i]t would be possible to control the necessary variables through blending." 2022241584-1587 at 1584 (US 36850).

1405. On March 26, 1964, Philip Morris scientists provided an outline of their work on a "1965 Cigarette" that would have lower tar amounts but that would still contain at least 7 milligrams of nicotine per cigarette. The scientists focused on the question, "Can we transfer nicotine from filter to smoke?" The same outline set forth goals for a "1966 Cigarette" that would provide "optimum nicotine in relation to flavor and impact." 1001901299-1310 at 1301, 1309 (US 35573).

1406. A March 24, 1969 Philip Morris memorandum' demonstrates that the company had considered several different filters, air dilution, and improved internal filtration, and had determined the effects that these methods would have on the nicotine to tar ratio measurements using the FTC method. The memorandum states that "[t]here does appear to be a definite increase in nicotine concentration as the percentage dilution increases." 1001883866-3870 at 3866 (US 35572); Farone WD, 88:17-89:13.

1407. Philip Morris's Cathy Ellis, a research scientist, stated that, during the 1970s, Philip Morris looked into increasing the nicotine delivery in its cigarettes while at the same time decreasing tar levels. Ellis explained that one method of achieving the higher nicotine delivery level was through selective tobacco blending. Ellis PD, Mississippi, 3/20/97, 92:21-93:18.

1408. Philip Morris often used actual smokers to provide results for different tests it ran regarding nicotine delivery. The company sometimes sent samples to identified smokers, and sometimes used its own employees as subjects. Philip Morris then analyzed the results in order to inform not only its research but also the production and marketing of its product. 2025986931-6935 (US 37314); 1000408760-8809 at 8771 (US 35272).

1409. Philip Morris conducted multiple consumer research studies to determine the acceptability of various nicotine to tar ratios. Studies conducted in the early- and mid-1970s tested smokers' reactions to "low tar, high nicotine" cigarettes. These studies showed that consumers preferred nicotine to tar ratios that were higher than those that occur naturally in tobacco. 1000351570-1595 (US 85423); 1003288950-8967 (US 20166); 1003288934-8949 (US 20165); 2024545758-5773 (US 20402); 1000048633-8654 (US 20075); 1000350159-0186 (US 35241).

1410. In a January 18, 1971 memorandum from psychologist Thomas Schori, to L.L. Long, Research and Development Engineer, Schori described a human smoking survey in which Philip Morris would mail to 600 Marlboro smokers ten experimental packs of four cigarettes each, with each pack having varying tar and nicotine levels. The nicotine levels ranged between .33 mg to 1.3 mg of nicotine per cigarette. The memorandum plainly stated, "Nicotine will be added as needed." 1003285444-5445 at 5444 (US 35692).

1411. In 1971, Philip Morris asked some of its own employees to participate in a smoking study in order to "find out how the nicotine and tar levels of cigarettes affected their acceptability and consumption." One of the conclusions of the study was that the number of cigarettes the employees smoked per day was directly correlated to the nicotine levels, but not to the tar levels. 1003285443-5443 (US 85421).

1412. In November 1971, Philip Morris issued a special report on "Tar, Nicotine and Smoking Behavior," written by Schori and approved by William Dunn, Associate Principal Scientist. The report, which involved analyses of the results of tests involving human smokers, concluded that "tar deliveries of the currently best selling cigarettes might be reduced somewhat, leaving nicotine as it is, without any significant overall decrease in the cigarettes' acceptability." The study also found that because of compensation, test subjects received similar amounts of nicotine and tar each day, regardless of the levels available in the cigarettes they were smoking. 1000350158-0188 at 0161 (US 20176); Henningfield WD, 94:6-13; Farone WD, 110:6-9, 110:15-111:4.

1413. On September 8, 1971, company R&D scientists, including Dunn, wrote to Paul Eichorn, then Manager of Technical Planning and Information Development, stating their intent to "concentrate upon the nicotine/tar ratio as a factor in determining cigarette acceptability." The goal was to determine the "optimum" nicotine/tar ratio levels. The plans for 1972 included a focus on nicotine delivery between .3 and 1.2 mg of nicotine per cigarette "with a systematic manipulation of the nicotine/tar ratio at incremental nicotine levels within this range." 1003289951-9954 at 9951 (US 85422); see also 1000351570-1595 (US 85423); 1003288521-8545 (US 35683) (US 35719).

1414. Correspondence between the Marketing Department and the Research Center at Philip Morris in 1972 demonstrates the company's desire to increase its share of the menthol cigarette

market, then dominated by Brown & Williamson's Kool cigarettes, by altering the nicotine to tar ratio and overall nicotine levels in Philip Morris's own menthol cigarettes, such as Alpine. 2022244795-4801 (US 85424).

1415. In a July 8, 1974 letter from Philip Morris's Helmut Wakeham to Max Hausermann of Philip Morris Europe, Wakeham acknowledged receipt of a Research Progress Report from Hausermann. Wakeham responded to studies highlighted in the report that had found discrepancies between the way that humans smoke cigarettes as compared with the operation of the FTC smoking machine. Wakeham agreed that Philip Morris had found evidence of the same phenomenon. He advised Hausermann not to publicly share this information:

> There is concern that if in the light of new findings, we are too strong in denunciation of the present test as being unrealistic, then some advocates might claim the advertised numbers are false and misleading. . . .
>
> I am not suggesting we defer the research or neglect to apply it to our product problems.
>
> We should by all means use it to the best of our advantage. On the other hand, I would propose deferring publication or presentations to committees or conferences, particularly those attended by our competitors, for obvious reasons.
>
> Let us pursue the research and hold back on the publicity until we can agree on some pro-industry approach to the problem.

1004863921-9975 at 3921-3922 (US 35921); 1000356550-6576 (US 85425); 0000258064-8064 (US 85426).

1416. An additional study, titled "Low Delivery Cigarettes and Increased Nicotine/Tar Ratios, III," was conducted in 1976 and concluded that many smokers preferred a cigarette with a higher nicotine/tar ratio, which was accomplished by adding nicotine citrate to the cigarette.

1003288934-8949 at 8943 (US 20165). Studies involving nicotine citrate continued into 1977. 1003285418-5418 (US 85427); 2081925847-5856 at 5851 (US 88784).

1417. A March 21, 1978 memorandum from scientists J.I. Seeman, Carolyn Levy, and E.B. Sanders to Thomas Osdene outlined Philip Morris's "Nicotine Program," which was "aimed at elucidating the basic mechanisms of action of nicotine with a major goal of understanding and controlling the physiological effects of 'smoke.'" 1000128638-8644 at 8638 (US 86949); Levy WD, 5:5-6:31; see also 2031436002-6002 (US 20433).

1418. A December 6, 1978 memorandum from William Dunn to Thomas Osdene, titled "Plans and Objectives 1979," stated:

> To what extent does the presence of detectably more or detectably less nicotine in smoke affect the acceptability of low-delivery cigarettes. This question is related to the optimal nicotine/tar ratio, a problem we have addressed before at higher delivery levels.

2022150943-0951 at 0947 (US 85254). Dr. Jerry Whidby, Philip Morris scientist from 1972 to 1998 and presently a paid consultant for Philip Morris, who held the title of Senior Fellow, the highest non-management scientific position at Philip Morris, acknowledged that nicotine deliveries identified in this memorandum "show[] almost uniformly that the brands with the lower FTC tar deliveries actually have higher nicotine to tar ratios." Whidby TT, 2/22/05, 14015:8-14016:14.

1419. An April 17, 1980 Philip Morris USA memorandum from P.A. Eichorn to R.B. Seligman, titled "Reynolds' Proposal to Lower Nicotine in the New Flue-Cured Varieties," indicates Philip Morris's control over the nicotine levels of its cigarettes. In response to a proposal by RJR that the companies lower the nicotine content of their cigarettes, Mr. Eichorn of Philip Morris wrote: "From our viewpoint, I don't think lowering of standards to be desirable. To do so would put us in

a position of minimal control of nicotine levels which we are able to adjust as needed with present technology." 1000779209-9209 (US 90178); Whidby TT, 2/22/05, 14019:2-14021:1, 14021:22-14022:5.

1420. Philip Morris scientist Frank Gullotta conducted research for the company in the early 1980s, including human smoking studies, that involved holding tar levels constant and varying nicotine levels, in order to discover human smoking reaction to increased levels of nicotine delivery. This research informed his search for the optimal nicotine delivery level. 2025986350-6401 at 6393 (US 87080); 2023105617-5623 (US 85464).

1421. In a November 8, 1990 memorandum, Philip Morris scientists Frank Gullotta, Cynthia Hayes, and Bobby R. Martin wrote to Cathy Ellis, then Manager of the Biochemical Research Division and later Senior Vice President, Worldwide Scientific Affairs for Philip Morris, regarding "past, present and future" contributions of "Electrophysiological Studies to P.M. USA." The scientists reported that:

> Experiments conducted in our laboratory led us to the idea of how to produce an acceptable low tar cigarette. It was our work which led to the development of cigarettes with altered tar/nicotine ratios. The tobacco blend which we advocated . . . is now being used in Project Bold and may soon find its way to the marketplace.

Another accomplishment they described was research showing that "there are optimal cigarette nicotine deliveries for producing the most favorable physiological and behavioral responses," and that "all forms of nicotine are not behaviorally or physiologically equal." 2028813366-3368 at 3366, 3367-3368 (US 20430); Henningfield WD, 102:2-10.

1422. Philip Morris continued to study various nicotine delivery levels while holding tar levels constant in the 1990s. In some of these studies, Philip Morris also examined the interactions

between menthol, nicotine, and tar levels in cigarettes, determining how menthol levels in cigarettes with different levels of nicotine affected smoker impact. These studies included human smoker studies. 2028813366-3368 (US 20430).

1423. Dr. Jerry Whidby admitted that, "[f]rom the 1970s until today, Philip Morris has . . . used computer models that predict tar and nicotine delivery according to the FTC Method based upon the design of the cigarette that you put into the program." Whidby WD, 16:13-16. These computer models were used by Philip Morris to adjust, among other things, the nicotine delivery of commercial cigarettes to the target level desired by Philip Morris. Farone WD, 47:7-18, 53:4-9.

1424. Dr. Whidby also admitted that Philip Morris's low tar Merit Ultima cigarette has a higher nicotine to tar ratio than full flavor cigarettes, and that this cannot be explained solely by "filtration efficiency." He further stated that Philip Morris's Merit Ultima cigarettes use a "higher nicotine blend" of tobacco. Whidby TT, 2/22/05, 14056:19-25; 14110:24-14111:14.

(2) R.J. Reynolds

1425. No later than 1972, RJR recognized an urgent need to develop a lower tar cigarette that would deliver a high level of nicotine, in order to have a competitive advantage in the marketplace. In a May 19, 1972 internal memorandum to Claude Teague from Frank G. Colby, Manager of Scientific Information, Colby recounted a conversation he had with an employee of Imperial Tobacco Company while preparing for an industry-wide conference:

> He explained in some detail how desirable it would be to have a high nicotine tar ratio cigarette, but said that unfortunately he did not have any idea how to realize this technologically. Naturally, I did not mention in any way our interest in this subject.

Colby also reported his suspicion that Philip Morris already was developing a high nicotine cigarette. Colby concluded: "I feel these two incidents prove that the high nicotine tar ratio cigarette is a concept which is 'very much in the air.' We should definitely make an effort to be first." 500790798-0798 (US 20651); see also 500901543-1545 (US 85428).

1426. In a March 28, 1972 paper from Claude Teague to E.A. Vassallo and Murray Senkus, who became Vice President of Research and Development, Teague noted that he believed Reynolds had identified the minimum nicotine delivery required to make a cigarette "acceptable" to a smoker as 1.3 milligrams. Teague's paper, titled "A Gap In Present Cigarette Product Lines And An Opportunity To Market A New Type Of Product," advocated that Reynolds take advantage of the so-called gap in product lines by developing a cigarette that would deliver 1.3 milligrams of nicotine while delivering less tar than any current product:

> [A]t the desired nicotine delivery, calculated to be 1.3 mg., the smoker will chose [sic] the cigarette offering the lowest T/N Ratio, if other qualities are satisfactory. With current brands at or even near the desired nicotine level, the smoker is offered no brand with a T/N Ratio below 13. Indeed, of all 121 brands tested by the FTC, the only one with a T/N Ratio less than 13 is Carlton, and it delivers only 0.4 mg. of nicotine.

500790776-0784 at 0776-0777 (US 29473) (emphasis in original).

1427. An undated RJR document setting forth the objectives and strategies of its Tobacco Development Department identified the "need for increased smoker satisfaction" as a key issue. Reynolds's strategies for maintaining and improving smoker satisfaction included "proceed[ing] with tar reduction programs maintaining maximum nicotine deliveries in the smoke" and "study[ing] all means to maximize nicotine content of tobaccos and delivery to the cigarette smoke . . . [including] agricultural practices, leaf purchase program, blending, processing, nicotine transfer efficiency,

casing levels, added nicotine, selective filtration, effect of wrapping materials." 504658762-8769 (US 85429).

1428. Frank G. Colby, Manager of Scientific Information, wrote in a December 4, 1973 memorandum to R.A. Blevins, Jr., about the importance of assuring that the new product delivered sufficient nicotine:

> In my judgment, for public relations reasons it would be impossible to go back all the way to the 1955 type cigarettes. As far as tar and nicotine in the smoke are concerned, I believe it should be possible to achieve the desired effect by going to a tar level of today's Pall Mall (non-filter type) of about 29 mg of tar and 1.8 mg nicotine. Still, with an old-style filter, any desired additional nicotine 'kick' could be easily obtained through pH regulation.

501166152-6153 at 6152 (US 23051) (emphasis in original); Henningfield WD, 75:22-76:1, 78:1, 79:16-20.

1429. On June 5, 1974, individuals from RJR's research department and RJR's advertising agency, Tatham-Laird & Kudner, Inc., met "to review a selected group of technical developments in the cigarette category . . . [and] to determine whether any of the technical developments to date could, at this time, be utilized in the development of new brands for marketing." One of the technical developments discussed was a high nicotine/low tar cigarette:

> Until this development, tar and nicotine went either up or down in a cigarette simultaneously; the technical development here has enabled RJR to deal with these two elements separately and therefore each can be controlled at virtually any given level desired.

501186367-6369 (US 20673).

1430. In May 1976, Reynolds's Research Department prepared a document titled "Planning Assumptions and Forecast for the Period 1977-1986+ for R.J. Reynolds Tobacco Company." Envisioning cigarettes delivering less than 0.8 milligrams of nicotine, RJR acknowledged that:

> [I]t is essential that we are fully aware that, at these nicotine levels, smoking cessation will be very much facilitated. Some "farmed out" or in house research on determining the minimum nicotine level (at the highest "acceptable" pH) for providing "satisfaction" should be considered.

500884613-4638 at 4619-4620 (US 85430); see also 504707350-7372 at 7365 (US 86950); 504424968-4976 (US 86951).

1431. According to an August 19, 1976 report, titled "New Product/Merchandising Directions A Three Year Action Plan," R.J. Reynolds's "top priority [was] to develop and market low 'tar' brands . . . that: [m]aximize the physiological satisfaction per puff -- the single most important need of smokers." Reynolds was not content with the proportionate nicotine reductions which were believed to follow tar reductions. Instead, the report stated, "[i]t would be more desirable from our standpoint, i.e. providing satisfaction to the smoker and maintaining his allegiance to smoking if we could reduce 'tar' to whatever target we choose without a proportionate drop in nicotine." The report also outlined Reynolds's "approaches to decreased T/N ratio," including the development and commercialization of high nicotine tobacco, the development of "means to supplement nicotine" in tobacco, and the development of "means to increase nicotine transfer in smoke." 500672011-2172 at 2054, 2111-2112 (US 20645) (emphasis in original).

1432. An August 23, 1976 document, titled "MBO Performance Report," outlined the objectives and activities of "Project 1250," a research project carried out by RJR's Chemical Research Division for the purpose of "search[ing] for fundamental information which will lead to

new techniques and methods of altering and controlling nicotine/ 'tar' ratio, which will define important factors related to optimum nicotine level and smoker satisfaction." The report defined Reynolds's objectives for 1977: (1) "Identify factors influencing nicotine delivery efficiency, and determine means to increase nicotine to 'tar' ratio"; (2) "Determine minimum 'tar'-nicotine levels for smoker satisfaction through panel testing and study effect of varying nicotine levels on low 'tar' blends"; (3) "Evaluate existing competitive brand data and crop analyses to determine factors related to nicotine and 'tar' delivery"; (4) "Evaluate various experimental and foreign tobaccos to determine the effect of these materials on 'tar' and nicotine delivery"; and (5) "Continue casing studies, particularly the effect of sugar on nicotine delivery." 511526479-6481 at 6479 (US 85431); see also 502966364-6374 at 6364-6367 (US 85432).

1433. In a January 5, 1977 memorandum on the subject of "Nicotine-Related Research," D.H. Piehl, Manager of Reynolds's Chemical Research Division, informed a large group of RJR employees that "[i]n 1977 we will be increasingly concerned with discovering new means for control of nicotine, tar to nicotine ratio and satisfaction in our products." 502740087-0087 (US 85433).

1434. On May 19, 1977, W.M. Henley sent a memorandum to Dr. D.H. Piehl, an RJR scientist, outlining the research activities undertaken in Reynolds's "Project 1250: Methods of Controlling Tar, Nicotine and Satisfaction." The objective of Project 1250 was to "[i]dentify factors influencing nicotine delivery efficiency and determine means to manipulate nicotine/tar ratio to provide a more satisfying smoke." 504476706-6706 (US 85434).

1435. In a January 4, 1978 memorandum, titled "Nicotine and Smoker Satisfaction," Piehl wrote to Alan Rodgman, RJR scientist, that an objective of the 1977-1978 research was to "[d]etermine the means to alter and control 'tar'/nicotine ratio and increase nicotine transfer

efficiency" with the objective of maximizing smoker satisfaction. 504423322-3327 (US 50614) (emphasis in original).

1436. Piehl's 1979 work plan, which set forth the objectives and the results achieved by the Chemical Research Division, indicated that Reynolds had identified the "optimum and minimum nicotine deliveries that maximize satisfaction" for full flavor cigarettes; established the "optimum T/N for . . . low 'tar' cigarettes in house"; and demonstrated through research that "nicotine can be substantially relocated from one blend component to another, without affecting smoke delivery in blended cigarette." 502972546-2579 at 2547-2550 (US 85436).

1437. A document setting forth the mission and goals of Reynolds's "Tobacco Development Department" for 1980, 1981, and 1982 indicates that as part of Reynolds's "action plan" it intended to "[d]etermine means to optimize tobacco density and puff count on lights brands" by 1981, and, "[i]n cooperation with Research, establish appropriate T/N ratio, absolute nicotine and strength index for each brand" by 1982. 500545614-5644 at 5627 (US 86953).

1438. In the early 1980s, with knowledge that FTC testing did not accurately measure the amount of nicotine inhaled by a smoker, see Section V(E)(2)(a-b), infra, Reynolds developed a human mimic smoking machine, or "HMSM," in order to obtain a more accurate picture of how much nicotine and other materials in cigarette smoke a human smoker would inhale on a puff-by-puff basis from smoking its products. 500952551-2551 (US 88068). Reynolds used the human mimic smoking machine in its product development research throughout the 1980s and 1990s to replicate observed human smoking patterns, thereby enabling "the determination of the effect of individual human smoking behaviors on yields of mainstream smoke components" for any cigarette tested with the machine. 508187782-7803 at 7785 (US 88069).

1439. A January 10, 1983 internal memorandum to W.M. Henley from C.L. Neumann and Thomas A. Perfetti summarized Reynolds's research activities "directed toward the development of information relating consumer perceptions to cigarette parameters." The memorandum indicates that Reynolds had conducted several consumer studies in which nicotine and/or smoke pH were controlled variables and that Reynolds reached conclusions about optimum nicotine deliveries and tar-to-nicotine ratios based on the studies. USX3621341-1345 at 1341,1343-44 (US 77401).

1440. An internal RJR memorandum dated February 18, 1984, from Charles Green, Principal Scientist, stated that the purpose of one experiment was to manipulate particular variables of filter design, including length and chemical composition, in order "to find maximum nicotine delivery." The memorandum also indicated that the results of the experiment "show that nicotine and glycerine deliveries can be greatly altered by the manipulation of variable[s]" in filter design, and that RJR was in the process of designing additional experiments to "optimize" nicotine delivery. 505006266-6276 at 6274, 6275, 6276 (US 85499); see also 506339873-9880 (US 85500).

1441. In 1989, Reynolds formed its "Intra-Company Nicotine Review Committee (INRC)," an "interacting group comprised of representatives from Research and Development, Marketing and Marketing Research whose goal . . . [was to] develop a strategic plan that provides resources which will satisfy consumer wants and company needs related to nicotine." 507063957-3960 at 3957 (US 86955). Under the heading "Nicotine Strategic Plan," a document setting forth the INRC's priorities stated that "[b]y building our knowledge base with respect to nicotine, as a key design parameter, R&D can place the company in a more responsive position to act on identified consumer wants and product ideas to maximize volume and share growth." 507904528-4535 at 4530 (US 86956*). The INRC recommended that, in order to maintain its "technical leadership," Reynolds must "[m]eet

existing and emerging consumer wants via new products or enhancements to current products that employ nicotine as a key design parameter." Id.

1442. In the late 1980s, RJR began experimentation with preparing tobaccos using the "REST" [Reestablishment of Solubles in Tobacco] process. A December 11, 1989 internal memorandum from Rhenda H. Steele to Barry S. Fagg explained the purpose of REST processing as follows: "Using this process, all variables [in tobacco] are held constant except nicotine, the concentration of which can be controlled." 509887264-7264 (US 85437). A May 3, 1991 report titled "REST Program Review" explained Reynolds's goal for use of REST processing to control nicotine delivery in its products:

> To develop a viable process for the total control of nicotine in product, in conjunction with the "REST" process without affecting smoke performance other than attributes connected to nicotine. Basic development and process specifications are to be completed by the end of 1991. . . . We are basically in the nicotine business. It is in the best long term interest for RJR to be able to control and effectively utilize every pound of nicotine we purchase. Effective control of nicotine in our products should equate to a significant product performance and cost advantage.

509479574-9587 at 9854 (US 20829); Henningfield WD, 102:2-4, 102:11-12.

1443. REST processing was a vital part of Reynolds's "Nicotine Control Program" which began no later than 1990. The Nicotine Control Program included at least three distinct studies of methods for the control of nicotine delivery:

-- Project "LN," the objective of which was to "[o]ptimize products with extremely low smoke nicotine yields" using, among other things, REST technology;

-- Project "GTX," the objective of which was to "[d]evelop basic information on how the design variables of nicotine, 'tar' yield and draft interact physicochemically;"

-- Project "Nicotine RSM," the objective of which was to "[e]xplore effects (independently and interactively) of nicotine, 'tar', and draft on smoker perceptions, behavior and acceptance" using, among other things, REST technology.

508112783-2807 at 2788, 2790, 2792, 2794 (US 85438). An August 22, 1990 report on REST technology stated that Reynolds had "achieved on a development scale a practical process for selectively adjusting the nicotine content in a tobacco extract and, therefore, in the tobacco blend after REST processing" and that Reynolds intended to use REST technology to "[i]ndependently control nicotine delivery, from very low to elevated levels." 509479574-9587 at 9576, 9577 (US 20829); see also 509479799-9799 (US 86958); 508099588-9588 (US 86959); 507051133-1136 (US 86960); 512331601-1601 (US 86961*).

1444. A document prepared for an August 6, 1990 meeting regarding the Nicotine Control Project's "Nicotine RSM Study" explained the benefit of REST processing: "A new process (REST) makes possible for the first time independent manipulation of three key product development variables (nicotine, 'tar', draft)." 507523433-3477 at 3441 (US 85439). Reynolds's Biobehavioral Research Division also saw significant benefits from the use of REST technology in the Nicotine Control Program, as expressed in an April 9, 1990 memorandum from J.H. Reynolds to Mari-Jo Dryden: "For the first time 'tar' and nicotine can be independently varied without excessive changes in blend. This has been a 'dream goal' of developers and researchers for years." 510961941-1941 (US 85440); see also 509347328-7336 (US 85441); 507973629-7348 (US 86962).

1445. In another consumer study relating to REST-processed tobacco, Reynolds endeavored "to assess the pharmacological component of smoking satisfaction by attempting to experimentally

control the level of nicotine absorbed by smokers under normal smoking conditions." In a memorandum describing the experiment, Walter S. Pritchard and John H. Robinson explained that"

> [t]he nicotine yields of the experimental cigarettes will be controlled using the R.E.S.T. (Re-Establishment of Soluble Tobacco) process, with target nicotine yields of 0.06, 0.2, 0.4, and 0.8 mg. The target "tar" yield of the experimental cigarettes will be 10 mg.

525246100-6103 at 6100 (US 85442).

1446. An RJR document, titled "Nicotine Strategic Plan September 26, 1990" reflects a presentation given by Reynolds scientists, including A. Wallace Hayes, Mari-Jo Dryden, John Robinson, Tom Perfetti and Pat Lippiello, concerning several of their ongoing nicotine research projects. Regarding the "Nicotine RSM Study," the document described nicotine as a "critical variable[] for product development" and noted that "independent manipulation of nicotine will result in a better understanding than ever before of satisfaction." The document stated that the Nicotine RSM study would "result in definition of optimal combination of tar, nicotine, and draft to maximize acceptance among one or more smoker groups/mindsets." In addition, the document confirmed that the goals of Reynolds's Projects XGT and GTX, which involved adding Nicotine Levulinate (salt form) to NOW and Winston cigarettes, were to"explore alternate methods/sources for enhancing nicotine yields of low 'tar' products." The document also identified as a "key issue" the "[o]ptimization of nicotine's sensory properties in smoking products." 514106716-6809 at 6737, 6781, 6803 (US 51775); see also 514940099-0120 (US 51894).

1447. A November 15, 1990 facsimile from Emily Etzel to Donna Wilson hypothesized about the "several reasons why Philip Morris would find it strategically advantageous to master nicotine manipulation." Etzel wrote that:

> Nicotine manipulation involves the changing of nicotine levels in their products other than by buying tobacco with high or low nicotine levels. The extraction of nicotine for such products as NEXT and Merit De-Nic results in an [sic] surplus of nicotine. This nicotine can be added to other products. . . . PM has successfully raised the nicotine levels on all their products (across the line) by using high nicotine tobaccos. Thus, they already have a better T/N ratio than their competitors. Adding nicotine could further improve that ratio.

509348227-8229 at 8228 (US 88072).

1448. In a detailed April 1, 1992 report, Barry S. Fagg detailed RJR's continued investigation and progress in the use of REST technology in product development. Fagg described the rationale and strategy of the continued investigation:

> Previous development of the REST processing techniques has indicated that tobacco material can be disassembled into essentially water insoluble and water soluble portions, followed by controlled reassembly. . . . When coupled with the technology for denicotinization of aqueous tobacco extracts, the expanded process provides the power to produce a variety of "engineered" tobacco laminas in which the nicotine level is manipulated while other "non-nicotine" compounds are effected [sic] to a minimum degree.

Fagg concluded that "[t]he overall process has demonstrated the ability to start with lamina cut filler and produce processed tobacco cut filler in which the nicotine level within the tobacco can be controlled," and that "[c]ontrolled nicotine materials allow novel manipulations of tar to nicotine ratios which significantly alter smoking sensations. Product opportunities are apparent and consumer testing has been included in the Winston and Vantage brand families." 508380001-0027 at 0008, 0014-0015 (US 85443).

1449. RJR continued its research into changing the nicotine to tar ratio throughout the 1990s. The company concentrated on research that would allow it to create an ultra low tar product that provided nicotine delivery similar to full-flavor products. 509308455-8459 (US 20827).

1450. An April 6, 1998 memorandum circulated among RJR's employees listed "the locations where nicotine is currently measured on a regular basis in the domestic tobacco company." "Attachment B" to the document indicates that Reynolds regularly measured nicotine levels at twenty different stages of the tobacco manufacturing process. 523196492-6499 at 6492, 6493-6495 (US 88062).

(3) Brown & Williamson and BATCo

1451. Hugh Honeycutt, B&W's Director of Research Services and Analytical Research admitted that B&W "absolutely" had the ability to manipulate the nicotine to tar ratio of its products. Honeycutt PD, United States v. Philip Morris, 4/23/02, 160:15-19.

1452. A March 17, 1967 study by BATCo described a study in which the "delivery of 'extractable nicotine' was manipulated, to cover a convenient range" by chemical additives in the filters. 750039365-9385 at 9367 (US 88091).

1453. According to M. Lance Reynolds, former B&W Director of Product Development and Director of Research, from the beginning of his career at B&W in 1968 onwards, B&W and BAT Group companies had "projects to try and increase nicotine delivery with respect to tar, for many years." Reynolds PD, United States v. Philip Morris, 9/12/02, 301:1-301:23.

1454. In the 1960s, BATCo undertook two research projects called HIPPO I (completed in January 1962) and HIPPO II (completed in May 1963), which investigated the role of nicotine in cigarette smoking and examined its potential beneficial physical and psychological effects. Their goal was to control nicotine delivery and change nicotine to tar ratios. 105620620-0683 (US 20247); Farone WD, 84:6-15; 105620569-0605 (US 20246); 301083862-3865 (US 20577); Henningfield WD, 89:11-90:8. Prior to the publication of the 1964 Surgeon General's Report, B&W General

Counsel Addison Yeaman evaluated the findings of HIPPO I and II, and suggested that the best reaction to the Surgeon General's Report was to provide a filter capable of removing certain constituents of smoke considered suspect by public health officials, while still "delivering full flavor -- and incidentally -- a nice jolt of nicotine." 2046754905-4909 at 4908-4909 (US 20477).

1455. BATCo, like the other cigarette manufacturers in the 1970s and 1980s, also undertook research to control and maintain nicotine delivery for cigarettes with reduced FTC tar levels. The purpose of studies carried out in 1973 to assess the use of additives to reduce tar while at the same time increasing nicotine delivery to smokers was stated as follows: "The increased importance being placed on the lowering of TPM [total particulate matter] and the controlling of nicotine delivery has made it necessary to investigate the different methods available for producing these changes in smoke." The 1973 study also utilized "ADDITIVES FOR NICOTINE CONTROL," including nicotine tartrate, sodium bicarbonate, and diAmmonium hydrogen phosphate to increase the "extractable nicotine" in the smoke. The researchers found that certain combinations of additives successfully reduced tar while "maintain[ing] the impact and physiological strength levels" of nicotine. 402390265-0282 at 0268, 0280 (US 86963).

1456. In 1980, researchers employed by the tobacco companies, such as B&W's scientists Tilford Riehl, D.V. Cantrell, and C.M. DiPietro, studied the effect of cigarette wrapping paper on nicotine delivery and found evidence that some papers enhanced nicotine delivery to smokers of low tar cigarettes. 510000661-0662 (US 85501); see also 400132742-2776 (US 88084).

1457. A September 20, 1979 memorandum, titled "Tar/Nicotine Ratios and Nicotine Transfer Efficiencies of B&W and Competition Brands," indicates that the average nicotine to tar ratio for B&W brands and competition brands had increased, and that the nicotine to tar ratio for

"Low Tar" and "Ultra Low Tar" products was higher than for "Full Flavor" products. 505003431-3438 (US 85412).

1458. BATCo held a Nicotine Conference in England, from June 6-8, 1984. Session titles included: "A smokers [sic] requirement for nicotine. A smoking behavior and market place view;" "Product elasticity, nicotine and perception of product strength;" and "Product modification for maximal nicotine effects." Two out of the three "primary objectives" of the Conference were:

> Review the research to establish the relationship between tar and nicotine (ratios and absolute levels) as controlling factors of smoking behavior and their role in product assessment and acceptance.
>
> Identify to what extent the nicotine dose on a puff-by-puff, per cigarette, or on a daily basis can be used to indicate a smokers [sic] requirement for nicotine or infer product acceptance.

512106427-6437 at 6428-29, 6430 (US 20846).

1459. Nicotine to tar ratios were also a central issue at BAT's Smoking Behavior-Marketing Conference, held July 9-12, 1984. A presentation was given in which further study of nicotine was encouraged, particularly with the goal of "enhanc[ing] the properties of nicotine in reduced delivery products." B129103030501 at 0326 (US 85449); 521016789-6864 (US 85450).

1460. A BATCo document, titled "R&D Views on Potential Marketing Opportunities, marked, "Not for Circulation" and dated September 12, 1984 refers to compensation and lists as a "high priority" development of "alternative designs (that do not invite obvious criticism) which will allow the smoker to obtain significant enhanced deliveries should he so wish." The author recommends that this action be taken "irrespective of the ethics involved." Also listed under "high priority" is an item described as "nicotine deliveries," in which it is admitted that:

> Nicotine is the key pharmacological component of cigarette smoke. . . . An area of importance is to distinguish whether smokers smoke for (a) transient peak effects or (b) threshold base-line levels throughout the day. Another area of importance is the exploitation of physical and chemical means to increase nicotine transfer, ie [sic] to increase the effective utilisation of nicotine.

109869437-9440 at 9437-9438 (US 21707).

1461. BATCo's focus on enhancing the amount of nicotine inhaled by smokers was reiterated in a January 1985 internal document titled "Tobacco Research in BAT Industries." That memorandum indicated that "[m]ore resources will be provided for research into means of enhancing nicotine transfer to smoke and experimental combustion research, including cigarette paper effects." 109070972-0979 at 0976 (US 34858).

1462. In 1986-1987, BATCo undertook studies that revealed that nicotine delivery could be increased through filter modifications, with one study finding up to a 30% increase in nicotine per puff and a 19% increase in the nicotine to tar ratio. 400260652-0674 at 0665 (US 76183).

1463. In 1987, BATCo held a "Fundamental Research Review" in Southampton with scientists from the research and development department. It identified as one of its top three priorities for research in the United States, "Nicotine Control," in order to "optimise nicotine in current and future products." 400260496-0514 at 0499 (US 85451).

1464. At the same time, BATCo's scientists continued to research modifying nicotine to tar ratios. In a May 14, 1987 document developed by the Southampton Research and Development Centre, with contributions from BAT Group participants, including B&W's R.R. Johnson, and distributed to the research and development departments throughout the BAT Group, the authors highlighted the success of the Barclay brand and cited as a reason its nicotine to tar ratio, "using both

high blend nicotine and high ventilation levels, to give an NTR [nicotine/tar ratio] some three times that of a full flavour product. . . ." The document pointed out that "[t]echnologically, design of a high NTR product anywhere in the 1-10 mg tar range is possible immediately." The question for further research was how "NTR should vary with tar delivery to give 'acceptable' smoking characteristics at any given delivery level." 570346066-6151 at 6068 (US 53187).

1465. In "Chemosensory Research," by BATCo scientist Richard Baker, dated February 28, 1990, Baker argued for continued research on nicotine to tar ratios, maintaining that both components of smoke were necessary -- at the appropriate levels -- to produce a successfully marketable cigarette. However, he made clear that nicotine is of greater importance and that tar's role is to make nicotine inhalation palatable:

> The ultimate product of the tobacco industry is nicotine and research should continue to be directed at the development of low tar/medium nicotine cigarette smoke. Nicotine alone in smoke is not practical, nor are extreme tar/nicotine ratios, since nicotine is too irritating – other substances are required for sensoric reasons.

400854060-4066 at 4060 (US 67851). Baker noted that since the 1960s, B&W conducted such nicotine delivery research as part of a coordinated BAT Group research strategy, with "work done by a variety of groups in Southampton, Louisville and elsewhere." Id.

1466. BATCo's Operating Group Five Year Plan 1991-1995, dated January 15, 1991, stated that "[b]asic research will continue into products delivering adequate levels of nicotine . . .[,] controlled release of nicotine . . . and enhancement of the transfer of nicotine . . . ." BATCo used this knowledge to develop ultra low tar products that delivered the nicotine at a level equal to regular cigarettes:

> Ultra Low Delivery Products -- High priority will be given to the development of more satisfying products in the low and ultra low delivery ranges (1-9 mg). New concepts developed through Projects FELT and GREENDOT will be applied to a range of products in the next 2-3 years, especially at low delivery levels . . . Project FELT which is to be test-marketed as B&H SM in Belgium in the second quarter of 1991, has demonstrated BAT's ability to design a 9 mg flue-cured product that has the impact, satisfaction and mechanics of a 14 mg commercial product (B&H SF). The principles applied to FELT will now be used to develop a 7 mg USB style product to match a 12 mg US commercial product.

201752783-2899 at 2837, 2838 (US 85452).

1467. On March 8, 1994, BATCo published a "Review of Information on Sensory Effects of Changing Tar/Nicotine Ratio of Smoke," designed to summarize the company's knowledge on the "sensory effects of changing tar/nicotine ratios of smoke." The summary was devised to help "point[] the way" toward "manipulat[ing] and modify[ing] the impact and irritation sensations and the balance between them." The summary pointed out the following main conclusions:

> (1) impact increases when nicotine delivery is increased and tar remains constant;
>
> (2) impact increases when nicotine delivery is held constant and tar is reduced;
>
> (3) a decrease in the tar/nicotine ratio increases smoke pH, which increases impact; and
>
> (4) nicotine is the source of impact.

The Review states that BATCo's research was aimed at gaining an "understanding of how impact and irritation can be tailored to meet product requirements by optimisation of nicotine delivery." 575102998-3015 at 3002-3003, 3010 (US 53213).

(4) American

1468. By the 1960s, American was undertaking numerous studies designed to affect the nicotine to tar ratio naturally found in cigarettes. These methods included adding nicotine to reconstituted tobacco, increasing the amount of Burley tobacco -- which is naturally higher in nicotine content than other tobaccos -- in a blend to determine its effect on the "nicotine yield," and producing tobacco plants, such as N. Rustica, that had almost double the concentration of nicotine of other tobacco plants used by American. MNAT00316688-6693 (US 21219); X003421-3431 at 3421, 3424 (US 34158); MNAT00881318-1323 (US 21221); see also X002999-3038 (US 88082).

1469. In 1969, American researchers, working with researchers from Philip Morris, RJR, and Liggett, conducted experiments "to determine if [genetically different tobacco] varieties differ in their ratio of nicotine to FTC 'tar.'" MNAT00533294-3295 at 3295 (US 21665).

1470. An April 29, 1974 memorandum from R.M. Irby, Jr., Manager of New Products Division for Research and Development, to Virginius Byran Lougee, III, executive, and E.C. Cogbill, scientist, titled "Compound W" (code word for nicotine) describes the company's efforts to increase the nicotine content of its cigarette tobacco:

> Regular PALL MALL Red blend analyzing 1.95% nicotine . . . was treated with Compound W to increase nicotine in the blend by 19%. . . . To make absolutely sure that the complete evaluation has been carried out at the desired nicotine level, the TC-22 blend will be modified with regular PALL MALL blend to yield an exact increase of 19% above the standard 1.87% nicotine blend. This is currently under way. . . . LUCKY 100's blend was treated with Compound W to yield 2.58% nicotine; a 21% increase above the standard control of 2.13%.

It was also found that "Compound W added to tobacco has little effect on the overall taste of the cigarette. Impact is increased slightly." ATX050142123-2128 at 2123-2124 (US 21602); Sprinkle PD, Carter, 1/19/96, 99:16-17; Henningfield WD, 93:9-94:5.

1471. Robert Sprinkle, an American scientist, stated that the company had a target burn rate and a target puff count that it sought to achieve in its cigarettes, and that it achieved these targets in part through controlling paper porosity. He also admitted that American selected paper porosity in order to assure a target nicotine delivery to smokers. Sprinkle PD, Small, 10/16/97, 67:22-68:25.

1472. In a 1977 document, American's researchers suggested "methods for increasing the [nicotine to tar] ratio" ["NTR"] including: (1) "addition of nicotine to the tobacco"; (2) "addition of ammonia salts . . . to tobacco, which on smoking would free the ammonia and thereby cause an increase in nicotine transfer to the smoke"; (3) increasing "the porosity of cigarette paper"; (4) "adding a nicotine salt . . . to cigarette paper"; (5) "making cigarette filter tips basic [to] enhance the nicotine transfer in the smoke and [to] increase the NTR's. . . . Adding nicotine salts to the cigarette filter is also a means to increase the NTR"; and (6) "adding salts that enhance the combustion of the tobacco" to offset the "reduction in the nicotine content" caused by reducing tar. MNAT00533268-3286 at 3270-3272 (US 22175).

(5) Lorillard

1473. A draft presentation located in a 1969 file of Alexander Spears, Lorillard's CEO, describes Lorillard's research efforts:

> The research activities on the physiological element are concerned with nicotine. The quantity of nicotine required for the stimulus is mediated to the nicotine content of the cigarette by several factors: (1) absorption rate into the bloodstream, once the nicotine has deposited on the respiratory tract; (2) fraction of inhaled nicotine

> which is deposited in [the] respiratory tract (pH dependence); (3) concentration of nicotine in the smoke and (4) transfer rate of nicotine from the tobacco to the mainstream smoke.

Spears further stated that "it would be useful to have a wider range of control over nicotine than now exists, through the selection of tobacco and the physical construction of the smoking article. Within one year, it is expected that tobacco modifications can be made to optimize absorption of smoke nicotine." 87667736-7740 at 7737 (US 56302*). In an undated paper, titled "Factors Affecting Smoke Delivery of Nicotine and Carbon Monoxide," Spears identified several factors that affect the nicotine yield of a cigarette and stated: "Through [a] combination of these variables, plant genetics and commercial processes, . . . it is possible to manipulate the yield of nicotine from about .1 mg to 4 mg per cigarette." 00044998-5021 at 5001-5002 (US 34208).

1474. By 1971, Lorillard was analyzing the nicotine content and nicotine to tar ratio of several brands of cigarettes in connection with sales data for each brand. In a February 8, 1971 memorandum to top scientist Alexander Spears and C.L. Tucker, Jr., Director of Product Development and Marketing Research, S.T. Jones wrote that "[i]t has become apparent from the available data that the top sellers, e.g. Winston, Salem, Marlboro, and Kool are all fairly high in smoke nicotine. . . . The one other parameter common to the top sellers is the ratio of smoke nicotine to 'tar.'" Jones concluded that "[t]he ratio of nicotine to tar can be controlled by blending high nicotine and tar grades with low ones resulting in a net gain of nicotine delivery over tar level." 00776195-6201 at 6195, 6196 (US 34293).

1475. By 1976, Lorillard was evaluating methods it believed might be used by other Defendants, including Philip Morris and RJR, to externally apply nicotine to tobacco in order to "raise the impact" of low tar cigarettes "while maintaining a low 'tar' profile." In a March 9, 1976

memorandum from J.R. Reid to Minnemeyer, Reid reported on the methods believed to be used by other Defendants and recognized that the research was important because of "[r]ecent public demand for low tar smoking materials." 00120379-0388 at 0379 (US 85455).

1476. In a March 2, 1976 memorandum to Alexander Spears regarding the "R&D Sedgefield Meeting," Lorillard's Schultz summarized the various research topics discussed at the meeting, which took place on February 3, 1976. Regarding the topic of "Enhancement of Nicotine or Nicotine Effects," Schultz stated that "[t]he modification of products to allow delivery of more of the available nicotine in the free form was discussed as a viable possibility. . . ." With regard to the topic "Very Low Tar Cigarettes," Schultz summarized that "[i]t was considered that cigarettes with tar deliveries of 2 mg or less are likely to become important but that reasonable levels of nicotine (0.5 mg or more) and relatively high flavor levels would be necessary to make such a product a leader in the field." 01111982-1985 at 1984-1985 (US 34311); Farone WD, 96:7-19.

1477. By 1976, Lorillard had embarked upon a comprehensive study of product design mechanisms for controlling the nicotine content and delivery of its products with the goal of developing a "cigarette delivering lower tar while at the same time delivering a level of nicotine higher than could be obtained normally. [sic] by conventional cigarette construction." A May 4, 1976 memorandum to F.J. Schultz, Vice President of Research and Development, from Harry Minnemeyer, Director of Research, details the scope of Lorillard's extensive research plan, named the "Nicotine Augmentation Project (NAP)." Lorillard began its Nicotine Augmentation Project in the mid-1970s. According to a project memorandum, the goal of the NAP research was to "develop a flavorful cigarette delivering lower tar while at the same time delivering a level of nicotine higher than could be obtained normally by conventional cigarette construction." Letter of 5/4/76 from

Minnemeyer to Schultz re Nicotine Augmentation Project (NAP), US 47721 (at 1). This project is discussed further in Section V(C)(1)(a)(4).

1478. In the 1976 memorandum, Minnemeyer described proposed research into numerous mechanisms for controlling nicotine, including adding "nicotine from an outside source to that naturally present in cigarette tobaccos"; chemical treatment of tobacco with ammonia to create more free nicotine in the smoke, which "would have a much greater physiological effect than nicotine salts"; air dilution of cigarette smoke; decreasing the acidity of smoke; and development of filters that selectively allow the passage of nicotine while reducing tar. 00050444-00050450, passim, (US 47721); Farone WD, 96:7-19; see also 00044529-4533 (US 34192); 00050440-0443 (US 47720).

1479. In a June 8, 1976 report on a portion of Lorillard's Nicotine Augmentation Project titled "Application of Free Nicotine to Cigarette Tobacco and the Delivery of that Nicotine in the Cigarette Smoke," T.M. Larson and J.P. Morgan explained the purpose of the research: "Nicotine was applied as free nicotine and nicotine tartrate to different tobaccos for the purpose of increasing the nicotine to tar ratio in cigarette smoke." One conclusion of the study was that "only a small addition of free nicotine was needed to provide the impact of a higher nicotine cigarette." 00398312-8322 at 8312 (US 85456); 00781406-1417 (US 20029); Farone WD, 96:7-19.

1480. In a June 16, 1976 memorandum to Alexander Spears, H.J. Minnemeyer gave another progress report on Lorillard's "Nicotine Augmentation Project." Minnemeyer wrote that "[a]bout a dozen approaches have been recognized as a possible solution to the problem of delivering more nicotine in the smoke of low tar cigarettes." Minnemeyer stated that "[o]ne approach involved the procurement and addition of nicotine to tobacco to supplement that already present, while [another] attempts to optimize the delivery of nicotine already present in cigarette tobaccos. . . ." Minnemeyer

also reported that small amounts of nicotine could be added to a blend without affecting the nicotine to tar ratios as reported by FTC testing:

> Participants in this work now feel that a satisfactory low tar smoking article might be achieved by the addition of much less nicotine than was previously thought necessary. By spraying the blend with a small amount of nicotine it might be possible to get the impact of a higher T&N cigarette. This might be achieved without actually changing the T&N figures one would get from untreated tobacco.

00044525-4528 at 4525, 4526 (US 34191).

1481. Lorillard concluded as early as January 31, 1977, as a result of research on the Nicotine Augmentation Project, that nicotine could be successfully added to reconstituted tobacco leaf by spraying, that nicotine added in this manner was in fact delivered to the smoker in a normal manner, and that "the added nicotine improved the overall quality of the RL [reconstituted leaf] smoke somewhat." 81090368-0380 at 0369, 0372 (US 85457); Farone WD, 96:7-19. In an April 12, 1977 report concerning "Enrichment of Reconstituted Leaf Nicotine Content By Direct Addition of Nicotine Alkaloid to the RL Slurry," Morgan and Larson concluded that the "[n]icotine content of the final product can easily be controlled by the addition of predetermined amounts of nicotine alkaloid." 00398474-8484 at 8474 (US 20025); 01254872-4876 (US 20043); Farone WD, 96:7-19. In a June 30, 1977 memorandum, H.S. Tong recommended further study of the "enrichment" of reconstituted tobacco leaf through the addition of pure nicotine or nicotine salts, stating: "I think it is an important and worthwhile project because it gives us precise control over nicotine contents in all our products." 00045059-5059 (US 34209); Farone WD, 96:7-96:19.

1482. A July 27, 1976 memorandum from Senior Chemist M. A. Skladanowski to Mary Sue Ireland described methods studied by Lorillard to "increase nicotine to tar ratios in the mainstream

smoke of cigarettes." The memorandum notes that: "The use of air dilution to augment cellulose acetate filters has increased as the demand for low tar and nicotine cigarettes has increased. . . . The renewed interest in air dilution as a filter mechanism is due to the fact that these filters produce relatively high nicotine in the mainstream smoke." 00044989-00044993 at 4989 (US 34207). Later that year, Skladanowski reported in a November 4, 1976 memorandum the results of another internal research project concerning the effect of air dilution filtration on nicotine delivery and determined that among "[t]he advantages of a total air dilution cigarette are . . . higher nicotine to tar ratios . . . [and] [g]reater smoke pH." 00044975-4984 at 4975 (US 34205). In an April 4, 1977 memorandum, Skladanowski again reported the results of a study of air dilution filtration, finding that:

> [a]ir dilution alone, without a cellulose acetate filter increased the nicotine to tar ratio in the smoke and the number of puffs per cigarette. . . . By simply removing the cellulose acetate filter and adding air vents, a True 85 cigarette with 11.6 mg tar and 0.6 mg nicotine was modified to deliver 13 mg tar and 1 mg nicotine. The nicotine to tar ratio in the smoke of modified cigarette . . . was 52% greater than in the control.

00044955-4970 at 4959 (US 85459); Farone WD, 96:7-19.

1483. A February 14, 1978 confidential report prepared by Harry Minnemeyer and P.D. Schickedantz reviewed the progress of Lorillard's Nicotine Augmentation Project. The report reveals that Lorillard had initiated a "major new project . . . in order to create the technology necessary to market a cigarette with a nicotine to tar ratio higher than is normally found in commercial cigarettes." The report reviewed the various technological mechanisms studied by Lorillard as a means of increasing nicotine delivery to the smoker in "ultra low- and low-tar" cigarettes, including: studies of Lorillard's manufacturing process for the purpose of determining

whether nicotine could be extracted from the waste of normal tobacco processing; studies of the effect on nicotine delivery and impact of spraying tobacco with nicotine tartrate and free nicotine; studies of increasing the ratio of free nicotine to total nicotine by raising smoke pH; and studies of increasing the nicotine to tar ratio of "low tar" cigarettes through filter design and treatment of the filter with additives. 00782192-2223 at 2196-2199 (US 54377); Farone WD, 96:7-19.

1484. In 1982, Lorillard experimented with adding bases to tobacco to enhance transfer of nicotine to mainstream smoke and alter nicotine to tar ratios. 00053989-4018 (US 34217); 00053989-4018 (US 47723); Henningfield WD, 75:22-76:1, 77:15-18; Farone WD, 96:7-19.

1485. Lorillard extensively studied the effect of treating filters with various chemical additives on the nicotine to tar ratios in mainstream smoke. For example, an April 8, 1982 memorandum concerning the "Results of Preliminary Experiments to Increase Nicotine to Tar Ratios in Mainstream Smoke by Augmenting Nicotine Elution [Extraction] from the Filter" concluded that increasing the amount of nicotine in a filter, modification of particle size in the smoke aerosol, and modification of the polarity of a filter were all possible mechanisms by which more nicotine could be "eluted," i.e., extracted by means of a solvent from a filter, thereby increasing the nicotine to tar ratio. 00054361-4368 at 4361, 4367 (US 34220).

1486. A July 25, 1984 memorandum reported on Lorillard's "Evaluation of Potassium Acetate as a Cellulose Filter Additive." The report concluded: "Addition of potassium acetate caused significant increases in nicotine delivery (28%, 45%) and nicotine/CPM [corrected particulate matter] levels (19%, 36%) relative to the control." 83897124-7127 at 7125 (US 55935); see also 88169525-9528 (US 56437).

1487. An August 3, 1984 memorandum from M.A. Sudholt to M.S. Ireland acknowledged that "[o]ne object of the nicotine project has been to increase the level of nicotine relative to tar in cigarette smoke. Increased ratios of nicotine to [tar] as high as 66% were obtained with diethylaminoethyl cellulose ion exchanger purchased from Whatman." 83897139-7142 at 7140 (US 55938); see also 81070726-0727 (US 88772); Farone WD, 96:7-19.

1488. A February 6, 1985 memorandum described the "ultimate goal" of Lorillard's ongoing study of filter design as "increas[ing] the amount of nicotine which 'migrates' to the filter from the tobacco while cigarettes are stored, prior to consumption. It is hoped that shifting more nicotine to the filter than is currently shifted with cellulose acetate filters will increase the smoke impact." The report concedes: the "major objective" of Lorillard's study of nicotine was "to increase the physiological impact and/or nicotine to tar ratio in ultra low tar cigarettes." 80551040-1042 at 1040 (US 55381).

(6) Liggett

1489. Liggett also recognized the need to increase the nicotine to tar ratio. In 1977, Liggett's new product concepts included producing a "low tar cigarette with increased nicotine impact." Methods for designing this proposed cigarette included adding nicotine to the tobacco blend, or increasing the smoke pH through the use of additives. LWDOJ9165472-5472 (US 22169).

1490. In 1978, Liggett researched creating "Cigarettes with Elevated Nicotine." As part of this research, Liggett created test cigarettes using the additive nicotine maleate to alter the nicotine to tar ratio. LG234157-4157 (US 21425).

1491. In a November 9, 2001 e-mail to Vector and Liggett management and employees, Timothy Jackson, the Vice President for Operations at Vector Tobacco, stated with regard to the

Omni and Quest cigarette brands, "The purpose of the samples that have been tested on these two products is to see if we can maintain taste/impact while lowering the tar." VDOJ 25299-5299 (US 75450) (Confidential). In another e-mail dated August 27, 2001, Jackson informed Liggett and Vector management that the Omni was being modified in order to "attempt to provide more initial impact to the cigarette." Jackson further informed management that alternatives were being considered "to try and moderately increase nicotine." VDOJ 25348-5348 (US 64735) (Confidential).

1492. A memorandum dated July 25, 2001, regarding the launch of Omni Gold, a Vector Tobacco product, details cigarette design changes in the filters, paper, and various flavorings. This memorandum also acknowledges the concept of compensation and notes that a particular choice of paper "should deliver the correct tar and nicotine numbers as well as the correct puff count." VDOJ 25339-5341 at 5339, 5340 (US 64737) (Confidential); Dietz PD, United States v. Philip Morris, 7/1/02, 95:3-118:8.

c. Defendants Understood the Correlation Between Nicotine Delivery and Cigarette Sales

1493. For several decades, the cigarette company Defendants have recognized that the commercial success of any cigarette depends on its ability to deliver adequate levels of nicotine to smokers. As the internal documents discussed below reveal, each Defendant also understood that its market position, as well as the financial viability of the tobacco industry as a whole, required the development of cigarettes that provide nicotine in amounts sufficient to ensure that smokers become and remain addicted. Accordingly, each Defendant took steps, over a sustained period of time, to develop such cigarettes.

(1) Philip Morris

1494. A May 5, 1975 memorandum from John T. Landry, Philip Morris's Executive Vice President of Marketing, to Clifford H. Goldsmith, President, expressed that Landry was "alarm[ed]" that Marlboro's nicotine delivery had "dropped . . . sharply below that of Winston." Landry acknowledged, "it puts us at a competitive disadvantage," and recommended "that this problem be thoroughly explored with Manufacturing and R&D and that every attempt be made to return the nicotine delivery to more suitable levels." 1000219888-9888 (US 85409); see also 1000046538-6546 at 6543 (US 26074).

1495. Even though Philip Morris publicly stated for decades that nicotine is used in cigarettes for "taste," an internal Philip Morris document, dated March 18, 1980, discusses the utility of nicotine to Defendants, and to Philip Morris in particular. In that document, a memorandum from Jim Charles, Manager of Research and Development to Robert Seligman, then-Vice President of Research and Development, Charles wrote that "[n]icotine is a powerful pharmacological agent . . . and may be the most important component of cigarette smoke." Charles argued that further research on nicotine was vital and that it would have a "direct bearing on our market position in a 10-15 year time frame." 1003289974-9975 (US 21553).

(2) R.J. Reynolds

1496. A July 3, 1973 memorandum from Jerry R. Moore to R.A. Blevins, Jr., the Director of Marketing and Planning at RJR, reported that a study conducted by Reynolds's Marketing and Development Department found a direct, significant correlation between the amount of "free nicotine" in a brand and the sales level of that brand. 501011401-1401 (US 20668). Blevins

summarized the results of the study and his recommendations in a July 12, 1973 memorandum to William S. Smith, Jr., member of the CTR Research Board of Directors, as follows:

> Our analysis suggests that pH does not correlate as closely with share performance as does free nicotine. Our emphasis should be directed toward free nicotine while pH would provide us with a measure of or tool to effect free nicotine.

501011403-1403 (US 20669). Free nicotine is nicotine in the unprotonated form, i.e., without a proton or positive chemical charge. See also definition and discussion of "free nicotine" at V(C)(2)(d)(1); see also Farone WD, 93:22-98:21.

1497. In 1973, Reynolds also conducted a "historical review of smoke pH data and sales trends" comparing data for its own cigarettes to that of its competitors. A May 10, 1973 report about the review, written by John D. Woods and Gloria C. Harilee, indicated that "smoke pH data for competitive brand filter cigarettes measured since 1964 were compiled "for the purpose of attempting "to correlate these data with cigarette sales trends." Woods and Harilee found that:

> A high pH smoke is strong due to a high concentration of unbound, or free, nicotine in the smoke. . . . Correlation of these values with sales trends were made and the results showed even stronger positive correlations than were found for smoke pH-sales trends studies.

500606138-6153 at 6138 (US 48334). Similarly, in 1982, Reynolds reported internally that shortly after Philip Morris began increasing smoke pH and free nicotine through the introduction of added ammonia (diammonium hydrogen phosphate) in 1965, Philip Morris's sales began growing very rapidly. 500540827-0832 (US 20639).

1498. In a February 5, 1979 handwritten memorandum, RJR scientist C.L. Neumann stated that RJR wished to "obtain a fundamental understanding of the role of nicotine in smoking satisfaction" by examining "whether there is a minimum or threshold level and an optimum smoke

nicotine level related to smoking satisfaction" and "the relationship of smoke pH to nicotine perception and satisfaction." Neumann recognized the significance of these issues to increasing Reynolds's sales: "If the optimum smoke nicotine and pH can be determined for each of our products, then these products can be tailored with respect to these variables to provide maximum satisfaction and acceptance for the consumer, [h]opefully resulting in increased sales." 504460126-0134 at 0128, 0130, 0133 (US 88065).

1499. Admitting that there is no "chemical compound more important to a smoker's decision to continue smoking than nicotine," Gary Burger, former RJR Vice President for R&D and, before that, Director of Toxicology, stated that from at least 1983 to 1996, Reynolds researched the threshold level of nicotine to "arrest the decline in the social acceptability of smoking." Burger PD, Arch v. American, 8/22/97, 44:15-72:7, 117:16-20; see also 519192752-2754 (US 80229); 519192755-2756 (US 80230); 519192757-2758 (US 80231).

1500. In 1989, Reynolds identified "a particularly disturbing difference" between Winston and Marlboro: "smaller puffs of Marlboro delivered higher levels of nicotine into the bloodstream, and delivered them more quickly, than Winston." Reynolds concluded that this difference "could be a major factor in why people stay with a brand . . . even though they don't know why." 507555896-5909 at 5898-5899 (US 20779).

(3) Brown & Williamson and BATCo

1501. A 1963 letter from B&W's R.B. Griffith, Director of Research and Development, to BATCo's Chemist, John Kirwan, discussed "the question of desirable or optimum levels for either nicotine or sugar or a balance between the two," and how the level of nicotine and sugars might "be varied to win consumer preference for our brands." Griffith pointed out that B&W's "sales pattern

[from 1960 to 1963] has been positively correlated with the nicotine level of the tobacco in our products." Griffith went on to state that "the nicotine level of B&W cigarettes [studied] was not obtained by accident." He closed by recognizing the marketing department's role in determining nicotine content in cigarettes, stating, "I think that we can say even now that we can regulate, fairly precisely, the nicotine and sugar levels to almost any desired level management might require. . . ." 102630333-0336 at 0333, 0334, 0335, 0336 (US 23000).

1502. A September 20, 1979 memorandum from the B&W Research Department, written by Rufus Hugh Honeycutt comparing tar and nicotine delivery information amongst various commercial cigarettes, noted that "[p]erhaps not coincidentally, Philip Morris and R.J. Reynolds have the highest average NTE [nicotine transfer efficiency] and the highest USA sales." 505003431-3438 at 3433 (US 85412); see also 505003675-3688 (US 85413); 510000667-670 (US 51496); 2077864189-4190 (US 45063).

1503. On April 7, 1982, BATCo's G.O. Brooks, a research scientist, sent a letter to B&W's William L. Telling regarding a study concluding that when a cigarette's nicotine level "is so low that the nicotine is below the threshold of pharmacological activity then it is possible that the smoking habit would be rejected by a large number of smokers." 660913609-3633 at 3620 (US 22763). Considering this threshold "satisfaction" level, BATCo senior scientist S.J. Green later warned that "we should be aware of the long-term dangers of following the crowd into ultra-low nicotine deliveries." Green explained, "Nicotine is an important aspect of ‘satisfaction,' and if the nicotine delivery is reduced below a threshold ‘satisfaction' level, then surely smokers will question more readily why they are indulging in an expensive habit." 110069974-9982 at 9975 (US 20268); see also 400993160-3215 at 3196 (US 75975*); 100051935-1948 (US 34587). Green's warning

demonstrates BATCo's understanding that the trend towards ultra-low nicotine deliveries could mean "that the market would extinguish because people would get to the point that smoking really would be a matter of taste and pleasure and not nicotine receptors in the brain; at that point, people would find it easier to quit." Henningfield WD, 97:21-98:3.

(4) Lorillard

1504. In an April 29, 1976 memorandum to J.R. Ave and Alexander Spears, Richard E. Smith, Vice President of Marketing and Development for Lorillard, summarized a meeting on Lorillard's "5 Year Domestic Cigarette Marketing Plan." Smith wrote:

> [i]t was agreed that judgement and recent publicity give an enriched nicotine product the highest priority of all new brand projects. This project has been divided into three parts: a.) How to get the nicotine (quantities, prices, throw-away costs, etc.), b.) How to use the nicotine (on both the 5 mg and 2 mg tar products), and c.) What are the corporate implications of nicotine addition.

03364986-4988 at 4987 (US 85408); see also 01254896-4898 at 4897 (US 34518); 83250744-0747 at 0746 (US 55650).

1505. A November 9, 1976 memorandum from Richard E. Smith to Fred Schultz, Vice President of Research and Development, recommended that an industry-wide effort to offer a product with 50% less nicotine be discontinued despite "considerable consumer trial appeal" because such a cigarette "could not deliver the smoking satisfaction to sustain consumer purchase." 01244504-4504 (US 20042).

1506. One of Lorillard's highest priorities in the late 1970s was its nicotine enrichment program, as already discussed supra. In a February 9, 1977 memorandum to Fred Schultz, Harry Minnemeyer, Director of Research, reported on the "Continuation of Nicotine Augmentation Project

(CONAP)." Minnemeyer explained that the objective of Lorillard's extensive study of the mechanisms by which nicotine delivery could be controlled was a "highly important business objective." 83251036-1044 at 1037 (US 55688).

1507. In a July 22, 1977 memorandum from Fred Schultz to Alexander Spears, Schultz briefly summarized the progress of Lorillard's efforts to increase the impact of "low tar" cigarettes by adding nicotine directly to reconstituted tobacco leaf and stated: "Consideration of nicotine delivery necessary to achieve long term use and satisfaction by the consumer dictate that we should continue to pursue the concept of nicotine enhancement." 00361822-1823 at 1823 (US 20024).

2. Defendants Researched, Developed, and Utilized Various Designs and Methods of Nicotine Control to Ensure that All Cigarettes Delivered Doses of Nicotine Adequate to Create and Sustain Addiction

1508. Nicotine delivery levels are not a matter of random variation. Rather, cigarettes are specifically designed to deliver a range of nicotine doses so that a smoker can obtain her optimal dose from virtually any cigarette on the market, regardless of that cigarette's nicotine delivery level as measured by the FTC method. Farone WD, 99:10-12; Henningfield WD, 36:8-16.

1509. Defendants' control of nicotine has not focused simply on delivering as much nicotine as possible, because delivery of large amounts of nicotine can make cigarettes harsh and unpalatable to the smoker. Farone WD, 85:7-16. In addition, an unsmoked cigarette already contains much more nicotine than a smoker will inhale because, as mentioned, supra, at ¶1368, not all of the nicotine present in tobacco is transferred to cigarette smoke. Typically, a cigarette that delivers approximately one milligram of nicotine in smoke, as measured by FTC testing, retains "about 14-20 milligrams of nicotine in the unsmoked rod." Farone WD, 86:10-12. Therefore, it is simplistic to consider only "spiking" of cigarettes by adding extraneous nicotine when determining Defendants'

control of nicotine delivery. Rather, their control of nicotine must include consideration of the myriad design parameters Defendants have used to control the dose and form of nicotine delivered to mainstream cigarette smoke. As explained by Dr. Farone, who had extensive personal experience with Philip Morris's cigarette design efforts and objectives as Director of Applied Research from 1977 to 1984, nicotine control -- or manipulation -- means doing something

> to change the amount of nicotine that comes off a burning cigarette to make it different than what it would be if you just took tobacco, wrapped it up, put it in a rod, lit that up, and let the nicotine go where it may. . . . [N]icotine manipulation deals with making specific changes in that design to make nicotine go where you want it to go as opposed to where it would go by itself without changing the design.

Farone TT, 10/7/04, 2021:6-13.

1510. As the following Findings of Fact demonstrate, Defendants have used a variety of physical and chemical design parameters to manipulate the nicotine delivery of their commercial products. For example, while Dr. Farone was at Philip Morris, researchers identified fifty-seven different parameters that influence the quality and content of smoke delivery by a burning cigarette. Farone WD, 48:7-22. Physical design parameters include cigarette length, circumference, and density; filter composition and design; air dilution or ventilation; and cigarette paper composition and porosity. Chemical design parameters include tobacco blend selection, the chemical composition of tobacco filler, and the choice of additives, including additives such as ammonia and ammonia compounds to influence smoke pH and the amount of free nicotine. Farone WD, 85:3-6. Defendants' goal to ensure that their products deliver sufficient nicotine to create and sustain addiction influences their selection and combination of design parameters. No single design parameter is responsible, on its own, for the level of nicotine delivered by a particular cigarette.

Rather, Defendants combine design parameters to ensure that any particular cigarette delivers a sufficient level of nicotine. Id. at 48:2-6, 84:16-85:6; Henningfield WD, 49:8-53:5, 54:7-15, 55:13-56:7, 66:14-67:12.

1511. Defendants' claims that their control of nicotine in their products is strictly for quality control measure are without factual support. See, e.g., 2023011263-1263 (US 20371).

> Cigarettes are designed to give a desired tar and nicotine level for each member of any brand family. They are designed into the product and they are not a matter of random variation. . . . [Defendants' control of nicotine] starts at the design stage and then it is maintained.

Farone WD, 99:10-12.

1512. Defendants have long claimed that pressure from public health authorities motivated their efforts to manipulate the design of their cigarettes in order to control nicotine delivery. The record does not support those claims. What is true is that in the 1970s, public health groups, such as the Tobacco Working Group in 1976, suggested that Defendants create less hazardous cigarettes by lowering the amount of tar while maintaining the amount of nicotine. Farone TT, 10/7/04, 2022:13-2023:2; 11/29/04, 7154:24-7155:25. However, many of Defendants' internal documents on the issue of nicotine delivery control predate the 1976 recommendations of the Working Group. In addition, even during the limited window of time in which the public health community was encouraging high nicotine/low tar cigarettes, Defendants did not disclose how sophisticated their understanding of nicotine manipulation was or how much they understood about the process of compensation. Finally, even today, long after the Tobacco Working Group and other members of the public health community have acknowledged that such efforts were counterproductive and would

not benefit the public, Defendants continue to research and employ techniques to control nicotine delivery in their commercial cigarettes.

1513. Defendants also claim unpersuasively that their research into methods to control nicotine delivery never translated into any commercially successful products. They also challenge the scientific basis for some of the design parameters discussed, i.e., whether such a change in design actually had an effect on nicotine delivery and, correspondingly, addiction. While most of the physical and chemical design parameters discussed below were used in the manufacture of Defendants' commercial cigarettes and did have an effect on nicotine delivery to the smoker, that issue is not, in an of itself, relevant. In the context of these fraud claims, what is relevant is that Defendants firmly believed, as demonstrated by their internal documents, that they could -- and did -- control nicotine delivery to the smoker by manipulating the design of their cigarettes, and then lied about their knowledge and conduct to the American consumer.

a. Defendants Recognized the Need to Design Cigarettes that Would Produce Low Nicotine and Tar Measurements under the FTC Method While Also Delivering the Minimum Nicotine Levels to Create and Sustain Addiction

1514. Defendants began to anticipate in the 1950s and 1960s, as the relationship between smoking and health was becoming a more prominent subject of public concern, that public interest in less harmful cigarette products could ultimately require reduced levels of nicotine and tar in conventional commercial cigarettes. Harris WD, 139:15-140:10 & Dem. 5. Defendants also recognized that if they addressed smokers' concerns about the health effects of smoking by reducing the levels of tar in their cigarettes, they might also effect a proportional drop in nicotine. They also recognized that a reduction in nicotine delivery levels which was no longer sufficient to sustain

smokers' addiction could devastate their industry. Defendants therefore set out to design commercial cigarettes that were capable of delivering nicotine across a range of doses that would keep smokers addicted. Henningfield WD, 54:7-15, 55:13-56:7, 66:23-67:12; Farone WD, 72:10-13, 86:18-89:13.

1515. As discussed earlier, see generally Section V(E)(2)(b), infra, Defendants have known since the 1960s that individuals smoke to obtain the desired effects of nicotine, and that smokers of lower nicotine yield cigarettes tend to adjust their smoking behavior to titrate (i.e., control) their intake of nicotine to achieve desired levels. This behavioral adaptation is referred to as smoker "compensation." By puffing lower yield cigarettes more frequently and/or more intensively, by blocking ventilation holes in the cigarette filter, and/or by smoking more cigarettes in a day, smokers are able to "compensate" for the lower nicotine deliveries of low nicotine/low tar cigarettes. Id. Defendants used this knowledge in their research on nicotine manipulation and the manufacture of cigarettes. Benowitz WD, 55:17-56:2, 56:22-57:14; Burns WD, 36:3-15, 36:20-37:6, 44:4-32; NCI Monograph 13 (US 58700); 1003286580-6581 (US 85415); 1000405641-5689 (US 85416); 002545364544 (US 21747); 775036039-6067 (US 21053); 83250863-0873 (US 55673).

1516. The primary means by which Defendants have ensured that their low delivery products will sustain smoking addiction is by incorporation of physical design characteristics and ingredients that enable the human smoker to easily obtain his or her reinforcing level of nicotine, regardless of the cigarette's nominal FTC machine-measured yield. Farone WD, 105:10-106:6; Henningfield WD, 66:3-13, 66:23-67:7. Internal documents reveal that Defendants designed their cigarettes to increase the flexibility of their nicotine and tar dosing capacity to smokers even as they reduced nicotine and tar yields as determined by the FTC machine method. Henningfield WD, 48:17-23; 49-8-53:5.

b. Leaf Blend and Filler: Defendants Controlled the Amount and Form of Nicotine Delivery in Their Commercial Products by Controlling the Physical and Chemical Make-Up of the Tobacco Blend and Filler

1517. Nicotine delivery can be controlled through variation of the amount and type of tobacco used to manufacture commercial cigarettes. It can also be controlled through adding, eliminating, or reducing particular substances from a tobacco blend before it is used as a filler. Farone WD, 37:8-21; 39:11-16; 89:1-23. The tobacco blend is the main component of a cigarette that contributes to nicotine delivery because the blend determines how much nicotine will be in the unsmoked rod. Farone WD, 86:1-7; 107472304-2464 (US 20254); Henningfield WD, 65:22-66:8; Farone WD, 49:6-13; 52:15-23.

1518. There are three main varieties of tobacco that have been used in the production of commercial cigarettes in the United States -- Bright tobacco, Burley tobacco and Oriental tobacco. Each of these types of tobacco has a different chemical composition and different nicotine concentration that occurs naturally. Farone WD, 42:15-22; (no bates) (US 58700) (NCI Monograph 13, Ch. 5). Because of these variations, Defendants blend across types of tobacco and parts of the tobacco leaf, as well as across crop years, to compensate for the year-to-year variations in the tobacco crop. Farone WD, 43:9-14.

1519. Bright tobacco is generally grown in Southern Virginia and the Southeastern United States. It is also referred to as flue-cured tobacco. This term refers to the process by which the tobacco leaves are dried by being stored in a hothouse where either hot gases or heat is applied to the tobacco prior to its being used in the cigarette manufacturing process. Flue-curing has been one of the main methods used to cure tobacco in American-style commercial cigarettes over the years.

Farone WD, 44:2-13. Burley is a strain of tobacco with a higher alkaloid content than Bright, which means that it naturally has more nicotine than Bright tobacco. Burley tobacco is air-cured, which means that it is hung inside a shed to dry where no sunlight will hit it. Id. at 44:14-20, 46:16-20. Oriental tobacco, also referred to as Turkish, is imported and cured through a process called fermentation, meaning that the leaves are packed into moist stacks and fermented. Id. at 44:19-20, 47:8-17.

1520. Each of these types of curing -- flue curing, air curing, and fermentation -- causes different chemical reactions within the tobacco and therefore results in smoke that has different chemical properties, including different nicotine levels. Farone WD, 47:18-21.

1521. In addition to naturally-occurring variations across different strains of tobacco, the nicotine content of tobacco leaves in a single plant can also vary based on the age of the plant and their position on its stalk. Nicotine is synthesized in the root of the plant and, generally, leaves located at the top of a plant's stalk have a higher nicotine content than those located at the bottom. Because they have lost most of their nicotine to air, leaves at the bottom of the plant are generally dried out and deliver little nicotine to the smoker. At the top of the living plant, by contrast, the leaves have not yet reached maximum nicotine or alkaloid content and can deliver comparatively greater nicotine when smoked. Defendants recognize these variations and monitor and record the stalk position of the tobacco leaves they purchase. Farone WD, 37:11-18, 43:15-44:1.

1522. In addition to the cut tobacco leaves, Defendants' commercial cigarettes contain a variety of other materials, including parts of the tobacco plant that have been altered from their natural state. One such material is reconstituted tobacco, also referred to as blended leaf or reconstituted leaf, which is manufactured out of stems and other small pieces of tobacco that have

been removed from the tobacco leaves. Farone WD, 38:18-39:6. In the process of making reconstituted tobacco, water is applied to pieces of stem material so that water-soluble materials, including nicotine, can be removed from the stem and form a sheet. The nicotine and other water soluble materials are treated with various chemicals and additives and added back to the stem material after it has formed a sheet. Schindler WD, 58:12-59:4. The sheet is then chopped into small pieces and put in cigarette filler.

1523. Defendants also alter natural tobacco through the use of expanded tobacco, which is tobacco that has been impregnated with liquid that eventually evaporates. Farone WD, 39:7-10. This impregnation and evaporation process causes tobacco leaves to shrink when they are dried or cured, after which a chemical such as carbon dioxide or freon is added and causes the tobacco pieces to expand. When this material is heated and expanded, it puffs back up to about the size of the chunk of tobacco when it was originally on the plant. Farone WD, 39:11-16.

1524. Defendants can change the cut width of the filler material, which also has an effect on nicotine delivery. As a matter of aerosol chemistry, burning materials that are of a finer cut creates an aerosol with smaller particle size than materials that are larger. Farone WD, 50:20-51:5. Particle size affects the rate and location of nicotine absorption. The cut width of the filler also influences how much nicotine from the filter will be delivered to the smoke, thereby affecting the nicotine to tar ratio of the smoke. Farone WD, 91:12-92:1.

1525. Defendants are keenly aware of how the combination of different blend components will affect the nicotine delivery of their final products. See Farone WD, 89:16-23; Farone TT, 10/6/04, 1596:16-1597:6. Some Defendants, including Philip Morris and BATCo, developed sophisticated computer modeling systems to determine exactly what effect each component of the

blend would have on nicotine delivery, and then used those systems to design and create their blends. Farone WD, 48:7-18, 53:4-9; 105425765-5818 (US 85493).

(1) Philip Morris

1526. Philip Morris has been altering the blend of its tobacco filler to obtain desired levels of nicotine since at least 1954. In a document titled "An Outline of Current and Proposed Quality Control, Development and Research for Benson and Hedges," circulated in 1954, Philip Morris explained that comparisons of "analytical data for the blend with estimates of nicotine, tar and pH of the smoke should enable us to set up certain limits or norms within which the chemical composition of the blend must be controlled in order to achieve desired smoking quality." The document recommended:

> enlarg[ing] the scope of our present analytical program to secure estimates of nicotine, nornicotine, total volatile bases, ether solubles and ash, not only for the blend but also for all the grades and types of tobaccos which go into the blend. There is no reason why such data cannot be used as a guide to purchasing. Once norms can be established for the composition of grades and types, samples falling outside the range of desirability can automatically be rejected by the buyers. In this way, the adverse effects of fluctuations in the blend originating in wide differences in leaf composition due to cultural and climatic conditions and crop year can be minimized.

1001761472-1484, 1474 (US 35556).

1527. In an outline of a presentation to the Philip Morris Products Committee, dated February 27, 1961, Helmut Wakeham, Philip Morris's Vice President and Director of Research and Development, described under the heading "Data on Experimental Defensive Cigarettes" a "low nicotine" and a "high nicotine" cigarette, which differed from each other only in the blend of the

cigarette. This difference in blends resulted in a .9 mg difference in the amount of nicotine per cigarette. 1000277448-467 at 7458 (US 85479).

1528. By 1960, Philip Morris was studying the effects of adding nicotine maleate to blended leaf tobacco to determine if the nicotine content of cigarettes could be increased. 1001919941-9941 (US 21753).

1529. In an internal research document dated November 18, 1963, presented to Hugh Cullman, Vice President and Assistant Chief of Operations for Philip Morris USA, Robert Seligman, Manager of Philip Morris's Research and Development Division, described Philip Morris's ability to construct a plant to produce "all tobacco formulated product (TFP)" to replace blended leaf tobacco product. Seligman pointed out that a TFP product would enable " [m]aterials [to] be added to or removed from the formulated product so that predetermined chemical specifications can be met . . . as dictated by the requirements of the marketplace." The research department recommended that Philip Morris "consider this TFP plant as a vital addition to our defensive and offensive armament in the tobacco and health situation which we believe will remain turbulent for many years." Seligman warned, "Our chief competitors either already have the potential to make a tobacco formulated product by a similar process or are building it." 0000334739-4762 at 4742, 4751, 4755, 4759, 4761 (US 85480).

1530. A 1976 Philip Morris Special Report, titled "Manipulating Smoke Impact in Very Low (Less than 8 mg Tar) Delivery Cigarettes," described Philip Morris's study of relative influences of blend, Burley spray, and filter systems to produce "acceptable" impact, finding that a "50% [B]urley blend with a CA [cellulose acetate] filter would be the model of choice." 1000360937-0955 at 0939, 0947 (US 35250); Henningfield WD, 67:13-23.

1531. In 1982, the Biochemical Research Division undertook studies of the composition of Bright and Burley cigarettes with "varying levels of added nicotine to determine the relationship, if any, between nicotine, nicotine pyrolysis products and *in vitro* biological activity." 1002978092-8098 at 8095 (US 85481).

1532. In 1991, Philip Morris studied the differences between Bright tobacco and Burley tobacco, which has a higher alkaloid content and therefore a higher pH level. Researchers specifically raised the question "Can pH affect the chemical nature (gas versus particulate phase form) of nicotine in cigarette smoke?" An October 30, 1991 memorandum by D.C. Watson on the subject "Gas Phase Nicotine" concluded that "[r]elatively large proportions of vapor phase nicotine can, in fact, be swept from Burley using only warm air while Bright tobacco releases very little nicotine but measurable amounts of acetic acid under the same conditions." 2047348210-8218 at 8173-8178 (US 38596) (emphasis in original).

1533. According to former Philip Morris scientist Ian Uydess, Philip Morris "routinely targeted and adjusted" nicotine levels in its cigarettes, through blend changes and blend design. Udyess stated that this was true of the overall nicotine found in the blends, as well as the "deliverable" nicotine found in the smoke. "Both of these sources . . . were[] considered by Philip Morris' development scientists when formulating a new or modified product." Udyess also explained that "Philip Morris routinely applied this knowledge of selective tobacco blending to achieve desired nicotine . . . levels in the products that it designed and marketed." 521102262-2286 at 2269, 2271 (US 30497).

1534. On April 14, 1994, William I. Campbell, then CEO of Philip Morris, testified under oath before Congress regarding the tobacco blend used in the production of its Merit Ultima

cigarette, which was the lowest tar cigarette in Philip Morris's Merit brand family. Campbell admitted that Philip Morris used a tobacco blend in the production of Ultima that had a higher concentration of nicotine than it used in producing Merit cigarettes. TLT0730001-0850 at 0766, 0767, 0768 (US 77011).

(2) R.J. Reynolds

1535. RJR experimented with adding nicotine to the tobacco stem as early as 1956. 501052852-2856 (US 20671).

1536. Reynolds used leaf blending as a method for controlling the nicotine content of its cigarettes long before consumers began demanding cigarettes that delivered less tar. Dr. Murray Senkus wrote Divisional Monthly Research Reports in 1964 and 1965, discussing the blend changes tested by the company in response to the significant increases in the nicotine contents of Burley and flue-cured tobacco crops. 502805188-5195 at 5193 (US 50114); 502805205-5212 at 5210 (US 50116).

1537. In 1977, RJR embarked on a search for "new means for control of nicotine, tar to nicotine ratio, and satisfaction." 502740087-0087 (US 86978). Reynolds studied the nicotine delivery of individual blend components and the transfer of nicotine from individual blend components. 504423322-3327 at 3323 (US 50614).

1538. As part of its effort to learn how to control the nicotine content of tobacco independently of other components, Reynolds studied agricultural variables that might influence nicotine content in flue-cured and Burley tobaccos. Researchers examined: (1) how variables such as climate, fertilizer, and the height of the tobacco plant affect the amount of nicotine in smoke, and

(2) how to develop flue-cured and Burley tobacco with higher nicotine content. 508799518-9519 (US 85494).

1539. A September 8, 1980 internal memorandum by scientist Alan Rodgman outlined the types of nicotine technology Reynolds had studied and also compared, over a decade, nicotine levels in Reynolds's Winston cigarettes and Philip Morris's Marlboro cigarettes. Rodgman's analysis of this comparison concluded that, as a result of Reynolds's research efforts "since mid-1977, we have 'caught up' to PM insofar as its current use in the Marlboro of nicotine technology is concerned; our approach has been primarily one of controlling the smoke parameters noted above by blend formulation and denicotinization rather than by addition or transposition of nicotine." 501522719-2726 at 2720 (US 48913).

1540. RJR also tracked the year-to-year variations in the nicotine content of various Bright and Burley tobacco crops in order to "provide background information for nicotine control and grade substitution projects." An October 19, 1982 memorandum written by E.H. Villegas summarized and analyzed the nicotine content of various crops of tobacco from 1977 to 1981 and concluded:

> These graphs and tables provide an easy guide to grade, crop and belt comparison and may provide a new perspective on grade substitution. . . . From a nicotine control point of view, substituting adjacent grades with a given crop year is more logical than substituting a different crop year of the same grade/belt.

510723285-3286 at 3286 (US 88090).

1541. In an August 18, 1983 memorandum from G.M. Stewart to J.D. Frederickson, Stewart reported the results of Reynolds's research concerning the modification of tobacco blends, stating:

> [T]obaccos [] with varied levels of ammoniation products, nicotine and expansion can be produced in pilot plant quantities for evaluation as components of new and existing blends. Such modified tobaccos

> may provide new ways to control nicotine delivery and modify smoking characteristics.

504140118-0127 at 0118 (US 85495).

1542. In 1985, RJR planned to develop "NOW-type cigarettes with increased nicotine." An October 9, 1985 internal memorandum outlined two approaches to the development of such cigarettes, including increasing the nicotine content of a low tar cigarette through blend modifications, i.e., the use of high nicotine tobaccos, and through addition of a "nicotine salt complex . . . to increase the nicotine delivery." 509108038-8040 at 8039, 8040 (US 85496).

1543. An October 17, 1985 internal invention disclosure prepared by Dwo Lynm and Carl Morrison and addressed to Grover Myers of RJR's Legal Department, described a new proposed method for developing a cigarette that "will meet most of the consumers' needs" by delivering a "high impact of nicotine with low tar delivery." Lynm and Morrison wrote that "the amount of nicotine required for smokers to get an appropriate ‘kick' has been calculated to be 10 mg per cigarette in addition to the endogenous nicotine content." Lynm and Morrison proposed adding carbonized flue-cured [CFC] tobacco impregnated with 10 milligrams of nicotine to "the end or in the middle of the hollow tobacco rod in order to deliver more nicotine . . . This additional nicotine would lower the T/N ratio drastically." 505624894-4898 at 4894 (US 85497).

(3) Brown & Williamson and BATCo

1544. B&W's most senior executives took a great interest in the company's nicotine delivery research. A June 5, 1974 memorandum from R.M. Irby, Jr., Manager of New Products Division, Research and Development, to J.B. McCarthy, Executive Vice President, and copied to J.H. Hager, Executive Vice President, outlined B&W's research and knowledge on "increasing the nicotine

content of reconstituted tobacco." The methods for accomplishing this included: adding nicotine to reconstituted tobacco base sheets, replacing current leaf blends with higher nicotine tobacco, cast-sheeting tobacco "dust" that is high in nicotine content, altering filters, and changing smoke content. Irby discussed studies done to raise the nicotine delivery of Pall Mall and Lucky Strike cigarettes and to raise nicotine delivery in low tar cigarettes. MNAT00533225-3228 (US 85492).

1545. It was known within BATCo that blended cigarettes, which included higher nicotine Burley tobacco in the cigarette, were more alkaline and less acidic, and had a "greater proportion of free nicotine present in the smoke . . . which explains why these types of cigarettes tend to have higher impact than a flue-cured cigarette with the same nicotine delivery." 400132742-2776 at 2769 (US 88084).

1546. The tobacco companies also spent substantial resources researching the nicotine delivery strategies of their competitors in order to perfect their own methodologies. For example, in a January 22, 1974 report, titled "A Chemical Examination of B&W and Competitive Reconstituted Tobacco," B&W researcher R.R. Johnson found that reconstituted tobaccos were in use by B&W, Philip Morris, RJR, American, Lorillard, and Liggett. The report acknowledged that "[m]ost reconstituted tobaccos gain significantly in nicotine content during cigarette manufacture," and pointed out that the nicotine transfer for Philip Morris cigarette products was "massive." 650106026-6042 at 6028 (US 86979).

1547. In 1976, BATCo developed a "Total Product Design" to allow its product designers to use a computer program to create product specifications to meet design criteria and minimize cost. The product designer was instructed to input target values for tar and nicotine delivery, along with other specifications, and the program would "calculate the required blend nicotine." This

information would then be calculated with further specifications to determine other materials required to produce a cigarette providing the desired nicotine delivery. 105425765-5818 (US 85493).

1548. Tommy Sandefur, Chairman and CEO of B&W, stated that in 1984 or 1985, when he "became responsible for [B&W's] domestic business," he directed the Research and Development Department to reverse engineer the Marlboro product. He explained that "I wanted to find out how they were doing that because it was important if I was going to compete to improve the quality of my products." The B&W scientists reported to him that Philip Morris had used ammonia in the reconstituted sheet. Sandefur admitted that B&W then began using the same technology, and applying the same technique, as Philip Morris in order to add ammonia to the reconstituted tobacco in its cigarettes. TLT0730851-1975 at 1620 (US 77012).

1549. At an experimental farm in North Carolina during the 1980s, BATCo and B&W developed a tobacco that the companies referred to as "Y-1." The tobacco was genetically engineered to have a nicotine content approximately twice the nicotine content of conventional tobacco. B&W used seeds from the genetically-engineered strain to grow artificially high nicotine tobacco in Brazil. This nicotine-enhanced tobacco was blended with other tobaccos in order to alter nicotine to tar ratios in commercial cigarettes sold in the United States. 510003880-3882 (US 20831). B&W claims it was encouraged to pursue Y-1 technology by the public health community to develop a less hazardous cigarette.

1550. B&W filed two patents relating to the Y-1 tobacco, patent application #761,312, filed on September 17, 1991, and Brazilian Patent P1 9203690A, filed on September 16, 1992.

682515783-5803 (US 88089); 2072566619-6619 (US 88087). The Brazilian patent was never disclosed to the FDA.

1551. B&W's U.S. patent application described Y-1 as "a new and genetically stable variety of tobacco plant" engineered to have a nicotine content "which is significantly higher than any standard commercially grown tobacco variety." 682515783-5803 at 5786 (US 88089).

1552. B&W found the taste of Y-1 unacceptable to consumers when used alone. Nevertheless, Tommy Sandefur admitted that B&W incorporated millions of pounds of the Y-1 leaf into its Viceroy and Richland style cigarettes, using Y-1 "as a blending tool." 682637648-7650 (US 21027); 500004560-4580 (US 20607). Sandefur also admitted that the company attempted to use as much as 30% Y-1 in a blend, but that it ultimately reduced this percentage to 10% because consumers rejected that large amount of nicotine in the cigarettes. TLT0730851-1975 at 1619 (US 77012). Although B&W only used Y-1 for a short period of time, Kessler TT, 9/22/04, 522:21, 524:14, its use as a blending agent is significant because the blend is the most significant contributor of nicotine to an unsmoked cigarette and an important determinant of how much nicotine can be transferred to mainstream cigarette smoke. Farone WD, 86:1-7.

(4) American

1553. American actively studied blending as a method of increasing the nicotine yield in its low tar cigarettes. Company researchers investigated the effect of increasing the Burley tobacco in its Lucky Strike tobacco blend in 1963 as part of its low tar cigarette studies. The objective of the research "was to determine the effect of increasing the Burley Tobacco in a blend on the yield of nicotine." MNAT00316738-6748 at 6738 (US 21226).

1554. In 1963, American also experimented with adding commercial nicotine to its reconstituted tobacco. In an October 8, 1963 document titled, "The Effect of the Addition of 1% Nicotine on the Quality of RC Tobacco," American revealed that it bought commercial nicotine in the form of nicotine citrate, to increase the nicotine content of its reconstituted tobacco. X003371-3376 (US 85482); MNAT00316688-6693 (US 21219); see also MNAT00316683-6684 (US 21670).

1555. According to a June 21, 1963 memorandum concerning tobacco blends for filter cigarettes, American researchers increased the amount of Burley tobacco in a blend to determine the effect the addition of the Burley tobacco had on the "nicotine yield." One of the research findings was that the addition of Burley tobacco "increased the volatile bases, including nicotine, in the smoke. . . ." X003421-3431 at 3421, 3424 (US 34158).

1556. Later, in 1967, American investigated the production of nicotine from tobacco plants (N. Rustica) with almost double the concentration of nicotine. MNAT00881318-1323 (US 21221); see also, MNAT00316688-6693 (US 21219).

1557. In 1968, American's researchers prepared four lots of Lucky Strike tobacco blend and directed that twenty-five cartons of cigarettes be made from each lot. All four lots were "made up with a leaf blend to increase the nicotine level of this cigarette." MNAT00316699-6700 at 6699 (US 21616); X003382-3383 (US 34156). The company increased the nicotine content of Lucky Strike Menthol Leaf Blend by .2% and tested the product with smoke panels. X003388-3388 (US 34157). Also in 1968, American studied adding nicotine maleate in the finishing flavor of Pall Mall cigarettes and successfully increased nicotine by .5%. X003365-3366 (US 34155).

1558. Another American research memorandum from 1968 reported on the effects of adding reconstituted tobacco to leaf blends containing varying levels of nicotine. At all levels of

reconstituted tobacco, a panel of 40 individuals preferred those cigarettes with the highest nicotine levels, around 2.5%. X003363-X003364 (US 34154). In early 1969, the company reported the anticipated costs of large scale orders to increase the nicotine content of reconstituted tobacco. MNAT00367431-7431 (US 85483); MNAT00367429-7430 (US 85484). Studies of Pall Mall cigarettes with increased nicotine in the reconstituted tobacco continued throughout 1969. MNAT00367486-7486 (US 85489); MNAT00367423-7424 (US 85486); MNAT00367422-7422 (US 59799); MNAT00367420-7420 (US 85485); MNAT00367418-7418 (US 85487); MNAT00367417-7417 (US 85488).

1559. In 1969, American test-marketed Lucky Strike cigarettes in which nicotine maleate was added to the blend in order to increase nicotine levels. MNAT0533253-3253 (US 21673); MNAT00740105-0105 (US 21674); ATX140008085-8087 (US 21676).

1560. In a May 7, 1969 American memorandum from Timothy Mann to Preston Leake, scientist and eventual Director of Research and Development, regarding the panel studies already completed on the reconstituted tobacco with higher amounts of nicotine, Mann stated:

> Taking the proposition of higher nicotine cigarettes in general, I think that this is an area we are going to be most interested in. Because of that, I would recommend to you that we consider testing additional ways of adding nicotine to cigarettes such as, as you suggested, in the form of a salt during the overshot process.

MNAT00367425-7425 (US 85490).

1561. Many top-level executives met with and requested information from the company's scientists on the topic of nicotine research. MNAT00117626-7627 (US 59786). In 1974, American Executive Vice President J.B. McCarthy requested that the R&D department outline the company's "current knowledge regarding increasing the nicotine content of reconstituted tobacco." In a four-

page response memorandum to McCarthy, dated June 5, 1974, researchers discussed: (1) adding nicotine to reconstituted tobacco; (2) replacing "the lower nicotine-containing leaf components such as Turkish . . . with high nicotine tobacco such as Malawi sun-cured scrap (5% nicotine)"; (3) keeping tobacco stem from being put into reconstituted tobacco "so that the reduction of the nicotine content of the ingoing components is decreased"; and (4) "increasing nicotine transfer to the smoke [by] dilution and/or additives to the filter." MNAT00316695-6698 at 6695, 6696, 6697 (US 21509). McCarthy responded, endorsing raising nicotine levels as "very beneficial" and directing the researchers to continue their studies, even though some of the studies would be "slow and costly." McCarthy emphasized that this was "an important project." MNAT00367409-7409 (US 85491).

1562. According to Robert Sprinkle, an American scientist who worked extensively on product development and eventually became American's Executive Vice President of Research and Quality Assurance, American had target nicotine delivery levels for its products and designed its products to achieve those targets. Specifically, Sprinkle explained that American achieved the desired target amount of nicotine by knowing "what the nicotine content of each of the tobacco components is that makes up the cigarette. . . . We keep an inventory of tobacco, 24 months on average, and we know what the nicotine content of each type of tobacco we use by the stalk position by the crop year" and blended to achieve the desired level. Sprinkle PD, Carter v. American (sub. nom. Brown & Williamson), 1/19/96, 94:22-96:19, 99:1-15; see also, Sprinkle PD, Small v. Lorillard Tobacco Co., Inc., 10/16/97, 29:13-30:23, 71:11-14. Sprinkle also related that American measured the nicotine content in tobacco after it was purchased, during the manufacturing process, and in the finished cigarette, and that if the measurement revealed that nicotine content was too low,

American would "bury [its] mistakes," i.e., it would "throw it away and start again with a new blend." Sprinkle PD, Small, 10/16/97, 33:8-34:23.

(5) Lorillard

1563. Lorillard knew in 1971 that the industry's top sellers at the time, i.e., Marlboro, Camel, and Newport, shared two common traits: high nicotine content and a high nicotine to tar ratio. With this knowledge, Lorillard blended different tobaccos in an effort to generate a high nicotine to tar ratio blend. By 1973, the company's one-, three-, and five-year research plans included research to modify tobacco in order to control the delivery of nicotine. 00776195-6201 (US 34293); 526321304-1310 (US 85414); Farone WD, 86:20-87:12; Spears PD, Minnesota v. Philip Morris, 9/23/97, 98:5-100:7.

1564. A July 22, 1976 memorandum from J.P. Morgan to H.J. Minnemeyer disclosed that Lorillard added nicotine to several samples of the blend it used to produce Kent Gold Light cigarettes and periodically monitored the nicotine content of the blend in order to determine the "shelf life of added nicotine on the Kent Gold Light blend." 83250849-0851 at 0850 (US 55671).

1565. A November 22, 1976 memorandum from M.S. Ireland to H.J. Minnemeyer reported:

> Since the initiation of the nicotine addition project was begun, a number of samples have been made which have added impact but with reduced tar levels. . . . Experiments have indicated that free nicotine can be added at almost any place in the manufacturing process, or in the RL [reconstituted leaf] with no appreciable loss and that said nicotine will be delivered into the smoke in the same manner as naturally occurring nicotine. The addition of free nicotine has a direct effect on the pH of the leaf and the smoke.

94937063-7065 at 7063 (US 56780).

1566. In an April 13, 1977 Lorillard memorandum, Minnemeyer reported to Alexander Spears on several approaches to the development of "low tar, enriched nicotine products" and concluded, among other things, that

> nicotine can be added to the RL [reconstituted leaf] slurry to give predictable levels of nicotine in the final product. . . . The addition of nicotine to the RL slurry appears to overcome many of the problems associated with earlier work involving the spray application of nicotine solutions.

00044787-4799 at 4787, 4789 (US 34196).

1567. In an April 12, 1977 report investigating the "Enrichment of Reconstituted Leaf Nicotine by Direct Addition of Nicotine Alkaloid to the RL Slurry," Lorillard researchers concluded the "[n]icotine content of the final product can easily be controlled by the addition of predetermined amounts of nicotine alkaloid." 00398474-8484 at 8474 (US 20025), Farone WD, 96:7-19; see also 81090368-0380 (US 85457); 83251170-1192 (US 55726).

1568. On June 30, 1977, R.S. Marmor reported on Lorillard's "Danville Flavor Enriched RL Experiment of May 17, 1977 and Subsequent Research." In this project, Lorillard studied the potential for using waste from tobacco processing that was high in nicotine, referred to as "black water," as an additive to reconstituted tobacco to increase nicotine delivery. 00118797-8807 (US 34268).

1569. On April 14, 1994, Alexander Spears, then Vice Chairman and Chief Operating Officer of Lorillard, confirmed in testimony before Congress that cigarette makers could adjust the level of nicotine in their products by blending different types of tobacco to create a blend with a higher nicotine concentration. TLT0730001-0850 at 0722 (US 77011).

(6) Liggett

1570. Liggett's control of nicotine delivery through leaf blending and other alterations of tobacco filler continues to the present. Timothy Jackson, Chief Operating Officer of Vector Tobacco, a Liggett Group Inc. subsidiary, wrote in an August 27, 2001 e-mail: "We are still considering altering the flue cured mix, without changing the total input ratios, to try and moderately increase nicotine. The hesitancy to do this, however, is the potential resultant increase in nitrosamines." VDOJ25348-5248 (US 64735) (Confidential).

1571. With regard to Liggett's Quest product, developed in 2001-2002, Vector blended genetically modified reduced nicotine tobacco with conventional tobacco "to achieve specific nicotine levels." Jackson PD, Philip Morris, 3/21/03, 54:9-54:13, 57:11-57:15 (Confidential).

1572. Jackson acknowledged that he was aware of cigarette design methods that would allow the same blend of cigarettes to be altered to deliver varying amounts of nicotine and tar under the FTC testing method. Id. at 95:3-98:3, 100:16-100:21 (Confidential).

c. Nicotine to Tar Ratio: Defendants Have Used Physical Design Parameters to Increase the Nicotine to Tar Ratio of Their Cigarettes

1573. As the cigarette market increasingly shifted to products marked as “low tar/low nicotine” cigarettes, Defendants undertook extensive efforts to control the ratio of nicotine to tar in order to deliver more nicotine despite the decrease in tar.

1574. The nicotine to tar ratio is a numerical expression of the proportion of nicotine and tar in cigarette smoke. It is calculated by dividing the milligrams of measured nicotine by the milligrams of measured tar. Defendants’ documents discussing increases in the nicotine to tar ratio

(or, alternatively, reductions in the tar to nicotine ratio) are, in actuality, referring to increasing the amount of nicotine relative to the amount of tar in cigarette smoke.

1575. When there is a decrease in the amount of tar delivered by a cigarette, the nicotine to tar ratio will stay roughly the same only if there is a proportional decrease in the amount of nicotine delivered. If a decrease in tar delivery is not accompanied by a similar decrease in nicotine, the nicotine to tar ratio will rise. This can be illustrated by a simple mathematical comparison of two cigarettes with equal nicotine deliveries, one of which delivers sixteen milligrams of tar and the other of which delivers ten milligrams of tar. If these cigarettes deliver two milligrams of nicotine, their nicotine to tar ratios will be .125 (or 1/8) and .2 (or 1/5) respectively. The ten milligram cigarette will have a higher proportion of nicotine relative to tar in its smoke, and its nicotine to tar ratio will be higher than the sixteen milligram cigarette. Defendants' documents refer, confusingly, to both the nicotine to tar ratio and its mathematical inverse, the tar to nicotine ratio. For ease of understanding and consistency, these Findings of Fact will refer, wherever feasible, to the nicotine to tar ratio rather than to the tar to nicotine ratio.

1576. Defendants have consistently taken the position that "nicotine levels follow tar levels," i.e., as tar goes up or down, nicotine automatically goes up or down proportionately. Townsend WD, 83:22-84:3; (no bates) (US 17380); Sales-Weighted Tar and Nicotine Values for US Cigarettes as Measured Using the FTC Method. The facts do not support this claim.

1577. First, as shown, supra, Defendants possessed and exercised the ability to precisely control the amount of nicotine in any particular brand, whether full-flavor or light.

1578. Second, as tar levels decreased, nicotine levels either remained steady or increased; even if the nicotine levels remained steady, the nicotine to tar level ratio would actually increase as tar levels decreased. See 1989 Surgeon General's Report at 85:

> Since 1981, the tar delivery of U.S. cigarettes has averaged between 13.0 and 12.7 mg, while nicotine delivery has remained stable at 0.9 mg per cigarette. . . . In the smoke of popular U.S. low-yield cigarettes, the reduction of nicotine, the primary pharmacologic factor in tobacco addition (US DHHS 1988), has not occurred to the same extent as has the reduction of tar. The same development has been observed with cigarette in the United Kingdom (Jarvis and Russell 1985).

1579. Finally, if, in making the claim that nicotine follows tar, Defendants are relying on nicotine and tar values measured by the FTC method, they have long acknowledged that those values do not accurately reflect the actual nicotine and tar delivered to the smoker. Section V(E)(2)(a-b), infra.

1580. As already demonstrated, supra, Defendants can precisely control the nicotine and tar yields of their cigarettes. As Lorillard CEO Andrew Tisch has stated:

> The tar and nicotine yields of our products are determined by a combination of the tobacco blends and the physical characteristics which constitute the construction of the cigarette, namely length, circumference, paper porosity, filter tip ventilation, and tobacco density.

Despite numerous public statements that "nicotine follows tar," i.e., that the amount of nicotine delivered by a cigarette automatically follows the amount of tar in a fixed ratio, and that smokers would therefore get less nicotine as tar levels dropped, Defendants conducted years of research to develop methods of changing the ratio of nicotine to tar in tobacco smoke.

(1) Filter Design

1581. Defendants researched, designed, and incorporated filters into their light/low tar products in such a way as to allow smokers to determine the amount of nicotine they inhale and increase the nicotine to tar ratio in that inhaled smoke. Henningfield WD, 43:15-20. As researchers inside the industry explored potentially effective filters for tars, they well understood that if nicotine delivery was affected it could reduce the addictive properties of their product. Industry researchers exploring potentially effective filters for tar understood that affecting nicotine delivery could reduce the addictive properties of their product. Accordingly, cigarette company Defendants took steps to design a filter that would register a lower tar level according to the FTC method but would not reduce nicotine transfer into the body. Their goal was to create a filter that, while lowering tar, would deliver a sufficient dose of nicotine to the lungs in order to sustain a smoker's addiction. Id. at 43:15-44:13.

1582. In the 1950s, when filters were beginning to be used on more and more cigarettes, many in the public health community believed that they trapped some of the suspected toxins that otherwise were ingested by smokers. The effectiveness of a filter with respect to any particular substance depends on what the filter is designed to screen, the design of the filter, and the size of the particles that attempt to pass through it. Henningfield WD, 43:15-44:13.

1583. The particular design factors which influence how well the filter does its job include: its physical design, the density of the filter packing, the length of the filter, the porosity of the filter wrapper, ventilation holes and channels, and various potential ingredients. By varying these factors, Defendants control a cigarette's nicotine yield as well as its taste, palatability, and absorption of

nicotine. For example, the nicotine concentration of the puffs can be influenced by the design of the filter. Henningfield WD, 43:23-44:8; Farone WD, 49:14-50:11.

1584. Tobacco manufacturers also use filters to control the particle size entering the body. The density, length, and ventilation of the filter can alter the ability of the smoke particles to coagulate and form particles in the brief transit from the tobacco column of the cigarette to the smoker's mouth. If the particles are too big, they cannot efficiently get into smokers' lungs; if they are too small, they may not be transferred across membranes before exhalation. Physiologically, particles that are too large cannot efficiently get into the deep alveoli of the lung regardless of how hard the smoker sucks or smokes a cigarette. (Alveoli are thin-walled, small sacs located at the end of the smallest airways of the lungs where the exchange of oxygen and carbon dioxide takes place.) The importance of absorption of particles deep into the lungs is that, as with most addictive drugs in general, the faster the particles are delivered from the lungs to the brain, the stronger their effect. As discussed above, Defendants knew that the fastest way to get nicotine to the brain is through the lung. Henningfield WD, 44:14-45:22; see also Farone WD, 50:7-8; 58:20-59:14.

(2) Ventilation and Air Dilution

1585. Ventilation holes are small perforations in cigarette paper that dilute mainstream cigarette smoke with air during inhalation. Henningfield WD, 46:11-22; Farone WD, 42:11-14. Ventilation holes are created by perforation that can be done with lasers, mechanically, or electrostatically. Henningfield WD, 46:4-7.

1586. By diluting mainstream cigarette smoke with air, ventilation holes can reduce the concentration of tar and nicotine in the smoke and result in a decrease in the tar and nicotine ratings generated by FTC machine testing. Henningfield WD, 46:11-22. However, ventilation holes are

generally placed on the cigarette filter at a distance beyond which they would by covered by the orifice of the FTC smoking machine, and therefore the reductions in FTC measurements caused by filter ventilation do not necessarily translate fully or accurately to reductions in nicotine delivery under human smoking conditions, where ventilation holes are frequently blocked by smokers' lips or fingers. Henningfield WD, 47:7-10. Defendants have long been aware that the use of ventilation holes accentuates the differences in tar and nicotine yields observed under standard FTC smoking conditions and human smoking conditions. Henningfield WD, 61:1-62:6.

1587. Ventilation holes also change the chemistry of smoke by adding air to the smoke. Since the air enters closer to the filter end, it also slows down the smoke behind it, giving that smoke more time to undergo further chemical changes and become more mutagenic. Farone WD, 57:6-9.

(3) Paper Porosity and Composition

1588. Defendants also have altered paper porosity and paper composition to affect the nicotine to tar ratio in smoke. Henningfield WD, 63:19-64:4, 64:8-18. The paper used for cigars and hand-rolled cigarettes does not burn well and evenly, and it often self-extinguishes. Cigarette paper used on manufactured cigarettes is different. It is treated with chemicals that can affect nicotine delivery and burn accelerant chemicals that make the cigarettes burn hotter and faster. Some of the chemical additives that affect nicotine delivery in commercial cigarettes are buffering compounds, including alkaline compounds. They make the paper white, keeping the ashes a relatively attractive light grey color, and burn accelerants, such as sodium and potassium citrate. Henningfield WD, 64:5-18.

1589. The porosity of cigarette paper refers to the relative amount of air that can permeate or pass through the paper. Air fuels the burning and smoldering tobacco. Henningfield WD,

62:23-63:3. The cigarette paper used by Defendants to manufacture their commercial products is of controlled porosity. Controlling porosity is a means of controlling the composition and lowering the amount of nicotine in smoke measured by the FTC smoking machine by altering the mix of gases, temperature of the burning tobacco, and the speed at which the cigarette is burned. Henningfield WD, 62:22-63:18.

1590. Another feature of cigarette paper that can affect the nicotine to tar ratio of smoke delivered to human smokers is the filter overwrap. The filter overwrap is a layer of tough, glued paper that attaches the filter to the tobacco rod and is composed of materials that resist decomposition when held in the lips. Farone WD, 42:10-11; Henningfield WD, 64:22-65:3. The filter overwrap typically extends beyond the filter from a range of a few millimeters to nearly one centimeter. Henningfield WD, 65:1-3. The parameters of FTC testing require the machine to stop smoking at a point that is 3 millimeters beyond the filter overwrap, which means that the smoking machine does not burn all of the tobacco in a cigarette. Id. at 65:4-10.

1591. Human smokers, of course, can and often do smoke cigarettes all the way to the filter overwrap, thereby obtaining a few extra puffs of nicotine and tar. These puffs contain greater nicotine and tar than puffs of tobacco that are farther away from the filter overwrap for two reasons. First, with each successive puff on a cigarette, the remaining tobacco in the rod and the filter collect nicotine and tar, making the later puffs on a cigarette the richest in those substances. Second, because the filter loses efficiency with each successive puff, nicotine and tar are able to enter the smoker's mouth in greater amounts in the later puffs than in the earlier. Accordingly, the few extra puffs beyond those measured in FTC testing represent disproportionately large increases in nicotine and tar exposure. Henningfield WD, 65:11-21.

d. Smoke pH and Ammonia: Defendants Altered the Chemical Form of Nicotine Delivered in Mainstream Cigarette Smoke for the Purpose of Improving Nicotine Transfer Efficiency and Increasing the Speed with Which Nicotine Is Absorbed by Smokers

(1) Scientific Overview

1592. Defendants have used chemical additives in order to modify the form of nicotine delivered to the smoker and enhance its speed of absorption in the body. Alteration of the pH of cigarette smoke was one of the primary areas of research they pursued for this purpose.

1593. In order to understand the manner in which pH and ammonia intensify and speed the absorption of nicotine it is necessary to set forth a fairly detailed description, or overview, of the "science" involved. Virtually all of this description, which sets forth the basic chemical principles and how they affect the operation of drug delivery systems, is based on the testimony of three Government expert witnesses: Drs. Henningfield, Farone, and Benowitz. Their professional and academic credentials are set forth at great length below, and all three were accepted as experts in their fields, without opposition from the Defendants.

1594. Dr. Henningfield is an expert in psychopharmacology including the areas of health and medical issues related to the development of treatment for medical disorders, tobacco dependence and other drug addictions, and the design and effect of drug delivery systems for addictive drugs; he has a Ph.D. in experimental psychology with an emphasis on behavioral psychopharmacology, which is the study of drugs that affect the brain and the interaction between drugs and addictive behavior. Beginning in 1980, Dr. Henningfield began working at the Addiction Research Center of the National Institute of Drug Abuse ("NIDA") and went on to serve as NIDA's chief scientific advisor to the Federal Drug Administration during its development and consideration

of its Tobacco Rule. Henningfield TT, 6786:12-19, 7594:7-8; Henningfield WD, 29:7-30:9, 33:7-14.

1595. Dr. Farone is an expert in the chemistry and biochemistry of alkaloids and addictive drugs, the chemistry of physics and cigarette smoke, cigarette design and technology, and the chemistry and biochemistry of toxic substances and their interactions with living systems; he has a Ph.D. in chemistry and physical chemistry, and is specifically trained, both through formal education and long employment as Director of Applied Research at Philip Morris, in the study of colloidal systems (i.e., chemical aerosols and smoke). Farone WD, 6:1-8.

1596. Dr. Benowitz received his medical degree with distinction in research from the University of Rochester, is Board Certified in Internal Medicine, Medical Toxicology, and Clinical Pharmacology, and is an expert in nicotine toxicology and nicotine pharmacokinetics. All three were extensively cross-examined by Defendants. For more detail about Dr. Benowitz's extensive credentials, see Section V(F)(3)(c)(¶2705), infra. The Court credits their testimony, as cited and discussed in this Section, as accurate, comprehensive, and reliable.

1597. The acidity or alkalinity of a substance is commonly expressed as a measure of pH. Most substances have pH measurements ranging from zero to fourteen, with a pH below seven representing an acidic substance, and a pH measurement above seven representing an alkaline, or basic, substance. Farone WD, 8:20-9:3. The pH scale is logarithmic, meaning that as pH rises, the alkaline (or basic) nature of a substance increases exponentially by a magnitude of 10 between each unit of measurement on the scale.

1598. For example, a substance with a pH measurement of 6 is ten times more basic than a substance with a pH measurement of 5, while a substance with a pH measure of 7 is 100 times

more basic than one with a pH measurement of 5. Henningfield WD, 68:16-69:1. Increasing the pH by a small percentage can double, triple, or quadruple the amount of free nicotine available for inhalation in cigarette smoke. Even a small amount of free nicotine yields a discernible effect for the smoker. Henningfield WD, 68:16-69:1, 86:5-14.

1599. The pH of tobacco smoke is significant because it affects the chemical form of nicotine delivered in mainstream smoke, which in turn affects the rate and amount of nicotine delivery and the speed of absorption of nicotine over certain biological membranes. Henningfield WD, 69:2-9. Nicotine in cigarette smoke is found primarily in two different chemical states: either the protonated "bound" form or the unprotonated "free" form. At any given pH level, there is a ratio of free to protonated nicotine. As cigarette smoke becomes more basic -- that is, as the smoke pH rises -- more of the nicotine is delivered in its "free," unprotonated chemical form. As more nicotine is delivered in the free, unprotonated form, a greater proportion of the nicotine is also delivered in the gas phase of smoke. Farone WD, 93:22-94:7.

1600. Molecule for molecule, the pH of tobacco smoke is an important determinant of how much nicotine reaches a person's bloodstream through cigarette smoking. Creation of more free nicotine by increasing the pH level of cigarette smoke increases "the amount of nicotine that can be readily released from the tobacco rod of a cigarette and, in turn, readily absorbed into the body of the cigarette smoker." Henningfield WD, 68:16-69:12, 69:19-70:2. A number of the Defendants' internal research documents refer to the measurement of the amount of nicotine transferred from the original unsmoked tobacco rod to the cigarette smoke (where it is available for inhalation) as "nicotine transfer efficiency" or "NTE." Farone WD, 101:19-22; Henningfield WD, 72:22-73:14;

103281081-1112 (US 34706); 599003691-3695 (US 22077); 103281081-1112 at 1082, 1099 (US 20234).

1601. Free nicotine is more volatile and more physiologically active than bound nicotine. Farone TT, 10/6/04, 1609:21-1610:6; Farone WD, 95:8-12; 00776238-6250 (US 21477). Consequently, it transfers more rapidly across the biological membranes of the mouth and lungs, and then to the brain, than bound nicotine. Henningfield WD, 69:2-9; Henningfield TT, 12/01/04, 7517:24-7518:8; Farone TT, 10/6/04, 1610:10-20; Farone TT, 10/7/04, 2015:8-11. Even with increased amounts of free nicotine, very little of the nicotine taken in by a smoker is absorbed in the mouth or throat. Usually, about 90% passes on to the lungs where it is absorbed. Benowitz TT, 4800:23-4802:16. Because free nicotine transports across cells more rapidly, the presence of more free nicotine in cigarette smoke also increases nicotine's effect on the central nervous system. By producing an increased and more rapid effect on the central nervous system, free or unbound nicotine gives the smoker a faster and more intense "kick." Farone WD, 76:11-77:1; Farone TT, 10/7/04, 2015:1-8, Farone TT, 10/12/04, 2126:10-12. The speed with which a drug is delivered to the body influences its addictive potential. The speed of delivery can be influenced by factors such as: where the drug is targeted, the pH, and the concentration of the drug in vapor form. Henningfield WD, 32:6-12, 33:20-21.

1602. There are greater physiological effects, and therefore "impact" on the sensory nerves in the back of the throat and "satisfaction" of the brain receptors, with cigarettes that have a greater percentage of the nicotine in the free form. Farone WD, 76:18-19; 96:7-97:14; Farone TT, 10/12/04, 2126:8-2127:8. Two cigarettes with identical nominal machine-measured nicotine yields may give the smoker different pharmacological experiences. 506236904-6907 at 6905 (US 88059);

1000048537-8552 at 8539 (US 35106). This difference is due not to the amount of nicotine but to the form of the nicotine and its availability for absorption in the mouth and lungs. Henningfield WD, 68:2-9; Dixon WD, 13:17-20; 400993160-3331 at 3320 (US 75975*); see also, 500378383- 8386 at 8385 (US 85467).

1603. It is well established in the scientific community that the freebase forms of other drugs of abuse, such as freebase cocaine, are more reinforcing and addicting than their non-freebase counterparts because of the speed with which they reach the brain. Farone TT, 10/7/04, 2012:20-22, 2015:1-2017:5; Henningfield WD, 34:14-17, 85:23-86:4, 86:9-11. The effects of pH on changing the chemical form of alkaloids like cocaine have been discussed in scientific literature for decades. Farone WD, 94:22-93:3; Farone TT, 10/7/04, 2012-2017. Similarly, alteration of pH is a well established, scientifically-effective means of dose control for certain substances, in particular substances in which variation of pH within physiologically tolerable parameters affects the fraction of drug transferred across membranes of the mouth and throat. Henningfield WD, 75:9-12. Techniques to alter pH so as to change the proportion of free and bound molecules of a substance are understood and employed by pharmaceutical companies to control the bioavailability of many drugs, including nicotine in nicotine-delivering medications. Id. at 75:7-9.

1604. According to Dr. Michael Dixon, a BATCo scientist, ammonia and ammonia-forming compounds, such as DAP and urea, do not increase the amount of nicotine going into the bloodstream or the speed at which nicotine enters the blood. Dr. Dixon relied on a study he coauthored in 2003 which measured, among other things, nicotine blood levels during smoking. Dixon TT, 3/9/05, 15032:8-15033:18; (no bates) (JD 031612). Dr. Dixon was offered as an expert in "smoking behavior." His conclusion is not persuasive because his study measured the amount and

speed of nicotine uptake into venous blood. That is not the path by which nicotine is delivered to the brain. After inhalation, nicotine is rapidly absorbed in the lung where it enters the bloodstream and quickly moves into the heart. From the heart, nicotine travels through arterial blood, not venous blood, to the brain and other organs. Benowitz WD, 16:4-10.

1605. There are several methods by which the pH level of cigarette smoke can be altered. One method is the choice of tobacco blend used to make the cigarette. For example, Burley tobacco is naturally higher in alkaloids and nitrates than other tobaccos, and therefore, yields a higher smoke pH. Farone WD, 94:8-12.

1606. Another effective method for altering pH is by using additives in the manufacturing process, such as ammonia or ammonia-based compounds, or other compounds that create ammonia when burned. Farone WD, 94:8-12; Henningfield WD, 69:13-18; Rodgman PD, United States v. Philip Morris, 6/26/02, 155:15-156:6, 157:7-13. Ammonia compounds are basic substances that may raise the pH level and convert bound nicotine to free nicotine. Farone WD, 94:11-12, 16-18.

1607. Defendants were well aware of the particular chemical characteristics and effects of free nicotine, and undertook efforts to exploit these features. Internal research at Philip Morris confirmed that cigarette smoke that is more basic increases nicotine's effects on the central nervous system, and that the "rate of entry [of nicotine into the bloodstream] is pH dependent." 2025986551-6553 at 6552 (US 37312); 2025986931-6935 at 6934 (US 37314); 2056128345-8379 (US 20496). As one Reynolds document explained:

> In essence, a cigarette is a system for delivery of nicotine to the smoker in attractive, useful form. . . . As the smoke pH increases above about 6.0, an increasing proportion of the total smoke nicotine occurs in "free" form, which is volatile, rapidly absorbed by the smoker, and believed to be instantly perceived as nicotine "kick."

511223463-3484 at 3466 (US 20840).

1608. While some ammonium compounds occur naturally in tobacco, Farone TT, 10/7/04, 1986:6-12, Defendants have attempted to alter the pH of cigarette smoke through the addition of ammonia compounds directly to the filler material as well as through the use of ammonia compounds in the process of making reconstituted tobacco. Henningfield WD, 69:13-18. Because they are not as bitter as nicotine, ammonia compounds also alter the impact and taste of smoke and nicotine, making them more palatable to the smoker. Farone WD, 94:15-16.

1609. Defendants have added ammonia compounds in order to enhance consumer use of cigarettes by: (1) increasing the amount of nicotine that is transferred from the tobacco to the smoke; (2) improving the sensory response to nicotine in the mouth and oral mucosa; and (3) increasing the speed of delivery of nicotine to the bloodstream and possibly to the brain. 511223463-3484 (US 20840); Henningfield WD, 69:2-18, 74:21-75:13; 85:12-86:14; "Nicotine in Cigarettes and Smokeless Tobacco Products Is a Drug and These Products Are Nicotine Delivery Devices Under the Federal Food, Drug, and Cosmetic Act: Jurisdictional Determination," 61 Fed. Reg. 44619 (August 1996) (jurisdictional determination annex) at 44974-44975 (US 61237); see also Townsend WD at 169:22-170:5; Technology: Ammoniation, at 8864-65 (US 20820).

1610. Ammonia compounds are among the most frequently used additives, measured by volume, in the industry. 566408585-8587 (US 21999). A B&W document concluded: "RJR alone has ammonia emissions of 900,000 lbs./year in North Carolina. . . . [T]he U.S. cigarette industry uses about ten million pounds of ammonia compounds a year," and industry ammonia usage "corresponds to about 10 mg of ammonia compounds per cigarette produced." 508104011-4164 at 4017 (US 20807).

1611. By 1993, all the cigarette company Defendants used some form of ammonia technology in some of their cigarette products. For example, an April 12, 1994 list of "Ingredients Added to Tobacco in the Manufacture of Cigarettes" by the six largest U.S. manufacturers states that the companies added ammonia and other ammonium compounds to their cigarettes during the manufacturing process. 508104011-4164 (US 20807); 681001134-1139 (US 21016); LG2018563-8563 (US 21190); 606000841-0889 at 0842 (US 53325). Since 1986, Defendants have annually disclosed, in statutorily mandated reports to the Department of Health and Human Services, the additives employed in the production of their cigarettes. Appleton TT, 3/24/05, 16958:12-18; see also (no bates) (US 21990 at 23). However, they have not disclosed the quantity or purpose of such additives.

1612. For decades, Defendants have conducted their research and developed their manufacturing processes on the basis of the scientific principles set forth above. In reliance on those principles, they have incorporated the use of ammonia technology in their commercial products with the intent to alter the pH of cigarette smoke and thereby affect nicotine delivery and absorption. In recent years, Defendants have publicly questioned these scientific principles, the validity of which they have acknowledged for decades in their internal documents. The evidence in this case simply does not support the current effort by Defendants to minimize the significance of their use of ammonia technology in commercial products.

1613. First, the internal research documents of Defendants, discussed in the Findings of Fact, infra, show that: (1) the cigarette company Defendants have been aware at least since the 1960s of their ability to alter the amount and form of nicotine delivered to smokers by using cigarette design techniques intended to raise the pH of cigarette smoke; (2) they have incorporated design

techniques -- including, but not limited to, the use of ammonia technology and alterations to the tobacco blend -- to raise the pH of the smoke in their commercial products with the purpose and intent of creating cigarettes that would deliver a greater amount of free nicotine and faster absorption of nicotine than cigarettes with lower smoke pH; (3) they took these actions in order to assure that their low tar products would deliver doses of nicotine sufficient to create and sustain addiction in cigarette smokers; and (4) their extensive research on the methods and effects of altering the pH of cigarette smoke demonstrates that their own scientists accepted and operated on the same basic principles of chemistry concerning alteration of smoke pH as those already set forth. Farone WD, 75:1-6, 93:12-15, 94:4-98:8

1614. Second, the facts do not support Defendants' claim that the pH of cigarette smoke has not, on average, increased over the years. Before Defendants started using ammonia technology in their products, the pH for cigarette smoke averaged 5.2-5.7. Farone TT, 10/7/05, 1995:24-1996:16, 2010:19-22. Since the late 1960s, the pH of cigarette smoke has risen slowly, but steadily, and has recently been tested at one full pH unit higher -- 6.3-6.5 -- than its level in the 1960s. Farone TT, 10/7/04, 1995:6-23, 2010:18-2011:2; DXA1200008-0012 (US 88093); Farone WD, 98:2-8, 100:15-101:6. As already noted, an increase in one unit of pH represents a ten-fold increase in pH. See discussion, supra, at ¶1597. Even a small increase in smoke pH can cause significant chemical and biological effects by substantially increasing the amount of free nicotine delivered to the smoker. Henningfield WD, 68:23-69:1, 69:21-23; 500606138-6153 (US 48334 at 614).

1615. Finally, there is also substantial documentary evidence set forth below, that Defendants' scientists internally found even "small" increases in pH and free nicotine delivery to

significantly increase their ability to deliver an "optimum" dose of nicotine, i.e., one that was capable of creating and sustaining addiction in cigarette smokers.

(2) Individual Defendants' Documents

(a) Philip Morris

1616. Philip Morris attempted to control the pH of tobacco to enhance the psychoactive effects of nicotine on the brain. 500606138-6153 (US 48334); 509314122-4154 (US 51456); Farone WD, 94:4-7, 97:9-21.

1617. Philip Morris appears to have been the first tobacco manufacturer to use the ammonia process in the United States, and started using it in the 1950s. At that time, Philip Morris ranked far behind RJR in domestic cigarette sales. Farone TT, 10/7/04, 1999:9-15, 2002:25-2003:19; 500990999-1004 (US 20666); 500540827-0832 (US 20639).

1618. A March 31, 1966 "Progress Report" on "Nicotine and Smoke pH" to R.N. Thomson, Philip Morris's Director of Development, stated that nicotine delivery "varies with filler (smoke) pH -- the higher the pH the higher the nicotine delivery and vice versa." The report concluded that "nicotine delivery can be controlled via filler or smoke pH adjustment." 2051205600-5605 at 5600 (US 85461). According to a 1970 inter-office memorandum from Jim Charles, Associate Professional who would later become Vice President of Research and Development, to Thomson, the company had developed a method for determining the pH of whole smoke on a puff-by-puff basis. Using that method, it was analyzing per-puff pH content of its biggest selling cigarette, Marlboro, of its competitor, Winston, and of other cigarettes and tobacco blends. 2028812066-2067 at 2066 (US 20429).

1619. By 1974, Philip Morris was conducting experiments to increase levels of free nicotine in smoke through pH levels, so as to affect both smoke impact and satisfaction. One of the experiments varied the amounts of nicotine salts added to the tobacco and another altered the tobacco blend and the carbohydrate concentration in the smoke, with the results of both showing higher pH levels. In an October 1974 report, Philip Morris behavioral researcher T.R. Schori concluded, "The amount of free nicotine in the smoke depends upon . . . total nicotine[] and pH of the smoke." Schori also noted that machine measured nicotine yields could be misleading because, depending on pH, a smoker could obtain different levels of free nicotine from two cigarettes with identical machine-measured yields, or similarly could obtain the same amount of free nicotine from two cigarettes with different machine-measured yields. 2047113252-3267 at 3264-66 (US 85462).

1620. Schori also wrote, in an October 22, 1979 document titled, "Free Nicotine: Its Implication of Smoke Impact," that "we should be able to increase smoke impact by increasing the total free nicotine potential (i.e. by using high nicotine blends and/or nicotine additives) in the smoke." Schori identified Burley blend tobacco and ammonia as two methods for increasing pH in tobacco smoke. 542001986-1996 at 1993 (US 53135).

1621. In the same 1979 paper, Schori again explained the misleading nature of machine-measured nicotine yields with respect to free nicotine:

> The way in which nicotine is typically reported can be misleading. This is due to the manner in which nicotine determinations are made. For instance, cigarettes X and Y may both be reported to deliver (based upon the standard smoking machine test) 2 mg. nicotine/cigt. However, a given smoker may actually inhale much more free nicotine from cigarette X than from cigarette Y. Likewise, cigarette W may deliver 1 mg. nicotine/cigt. while cigarette Z delivers 2 mg. nicotine/cigt. Yet a given smoker may inhale equal amounts of free nicotine from cigarettes W and Z. This paradox results from the fact

> that in making the nicotine delivery determinations strong bases are employed to free or release the nicotine from its bonds with other elements. . . . Thus, the amount of free nicotine available to the smoker is determined by the degree of alkalinity (or pH) of the smoke as well as his own degree of alkalinity.

542001986-1996 at 1988-1989 (US 53135).

1622. Philip Morris's testing of the effect of ammonia on nicotine delivery continued throughout the 1970s. As summarized in a November 8, 1971 Special Report of the Research Center, titled "Effects of Ammonia - Odor and Smoke," and distributed to, among others, F.E. Resnick, then Director of the Research Center and later Chairman and CEO of Philip Morris USA, scientists measured the differences in the impacts of nicotine levels in Marlboro cigarettes versus competitor brands. The study concluded that, for competitor brands containing less ammonia than Marlboro, addition of ammonia increased the "desirability" of the brands. 1000349937-9947 at 9943 (US 85463).

1623. A June 18, 1975 Special Report, titled the "Manipulation of Nicotine Delivery by Addition of Acids to Filler," prepared by scientist Joseph J. Cipriano and distributed widely through the Research Center, further demonstrates Philip Morris's knowledge of the significance of free nicotine in mainstream cigarette smoke. The Report discussed control of nicotine in the smoke through the use of acid, and found that although the acid increased nicotine delivery to mainstream smoke, it also lowered pH and therefore delivered the additional nicotine in the protonated form. Because this approach reduced the pH and therefore the amount of free nicotine in mainstream smoke, Cipriano recommended against its use, stating that "the increased nicotine delivery at a lower pH seems to lower rather than increase response." 1000051227-1240 at 1235 (US 85502); Farone WD, 95:13-96:6.

1624. Philip Morris's nicotine-enhancing techniques have been studied by other tobacco companies, including B&W. In 1984, R.R. Johnson wrote a report titled, "The Unique Differences of Philip Morris Cigarette Brands," that was sent to numerous B&W executives, including C.E.O. I.W. Hughes, in which Johnson stated: "Ammonia treatments appear to be the most important aspect of PM's blend uniqueness. It is definitely used in making one of the two types of reconstituted tobacco and one of the two types of puffed tobacco in these blends. Results from a Marlboro matching project at R.J.R. provide strong evidence that they also treat their lamina with ammonia." Johnson went on to state that B&W's research department had reason to believe that Philip Morris began to develop some of their techniques in the early 1960s, and had spent the time since then optimizing their methods. 570322550-2583 at 2552, 2568 (US 53186); 103281081-1112 at 1082, 1098 (US 20234). In an October 26, 1992 report written by B&W's Research and Development Department, titled "PM's Global Strategy: Marlboro Product Technology," B&W points to Philip Morris's "[a]mmonia technology [as] critical to the Marlboro character, taste and delivery," in part because of the smoke pH increase it produced and the "free nicotine/nicotine transfer" that occurred through its usage. 570399133-9370 at 9183 (US 88083); 304569591-9595 (US 46615*).

1625. At the same time, Philip Morris also engaged in its own research regarding its competitors' methods of nicotine manipulation. As noted, supra, Philip Morris extensively studied the ingredients and make-up of Winston cigarettes, particularly to discover tar and nicotine levels. Ellis PD, Mississippi, 3/20/97, 131:1-132-3.

1626. On August 26, 1986, Philip Morris applied for a patent on a process using ammonia to increase the nicotine delivery of Bright tobacco. 2026526349-6353 at 6349 (US 86964). Philip Morris acknowledged, "Ammonia treatment of tobacco has been employed in the past, principally

as a means to displace and effect release of nicotine." 2026526349-6353, at 6350 (US 86964); 2026377889-7896 (US 37347); 2024761243-1250 (US 86965).

1627. On August 2, 1989, scientists Gullotta, Hayes and Martin reported to H.L. Spielberg on a Philip Morris study comparing the effect on the central nervous system of cigarettes made from filler that had been oversprayed with nicotine as an acid (i.e., "the citrate") and as a base. "Cigarettes made from filler oversprayed with nicotine as the citrate . . . produce CNS effects which are approximately half the magnitude of those obtained with the [filler oversprayed with nicotine as a base]." 2025986931-6935 at 6934 (US 37314).

1628. By 1990, Philip Morris's research efforts included producing low tar cigarettes with more nicotine impact. As scientists Gulotta, Hayes, and Martin explained in a December 14, 1990 memorandum to R.D. Kinser, one study found " that one could produce a low nicotine delivery cigarette with a higher proportion of free to protonated nicotine. Such a cigarette would be analytically similar to other cigarettes at comparable nicotine deliveries, but would be judged to have much more impact." 2023107993-7999 at 7993 (US 85465); 2022262774-2775 at 2774 (US 36876); 2023105617-5617 (US 85464).

1629. Others in the industry closely studied and duplicated Philip Morris's use of ammonia. Minutes of an Ammonia Technology Conference, sponsored by B&W on May 18-19, 1989, and attended by representatives of Defendants, concluded that ammonia technology "is the key to competing in smoke quality with PM worldwide." It was noted that all U.S. manufacturers except Liggett were using some form of ammonia technology on their commercial projects at the time of the conference. 508104012-4164 at 4016 (US 53249*).

(b) R.J. Reynolds

1630. RJR conducted multiple studies regarding the impact of smoke pH on nicotine delivery. For example, a December 16, 1971 report written by D.P. Johnson discusses RJR's efforts to develop a method "to increase the free nicotine content of the VANTAGE smoke by adding selected salts to the VANTAGE blend." Although Johnson recommended that the costs of adding the salts outweighed the benefits, Reynolds continued its study of various methods for delivering more nicotine to the mainstream cigarette smoke of its products. 504414205-4211 at 4205 (US 50608); Henningfield WD, 78:2-16.

1631. In 1973, RJR conducted an extensive study of the design of Philip Morris's Marlboro cigarettes in an attempt to discover the reason for its competitor's sharp increase in sales. In a 1973 memorandum, titled "Implications and Activities Arising from Correlation of Smoke pH with Nicotine Impact, Other Smoke Qualities, and Cigarette Sales," Claude Teague, Reynolds's Director of Research and Development, reported that the pH of Marlboro was consistently and significantly higher than Reynolds's brands. Because Marlboro contained more free nicotine, it "would be expected to show more instantaneous nicotine 'kick' than our brands." The amount of free nicotine in Marlboro was found to be almost three times that found in the smoke of Reynolds's Winston brand. Reynolds concluded that other popular brands -- for example, B&W's Kool – also had an increased smoke pH and increased amounts of "free nicotine." The smoke pH as measured by Reynolds in 1973 of Marlboro and Kool was found to typically range from 6.8-7.3 and 6.4-6.6 respectively. Reynolds concluded that the high smoke pH attained by Philip Morris and B&W was "deliberate and controlled." 511223463-3484 at 3465-3466 (US 20840); see also 500990999-1004 (US 20666).

1632. In the same 1973 memorandum, Teague outlined the various methods the industry had already identified to alter the pH of cigarette smoke:

> Methods which may be used to increase smoke pH and/or nicotine "kick" include: (1) increasing the amount of (strong) burley in the blend, (2) reduction of casing sugar used on the burley and/or blend, (3) use of alkaline additives, usually ammonia compounds, to the blend, (4) addition of nicotine to the blend, (5) removal of acids from the blend, (6) special filter systems to remove acids from or add alkaline materials to the smoke, and (7) use of high air dilution filter systems. Methods 1-3, in combination, represent the Philip Morris approach, and are under active investigation.

511223463-3484 at 3468 (US 20840).

1633. Teague further reported on the significance of smoke pH to the amount of free nicotine in Marlboro cigarettes: "As a result of its higher smoke pH, the current Marlboro, despite a two-thirds reduction in smoke 'tar' and nicotine over the years, calculates to have essentially the same amount of 'free' nicotine in its smoke as did the early WINSTON." Teague also reported on other benefits of altering the pH of cigarette smoke:

> In addition to enhancing nicotine "kick," increasing the pH (increasing alkalinity) of smoke above about 6.0 causes other changes, particularly when the increase in smoke pH is achieved by adding ammonia to the blend. As smoke pH increases, in general, stemmy taste, mouth irritation, flue-cured flavor and Turkish flavor are diminished and burley flavor and character are enhanced. . . . It should be noted, however, that if the smoke pH goes much above 7 at normal total smoke nicotine levels . . ., the amount of 'free' nicotine becomes high, and this may cause harshness to the throat.

511223463-3484 at 3466 (US 20840).

1634. Another 1973 RJR study found that the smoke pH for the Marlboro and Kool cigarettes had been steadily increasing since 1964, while the pH for Reynolds's products had remained almost constant. At the same time, the FTC nicotine and tar levels for Marlboro and Kool

had decreased. The study also showed that the Marlboro and Kool brands had higher levels of ammonia than the other cigarettes studied. The researchers concluded that controlling smoke pH would be extremely important to the successful performance of Reynolds's cigarettes. 500606138-6153 at 6138, 6140, 6144, 6145 (US 48334).

1635. Reynolds soon developed a cigarette design similar to Philip Morris's. In a December 4, 1973 memorandum to R. Blevins, Director of Marketing and Planning for Reynolds, from Frank Colby, RJR scientist, titled "Cigarette Concept to Assure R.J.R. a Larger Segment of the Youth Market," Colby stated that, in developing a low tar cigarette to appeal to the youth market, "any desired additional nicotine 'kick' could be easily obtained through pH regulation." 501166152-6153 at 6152 (US 23051). By 1974, Reynolds had "introduced ammoniated sheet filler in the Camel filter cigarette . . . . Better market performance was indicated in the subsequent years." 509018864-8865A at 8864 (US 20820).

1636. An undated RJR document discussing the technology of ammoniation reveals that Reynolds "introduced ammoniated sheet material in the Camel filter product in 1974. . . . Low 'tar' products at R.J. Reynolds were designed with ammoniated sheet material beginning in 1974. . . . Ammoniated sheet was introduced into the Winston KS product in 1979." The document described two of the characteristics of products that incorporate ammoniation technology as "cleaner taste with more free nicotine" and "stronger physiological impact with less harshness." 509018864-8865A at 8864, 8865 (US 20820); see also 510983376-3380 (US 20833).

1637. A January 15, 1975 paper by John D. Woods and Sue H. Sheets, of RJR's Chemical Research Division, concluded: "With only a few exceptions, brands with high smoke pH performed better than those with low smoke pH. Correlations were also observed between calculated free

nicotine and sales trends and total sugar in the blend and sales trends." 500615944-5960 at 5944 (US 21786).

1638. In talks delivered to RJR's management on June 25, 1974, and to Reynolds's international management on August 4, 1976, Murray Senkus, Vice President of R&D, recommended development of a low tar product with a specific nicotine to tar ratio and stated that "[it] is worth noting that our competitors are fully aware of the significance of pH with respect to smoking satisfaction and taste. Moreover, they are fully aware of the advisability of maintaining a low tar value and also maintaining the nicotine as high as possible." 50152 5355-5366 at 5359, 5364 (US 29531). As an example, Senkus pointed to a commercial Lorillard product, the True cigarette: "the old True has 11 mg. tar [and] .6 mg. nicotine -- the new True is 5 mg. tar [and] .5 mg. nicotine. So although the tar was reduced 6 mg. . . . nicotine was dropped only .1 . . . The tar to nicotine ratio was dropped from 18.3 to 10," however, the nicotine to tar ratio increased from .05 to .1 -- a 100% increase." Thus, Senkus identified that Lorillard had achieved a roughly 55 percent reduction in tar delivery accompanied by only a 16 percent decrease in nicotine delivery. 50152 5355-5366 at 5364 (US 29531). This data directly contradicts the cigarette companies' persistent claim that "nicotine follows tar."

1639. By 1976, RJR was aware that the inhalation of cigarette smoke was the most effective method of administering nicotine to smokers. The company emphasized research to determine the "minimum level of nicotine required for smoker satisfaction," and the particular chemical form of nicotine, i.e., whether "nicotine in smoke was 'free' or 'bound' or some mixture of these two forms." 504424968-4976 at 4976(US 86968).

1640. In a September 21, 1976 memorandum from John L. McKenzie to A.P. Ritchy, McKenzie stated that "[t]he pH also relates to the immediacy of the nicotine impact. As the pH increases, the nicotine changes its chemical form so that it is more rapidly absorbed by the body and more quickly gives a 'kick' to the smoker." The document also noted that the typical range of cigarette smoke pH was from 5.5 to 7.0. 500378383- 8386 at 8385 (US 85467); Henningfield WD, 75:22-76:1, 78:17, 79:21-80:2.

1641. An October 12, 1979 report written by Calvin L. Neumann and M.D. Wallace to D.H. Piehl, Manager of Reynolds's Chemical Research Division, regarding "Nicotine Satisfaction, Consumer Test 2740," shows that Reynolds conducted research regarding the minimum and optimum nicotine delivery required to "maximize[] consumer acceptance," and concluded that "[c]igarette strength is nicotine and pH dependent, increased with both increasing nicotine and increasing pH." 5009069450-9466 at 9450, 9452-53 (US 85468).

1642. In a September 8, 1980 internal memorandum, scientist Alan Rodgman stated that Reynolds had "'caught up' to PM insofar as its current use in the Marlboro of nicotine technology is concerned." Rodgman's memorandum indicates that, in 1980, the pH of Reynolds's Winston measured 6.4, the same level as its measurement of Marlboro's pH that year. 501522719-2726 at 2720 (US 48913). As discussed earlier, a pH of 6.4 is four times greater than the pH of 6. Townsend WD, 173:21-174:4.

1643. An August 9, 1982 draft paper sent to G.R. DiMarco from E. Bernasek and C.W. Nystrom set forth Reynolds's "position papers describing our rationale for using the following additives in RJRT tobacco flavor formulations: ammonia, sclareol, sclareolide, glucose tetraisovalerate." The paper revealed that "[a]mmonia in smoke is one of the major pH controlling

components" and that "[s]tudies of the effect of ammonia on smoke composition showed . . . an increase in physiological satisfaction with increasing ammonia content." 504438506-8512 at 8506, 8509 (US 21386).

1644. A January 10, 1990 research report written by W.M. Coleman, III, discusses RJR's efforts to control the delivery of nicotine "through the regulation of the pH of the dense fluid process stream." The memorandum concluded:

> Evidence has been presented which confirms a novel process for the control and manipulation of the level of nicotine in tobacco and tobacco extracts. The process makes use of the chemistry of tobacco by extracting the available nicotine through a minor but subtle adjustment of the pH. . . . The full range of nicotine control can be realized. The process possesses many variables, among them being 1) pressure, 2) temperature, 3) NH_3 concentration, 4) flow rate, 5) flow volume, etc. With this number of degrees of freedom it is possible to dictate the level of nicotine in the extract as well as the tobacco.

508381102-1112 at 1102, 1103, 1105 (US 85469).

1645. RJR continued to conduct studies comparing the nicotine content of its cigarettes to the content of nicotine in cigarettes manufactured by other Defendants in the 1990s. For example, an October 1, 1991 memorandum written by Kenneth A. Beard reported on the results of studies conducted to determine the amount of "volatile nicotine," i.e., free nicotine, in RJR's Winston and Winston Light as compared to Philip Morris's Marlboro and Marlboro Light. The study compared the brands in terms of the amounts of "volatile nicotine," total nicotine, and volatile nicotine as a percentage of total nicotine. 508257695-7696 (US 86983).

1646. RJR continues to incorporate into a wide variety of its commercial products tobacco blends and reconstituted tobaccos that have been treated with ammonia or to which extracts treated

with ammonia were applied. Schindler WD, 56:9-51:18; 508062474-2493 (US 51299); 512337856-7859 (US 51628). In particular, Reynolds refers to its reconstituted tobacco internally as G-7, and has developed numerous formulations of G-7 that are designed for particular blends, brands, and brand styles. The formulations are identified internally using specific numbers, such as G7-1, G7-2, G7-3, etc. Schindler WD, 56:17-22. Internal Reynolds's documents reveal that G7 is a large blend component in many of its commercial products, that numerous formulations of G7 are ammoniated, and that the ammoniated formulations of G7 are used in Reynolds's full flavor, light, and ultra light commercial products. 508062474-2493 (US 51299); 512337856-7859 (US 51628); Schindler WD, 56:9-51:18; Rodgman PD, United States v. Philip Morris, 6/26/02, 169:1-21.

1647. An RJR document confirms that as late as February 11, 1998 Reynolds was using ammonium hydroxide to adjust the pH level of its reconstituted sheet tobacco. The document stated that "[a]mmonium hydroxide is applied to the G7 sheet via extract application. Ammonium hydroxide is applied to the extract to achieve a 6.3 pH prior to DAP addition." 521484265-4265 (US 86969) (Confidential).

1648. These Reynolds's internal research documents demonstrate clearly that Reynolds incorporated ammonia technology into its commercial products to design products that would deliver nicotine to smokers in a form that would be more rapidly absorbed than cigarettes without ammonia technology. These documents directly contradict the claim, made by Dr. David Townsend, that the only reasons for Reynolds's incorporation of ammonia technology into its commercial products were to improve taste and to increase the "tensile strength" of reconstituted tobacco sheet. Townsend WD, 169:22-170:5. While some of Reynolds's documents, like those of the other Defendants, do discuss the effect of ammonia technology on the taste or flavor of cigarette smoke, those documents show

that the major purpose of RJR's incorporation of ammonia technology into its commercial products is to affect nicotine delivery to the smoker.

(c) Brown & Williamson and BATCo

1649. On March 11, 1964, BATCo published a report on the "Release During Smoking of Nicotine Added as Various 'Salts' to Extracted Tobacco Cigarettes," which concluded that

> the transfer of nicotine, and thus the delivery per cigarette, is dependent upon the extent to which the nicotine is present as "freebase" (which in turn is controlled by pH). . . . [I]t appears possible to control nicotine transfer and this has some implications in the production of cigarettes giving a smoke of a low tar to nicotine ratio.

The report described the freebase nicotine as having a transfer three times greater than that of nicotine citrate, a salt. 400722326-2343 at 2327 (US 21577).

1650. In 1964, a BATCo researcher recognized the effect that adding potassium carbonate -- a base -- to tobacco could have on pH and, as a result, on the nicotine "kick" a smoker receives:

> There seems no doubt that the "kick" of a cigarette is due to the concentration of nicotine in the blood-stream which . . . is a product of the quantity of nicotine in the smoke and the speed of transfer of that nicotine from the smoke to the blood-stream.

The researcher came to the important conclusion that

> it is almost certain that the free nicotine base is absorbed faster into the blood stream. Thus [the] effect of this potassium carbonate treatment, even though it does reduce the total quantity of nicotine in the smoke, may be to enhance the effect of what is left until it is equal or may be greater in psychological effect than the original smoke.

100059066-9067 at 9067 (US 20102).

1651. In 1964, BATCo data reported that nicotine transfer from the tobacco to the smoke was directly related to the relative degree to which the nicotine in the tobacco was in the "free" form.

> The results show that the transfer of nicotine, and thus the delivery per cigarette, is dependent upon the extent to which the nicotine is present as "freebase" (which in turn is controlled by pH), e.g. as base the transfer is three times greater than that of the salt, nicotine citrate.

689201723-1770 at 1758, 1760 (US 31049).

1652. In 1965, a BATCo research report titled, "The Effect of Additives on Smoke Chemistry: Action of Gaseous Ammonium Flue-Cured Tobacco," noted the main effect of "treatment of flue-cured tobacco with ammonia" would be a 30% increase in delivery of nicotine. 570538281-8295 at 8283 (US 20941). This conclusion was confirmed during a subsequent Technical Development Meeting in September 1965. 689201723-1770 at 1761, 1734, 1735 (US 31049).

1653. A September 30, 1966 document titled, "Further Work on Extractable Nicotine," issued by I.W. Hughes and distributed widely, including to Sir Charles Ellis, R.B. Griffith and the Research and Development Library, confirms a finding in an earlier report that "the reaction of a smoker to the strength of the smoke from a cigarette could be correlated to the amount of 'extractable' nicotine in the smoke, rather than to the total nicotine content." The report also notes that "[i]t would appear that the increased smoker response is associated with nicotine reaching the brain more quickly." 83916527-6596 at 6530 (US 55968).

1654. A B&W document titled, "Use of Ammonia/Ammonium Compounds/Urea," stated that "reasons for use" of ammonia included, "[r]ais[ing] the pH of smoke and increas[ing] impact through increased levels of free form, vapour phase nicotine," and "[i]ncreas[ing] the efficiency of transfer of nicotine from tobacco to smoke." 303636914-6922 at 6914 (US 46608).

1655. M. Lance Reynolds, a chemist who worked for B&W from 1968 to 1991 and eventually became Director of Product Development and then Director of Research, stated that, during his entire tenure with B&W he had a working hypothesis that, as a 1979 Philip Morris document acknowledged, smoke impact is not determined by "the amount of nicotine in the smoke per se but rather it is the amount of free nicotine in the smoke." Reynolds PD, Minnesota, 6/4/97, 103:3-12; 542001985-1986 (US 86973).

1656. In a July 30, 1969 file note titled, "Added Ammonium Salts in Marlboro and Philip Morris Cigarettes," B&W research scientist C.J. Rosene reported that in a comparison of cigarettes manufactured by Philip Morris (including Marlboro) with Viceroy, "the [Philip Morris] tobaccos showed higher ammonia values than are normally encountered in U.S. blends." Dr. Rosene inferred that the higher ammonia values were due to ammonium salts, and speculated that "these compounds may contribute to physiological impact if free ammonia [sic] is released into the smoke." Accordingly, Dr. Rosene wrote, "[w]e recommend that the effect of ammonium salts on B&W brands be studied." 100025331-5331 (US 34585). M. Lance Reynolds acknowledged that this was B&W's "earliest indication" that "ammonia chemistry was involved in Philip Morris cigarettes." Reynolds PD, Minnesota, 6/4/97, 217:12-15.

1657. In a January 4, 1980 document, a B&W scientist spoke about the varying levels of nicotine delivery through the use of smoke pH and free nicotine:

> [t]hese relationships are not unknown to those persons developing new products in the tobacco industry. We have seen many changes in these relationships at B&W, e.g., through filter technology, use of chemicals, as well as conversion products formed from using tobaccos treated with microorganisms, to yield smoke with both increases and decreases in the free nicotine levels.

510000667-0670 at 0669 (US 51496).

1658. In a January 4, 1980 file note recounting an "Observation of Free Nicotine Changes in Tobacco Smoke," C.F. Gregory wrote: "It appears that we have sufficient expertise available to 'build' a lowered mg tar cigarette which will deliver as much 'free nicotine' as a Marlboro, Winston or Kent without increasing the total nicotine delivery above that of a 'Light' product." 510000667-0670 at 0669 (US 51496). 654005805-5807 (US 85446).

1659. Gregory reasoned that "[i]n theory, a person smoking these [Merit and Marlboro] cigarettes would not find an appreciable difference in physiological satisfaction from either based on the amount of free nicotine delivered." He then gave other examples where cigarette manufacturers could maintain "free" nicotine despite reducing machine-measured nicotine yield. Gregory suggested this information could be used to gain B&W a competitive advantage in marketing "Light" cigarettes:

> Is there not some way open now to use the knowledge we have gained in this area of tobacco and smoke research to give B&W a competitive advantage over its competition? It appears that we have sufficient expertise available to "build" a lowered mg tar cigarette which will deliver as much "free nicotine" as a Marlboro, Winston, or Kent without increasing the total nicotine delivery above that of a "Light" product.

65005805-5807 at 5806 (US 85446).

1660. B&W scientist Tilford Riehl, who later became Vice President of Research and Development, received Gregory's "file note" and commented on an alternative to Gregory's proposal to increase "free" nicotine to boost "physiological satisfaction." Riehl's suggestion, while accepting Gregory's data and concept, proposed maximizing the effects of nicotine on smokers in a different way. Riehl wrote in the margin:

> Several of us have proposed an alternative (almost opposite) approach -- design a low tar cig with high total nicotine / low to moderate % free nic. Theory: provide cig with "appropriate" level of sensory satisfaction/higher than usual "pharmacological" satisfaction.

510000667-0670 (US 51496) (emphasis in original).

1661. Under a cover memorandum dated May 2, 1980, BATCo's W.B. Fordyce circulated a report written by company scientist Terry Mitchell to BATCo directors. 110088143-8143 (US 34965). In his report, Mitchell discusses three means of intentionally increasing the nicotine content of cigarettes, including the use of specialized high nicotine tobaccos (such as N. rustica), direct addition of nicotine/nicotine extracts, and the chemical "augmentation of smoke nicotine." Mitchell noted that smoke nicotine could be augmented by improving the nicotine transfer to smoke and by increasing the alkalinity/pH of smoke. 110088144-8155 (US 34966).

1662. A January 20, 1981 B&W Research Department file note reported on the pH and extractable nicotine content of several commercial cigarette brands studied by B&W. B&W found that "[w]ithout exception, there is an inverse relationship between pH and tar delivery," i.e., commercial cigarettes designed to deliver less tar showed higher pH values when tested. This study measured the pH of the total particulate matter of the cigarettes and found the pH measures for the low delivery cigarettes tested ranged from 6.76 to 7.23, more than one full pH unit higher than the intermediate delivery pHs of 5.68 and 6.40. The percentage of extractable nicotine in the cigarettes with higher TPM pH values was significantly higher for the low delivery cigarettes. 620676643-6651 at 6643, 6647 (US 53345). In the same 1981 "File Note," the researchers recognized that traditional FTC testing methods do not detect nicotine in the gas (or vapor) phase. 620676643-6651 at 6644 (US 53345).

1663. Minutes of a September 1984 Joint Research and Development/Marketing Session held during an R&D Conference in Marlow, U.K., reveal that discussions took place regarding the various ways in which BATCo was able to increase the level of nicotine transferred in smoke. According to the meeting minutes, "[a] direct method of enhancing nicotine in tobacco smoke is through additions of nicotine oxide or nicotine salts." 109872430-2447 at 2439 (US 23340).

1664. Like RJR, B&W had long analyzed and evaluated Philip Morris's use of ammonia and other methods to affect nicotine transfer. B&W reverse engineered Philip Morris's Marlboro to learn how it could develop its own commercially successful products. Appleton TT, 3/24/05, 16883:25-16884:4. B&W's internal research shows that the focus of this work was on the alkalinity of Marlboro. In 1984, a B&W researcher drafted a report on "The Unique Differences of Philip Morris Cigarette Brands" describing the way that Philip Morris achieved "lower blend alkaloids than competition brands [i.e., less total nicotine in the unsmoked rod], yet deliver[ed] the same smoke nicotine." The researcher concluded that "[a]mmonia treatments appear to be the most important aspect of Philip Morris's blend uniqueness," resulting in "a mild and natural tasting smoke . . . favorable . . . for nicotine transfer." 103281081-1112 at 1082, 1112 (US 20234). The report found that Marlboro and other Philip Morris brands "clearly contain very high ammonia levels" and that Philip Morris brands "get more of their nicotine delivered in mainstream smoke than brands of other domestic manufacturers." B&W's research into Philip Morris brands stated that the process used by Philip Morris to create its reconstituted sheet creates a "reconstituted tobacco [that] efficiently scavenges nicotine from other blend components." The B&W researchers also concluded that Philip Morris had been able to accomplish increases in nicotine transfer efficiency without substantial increases in smoke pH. 103281081-1112 at 1099-1100, 1104 (US 20234).

1665. At a "Nicotine Conference," held in Southampton from June 6-8, 1984, participants concluded:

> If we are to make better use in product terms of the levels of nicotine in smoke currently available -- and even more so if we are forced to market cigarettes with reduced levels of nicotine -- then it is important to significantly increase our understanding of impact/satisfaction. There is an urgent need for experimental cigarettes in which the levels of nicotine in smoke (and smoke pH) are carefully controlled.

602759-2759 (US 53297); see also 401020175-0181 (US 47529).

1666. In 1984, B&W studied the effects of varying the smoke pH of Kool cigarettes. The results of B&W's study showed that increasing the smoke pH of Kool KS increased consumer acceptance. 510004186-4190 (US 20832).

1667. A 1986 BATCo report, titled "Group R&D Programme Group Projects" disclosed, among other things, that BATCo Group companies sought to determine nicotine-carrying capacity of aerosols in cigarette smoke and the effect of nicotine enhancement on human smoking behavior. The results from one such project found that the "impact" of the cigarette was a function of the aerosol pH, for which "optimal" levels were possible. 107472128-2302 at 2142, 2146, 2203-2204 (US 85472). Accordingly, BATCo sought to "evolve ways and means of ensuring that smaller amounts of nicotine continue to give the satisfactory 'reward' to the smoker." 103498901-8902 at 8901 (US 21384).

1668. In a 1988 document titled, "The Significance of pH in Tobacco and Tobacco Smoke," D.E. Creighton, a BATCo employee, wrote that "[f]ree base nicotine is the most chemically and physiologically active form because it is most rapidly absorbed." 500104403-4424 at 4408 (US 47966); see also 400132742-2776 (US 88084).

1669. B&W's internal documents demonstrate that, contrary to its assertions that ammonia serves to simply improve taste, ammonia technology improves nicotine transfer. Id. at 112:3-10; 570353434-3770 (US 53243). Minutes of a B&W Ammonia Technology Conference held on May 18-19, 1989, show that Dr. Baran Chakraborty presented his research on ammonia technology and listed the main effect as:

- Enhanced natural flavor/body via. formation of volatile nitrogen flavorants.
- Improved nicotine transfer.
- Reduced irritation via. scavenging of irritants and buffering.
- Superior paper recon (sensory/physical) by urea addition.

508104012-4164 at 4017 (US 53249*) (emphasis in original) . The report of this conference also noted that "[a]ll U.S. manufacturers except Liggett use some form of AT [Ammonia Technology] on some cigarette products." Id. at 4016.

1670. B&W's efforts to understand ammonia technology included: analyzing the product design of the leading cigarette brands, reverse engineering Marlboro, and holding two ammonia conferences, the 1989 conference described supra, and one in 1990, which were attended by representatives of all BAT Cigarette Affiliated Companies. 508104012-4164 (US 53249*); 570353434-3770 (US 53243). Ultimately, these efforts culminated in preparation of the 1991 handbook, "Root Technology: A Handbook for Leaf Blenders and Product Developers," created by B&W and other BAT Group company scientists to provide ammonia technology information "for the . . . product developer who is looking for ways to incorporate [ammonia] technology . . . in a cigarette design." 621800840-0899 at 0843, 0862-63, 0869 (US 86908).

1671. The Handbook provided a history of the use of ammonia by the tobacco industry. It referred to ammonia technology as "a relatively new technology at B&W and within the BAT Group of companies," and went on to list the five types of ammonia technology "currently used in production" by BAT Group companies: CPCL, EBR, DiAmmonium Phosphate (DAP), Emerge, and Ansiro. 621800840-0899 at 0844, 0855 (US 86908); see also 599003691-3695 (US 22077).

1672. The Handbook also examined the methods employed by Defendants Philip Morris, RJR, Lorillard and American to use ammonia technology, noting that B&W and Philip Morris used ammonia technology in almost all of their brands, and that it was heavily used by other companies as well. A particular type of ammonia technology, involving reconstituted sheet, was referred to by the scientists as "the soul of Marlboro." The objective in B&W's "CPCL [a band-cast reconstituted tobacco] development was to match PM's RCB [reconstituted sheet] in all important characteristics except for nitrate removal." The scientists observed, "[t]his objective has been met." 621800840-0899 at 0853-0854, 0849, 0851 (US 86908).

1673. The Handbook sets forth the purposes for which Defendants used ammonia technology. For example, "[the ammonia in cigarette smoke] can liberate free nicotine from the blend, which is associated with increases in impact and 'satisfaction' reported by smokers." As the Handbook explained:

> Ammonia, when added to a tobacco blend, reacts with the indigenous nicotine salts and liberates free nicotine. As a result of such change, the ratio of extractable nicotine to bound nicotine in the smoke may be altered in favor of extractable nicotine. As we know, extractable nicotine contributes to impact in cigarette smoke and this is how ammonia can act as an impact booster.

In discussing diammonium phosphate ("DAP") as an additive, the Handbook states that "[s]ince DAP can only provide ammonia, it can act only as an ameliorant, an impact booster, and satisfaction promoter." 621800840-0899 at 0845 (US 86908).

1674. The Handbook also described, in detail, how B&W used ammonia technology to enhance the impact of nicotine. In Table 2, the Handbook notes that, as the percentage of ammonia-treated tobacco increased in the blend, the efficiency of the cigarette's ability to transfer nicotine to smoke increased. 621800940-0899 at 0872 (US 86908).

1675. B&W attempted to discredit this information. According to Dr. Michael Dixon, a Senior Scientific Advisor to BATCo, the researchers misinterpreted the data and the error was pointed out to them "very shortly after the manual was circulated." Dixon WD, 58:8-12, 59:22-23. This testimony is not believable. Dr. Dixon could not recall ever giving such testimony in any of his many earlier court appearances on behalf of BATCo, nor was this information mentioned in his lengthy expert report. Dixon TT, 3/9/05, 14012:1-15013:15. There were no contemporaneous written reports demonstrating that the "error" was called to the attention of any B&W employees. Perhaps most importantly, there were never any follow-up written instructions given by B&W to its scientists or its leaf blenders to disregard the Handbook's conclusion that increased use of ammonia-treated reconstituted tobacco leads to greater nicotine transfer efficiency. Appleton TT, 3/24/05, 16894:12-18.

1676. In a March 1, 1991 document to employees in the research department, A.L. Heard informed the employees that the "Tobacco Strategy Review Team has identified a need to add greater confidentiality to our use of ammonia technology throughout the BAT Group. They have asked that for commercial confidentiality, we substitute a code word in place of the expression 'ammonia

technology.'" The memorandum further stated that existing code words for ammonia-related processes such as "ammonia treatment of stems or lamina" would continue to carry code names already in existence. The new code word for ammonia technology was to be transmitted via separate cover. 400182372-2372 (US 47487).

1677. B&W and BATCo continued to study and monitor nicotine transfer delivery throughout the 1990s. The effectiveness of the delivery is usually expressed as a percentage of the tobacco nicotine that is released into the cigarette smoke, or "nicotine transfer efficiency." 689201723-1770 at 1758, 1760 (US 31049).

(d) American

1678. American also investigated the effects of using nicotine in a freebase form. A June 30, 1980 American memorandum from N.L. Bodenhamer to Eugene Glock on "Increasing Nicotine Transfer in Smoke" stated:

> There has been an interest in increasing the amount of nicotine that is transferred from the tobacco to the mainstream smoke while leaving the "tar" level unchanged. Since most nicotine in tobacco is a non-volatile salt, it was thought that a greater transfer would take place if the tobacco was made basic causing the nicotine to volatilize when the cigarette is smoked.

To test this hypothesis, researchers conducted an experiment in which they added 2% or 5% potassium carbonate to American's Tareyton tobacco blend. Taste tests "suggested that more nicotine had transferred to the smoke, with the 5% being more harsh than the 2%." ATC2570157-0157 (US 66272); Henningfield WD, 68:23-69:1, 69:21-70:16.

1679. In a follow-up memorandum between the same American employees a month later, it was reported that using nicotine in a freebase form could

> volatilize and thereby increase the amount of nicotine in the smoke. Some further work planned in this area is the addition of sodium carbonate, treatment of stems with alkali base, and treatment of CARLTON blend to possibly increase smoke taste since cigarettes treated thus far have been much stronger than the control.

X003498-3506 at 3497 (US 86972).

(e) Lorillard

1680. Lorillard also studied ways to alter the pH of its cigarette products. In 1973, Lorillard sought to improve the smoking quality of its reconstituted tobacco. Lorillard believed its research at that time demonstrated that the amount of free nicotine contained in mainstream smoke increased with higher pH, and that higher pH increased impact. Lorillard also studied how the Marlboro reconstituted leaf achieved a higher pH while maintaining a good flavor. Using different additives, types of leaf, and added nicotine, Lorillard tested numerous ways to increase the smoke pH in its reconstituted leaf. 00044833-4841 (US 47324); see also 87644269-4277 (US 56273*).

1681. A November 2, 1973 memorandum, titled "Research 1-3-5 Year Projection of Major Projects," outlines Lorillard's research goals for "Tobacco Modification." The memorandum discussed a research program designed "to explore the possibilities of modifying various physical and chemical properties of tobacco by means of chemical treatments or additives." One of the areas of interest in this regard was the "control of nicotine delivery." The memorandum noted that the ability to control nicotine and other parameters "will permit the design of low tar products with acceptable burning rates having specified nicotine deliveries." 83250679-0693 at 0683 (US 55641).

1682. Several Lorillard studies reiterate the connection between smoke pH and nicotine delivery. For one, a May 4, 1976 memorandum concerning the "Nicotine Augmentation Project" noted, "It is known that the higher the pH of the smoke is (i.e. the more basic), the more nicotine

exists in the free form. Free nicotine has a greater physiological effect . . . ." 00050444-0450 at 0448 (US 47721). A July 12, 1976 Lorillard study by Leighton Chen provided an extensive review of "input variables affecting the pH of smoke" and the "effect of pH on smoke delivery." Chen reported, among other things, that

> [t]he market leaders appear to have the higher pH's, and hence the higher concentration of freebase nicotine. If the desired goal is defined to be increased nicotine yield in the delivered smoke . . . increase the pH, which increases the "apparent" nicotine content without changing the absolute amount.

00044921-4938 at 4922, 4933-4934 (US 34203). See also 00778258-8265 (US 34295*); 00121921-1942 (US 85476); 00778109-8113 (US 22930); 83250763-0765 (US 55655).

1683. In an April 13, 1977 memorandum to Harry Minnemeyer, titled "Gas Phase Ammoniation of Tobacco," P.D. Schickedantz recognized that the addition of bases such as ammonia to tobacco might result in "a greater efficiency of nicotine delivery or in an increased smoke pH. An increased smoke pH would liberate nicotine freebase from its salts to give a greater chest impact." Schickedantz also reported on several techniques to more accurately estimate the amount and form of ammonia that could be added without resulting in "the undesirable taste previously associated with ammoniated tobacco." 00778451-8457 at 8451, 8456 (US 34299).

1684. Lorillard conducted research on ammonia and smoke pH well into the 1990s. In 1995, the company investigated the ability of diammonium phosphate to increase the level of nicotine delivery and smoke pH. 96522458-2467 at 2461 (US 21973). A September 18, 1996 memorandum, titled "Summary of the Effects of Ammonium Carbonate, Ammonium Bicarbonate, Urea and Diammonium Phosphate on Smoke pH, Smoke Data and Leaf Chemistry," concluded: "A positive trend was observed between increasing levels of urea and increases in the percent transfer

of nicotine from the leaf to the smoke on a per cigarette basis." Although this trend was not observed with the addition of other additives, the researchers found that smoke pH increased with the addition of ammonium carbonate and ammonium bicarbonate, and that the addition of diammonium phosphate led to increased puffs, thereby increasing the nicotine delivery. 83502523-2535 at 2525, 2531 (US 55858). In a related memorandum examining the addition of urea, ammonium carbonate, and ammonium bicarbonate, the researchers concluded that "[f]or all three additives, as the amount of the additive applied to the tobacco was increased, the smoke pH increased. Increased smoke pH results in increased calculated levels of unprotonated, or free, nicotine." 93848806-8818 at 8809 (US 56687). See also 96522506-2542 (US 21822).

1685. In 1996, Lorillard researchers issued a report which stated that cigarette additives, such as urea, diammonium phosphate (DAP), ammonium carbonate and ammonium bicarbonate, increased the smoke pH and "the nicotine transfer from leaf to smoke." 88029439-9460 at 9439, 9449 (US 22048).

1686. As late as October 2000, Lorillard continued to use additives to affect smoke pH and produce ammonia. An October 3, 2000 Lorillard memorandum disclosed the concerns of Lorillard's then-CEO, Alexander Spears, concerning the use of ammonium carbonate to change pH balance: "[Spears] had a big concern about using ammonium carbonate to change the pH. His point was that much of the pH changes reported have shown that when the ammonia is generated is just as, if not more, important than the amount. He would like us to use *urea* instead, since it will allow ammonia to be generated at a more even rate and at higher temperatures than with the use of ammonium carbonate." 97014099-4099 (US 21853) (emphasis in original).

(f) Liggett

1687. Liggett also aggressively pursued designing a cigarette with increased smoke pH. A 1971 progress report on project TE-5001 reported that "[i]ncreasing the pH of a medium in which nicotine is delivered increases the physiological effect of the nicotine by increasing the ratio of freebase to acid salt form, the freebase form being more readily transported across physiological membranes." The importance of this finding was explained: "[w]e are pursuing this project with the eventual goal of lowering the total nicotine present in smoke while increasing the physiological effect of the nicotine which is present, so that no physiological effect is lost on nicotine reduction." LG0262125-2126 at 2126 (US 59994).

1688. By early 1972, Liggett had achieved its goal of increasing the smoke pH: "The original purpose of this development was to increase the smoke pH through the addition of a basic material to the tobacco in order to achieve a higher physiologic effect from the nicotine in the smoke. This has been accomplished." Liggett's researchers found related results from the study encouraging, reporting "[t]he above-observed facts would seem to present intriguing possibilities in the development of new products, particularly in the development of low yield cigarettes where it is desirable to obtain a higher physiologic effect from a cigarette yielding relatively small amounts of nicotine." The report set forth various ways Liggett would improve "taste" for commercialization of the product. LG0262506-2508 at 2506-2507 (US 36263).

1689. Liggett continued its work on the TE-5001 throughout the 1970s. Company scientists advised management of the perceived benefits of increasing smoke pH, writing: "[a] low smoke solids, low nicotine cigarette with an increased smoke pH would then have relatively more free nicotine in its smoke. Consequently, a higher nicotine impact would result producing a more

satisfying smoke." This January 22, 1974 report, and others, discuss methods, including filters, blends, and additives, by which the smoke pH could be altered. It was reported that "all the increased smoke pH cigarettes generally exhibited an increased physiological impact." LG0262127-2129 at 2127, 2128, 2129 (US 21185).

1690. In a January 29, 1974 report concerning the progress made by Liggett in 1973 on Project TE 5001, James R. Newsome, an attorney with Shook, Hardy & Bacon, explained: "[f]uture plans on this project will consist of screening a number of basic materials on both the cigarette filter and blend in an attempt to find which additive is most effective in producing a smokeable increased smoke pH cigarette." LG 0262130-2131 at 2130, 2131 (US 21596). Liggett continued its work on Project TE-5001 through at least 1978. It was only one of the methods of altering pH that Liggett employed. Other methods that Liggett believed could alter pH were: changing the tobacco blend, adding additives to the tobacco, or adding additives to the filter. LG0262155-2155 (US 21428); LG0262149-2151 (US 21186); LG0262152-2153 (US 21187); LG0262509-2512 (US 36264).

1691. Liggett was aware decades ago of the basic science surrounding pH and the freebase form of nicotine. Dietz PD, Minnesota v. Philip Morris, 9/29/97, 22:15-24:1, 25:23-27:5. Since 1971, Liggett has hypothesized that the effect of increasing the pH of nicotine, and hence increasing the ratio of freebase nicotine to salt form, increases the physiological effect of the nicotine. Id. at 28:1-32:3.

1692. Liggett was aware that adding calcium hydroxide to tobacco makes the tobacco more basic, thus raising the pH and increasing the amount of freebase nicotine relative to the salt form of nicotine. Liggett added calcium hydroxide to the L&M blend. LG0262506-2508 (US 36263); Dietz PD, Minnesota, 9/29/97, 35:17-41:11.

1693. Liggett also experimented with increasing the smoke pH by making the filter more basic and thereby increasing the physiological impact of the nicotine. Dietz PD, Minnesota, 9/29/97, 41:12-43:24; LG0262127-2129 at 2128 (US 21185).

1694. In 1976, Liggett continued its research into the modification of smoke pH, and noted that a smoke pH of 6 resulted in the nicotine in smoke taking on a salt form, while a pH of 11 resulted in the nicotine in smoke being almost entirely in freebase form. The most dramatic shift from salt form to freebase form occurred between pH 6 and pH 9. Dietz PD, Minnesota, 9/29/97, 44:21-50:4.

1695. Between 1993 and 1996, Liggett added diammonium phosphate (DAP) to its cigarettes. Id. at 61:7-19; see also LG2018563-8563 (US 21190). As discussed supra, other Defendants have concluded that DAP increases nicotine transfer.

e. Other Additives: Defendants Researched the Use of Other Additives to Control Nicotine Delivery

1696. Internal documents show that Defendants researched various additives, in addition to ammonia, which facilitate nicotine delivery. Cigarette smoke contains chemicals that can act synergistically to produce effects that might be even more addicting than nicotine alone. Farone WD, 74:4-9. For example, studies by Philip Morris have indicated that levels of acetaldehyde (a chemical involved in alcohol dependence) in smoke can be manipulated through additives so as to produce a mixture of acetaldehyde and nicotine that would be more addictive than either drug alone. DeNoble WD, 31:5-32:15; 1000413881-3964 (US 20100); 1003060443-0503 (US 87091).

1697. Philip Morris started studying the compound acetaldehyde in 1980, because it had been shown to have positive reinforcing effects, i.e., enhancing a smoker's desire to continue to

ingest nicotine. DeNoble WD, 29:16-33:5; 1002973586-3615 at 3598 (US 35633); 1000390648-8764 (US 35259).

1698. On January 30, 1981, Thomas Osdene, then Director of Research and later Vice President of Science and Technology, received a letter from Philip Morris consultant Leo Abood, informing Osdene of research showing that acetaldehyde was self-administered by rats and that it could reinforce smoking behavior. Abood postulated that acetaldehyde may "enhance" the behavioral effects of nicotine and suggested that further studies be done to see how acetaldehyde interacts with nicotine. 2058212035-2036 (US 64776).

1699. In 1982, Dr. DeNoble reported that preliminary studies showed that acetaldehyde readily penetrated the blood-brain barrier. 1003198459-8461 (US 20156). DeNoble's studies on acetaldehyde revealed a "synergistic effect" with nicotine. In other words, "the combination of nicotine with low doses of acetaldehyde caused more powerful results than either one of the drugs acting alone." DeNoble WD, 31:11-12; Mele WD, 18:18-19:1; 2048376436-6437 (US 85503).

1700. Also, in 1982, DeNoble presented his acetaldehyde research to Philip Morris corporate officers in meetings in Richmond and at Philip Morris headquarters in New York. Subsequent to his presentations, Philip Morris executives expressed interest in finding the ratio of the acetaldehyde-nicotine combination that would be optimally reinforcing. 1000413881-3964 at 3883-3884, 3908 (US 20100). DeNoble recounted that Philip Morris considered the acetaldehyde work "very sensitive and that [the company] did not want it to be misinterpreted if it got out." DeNoble WD, 11:8-10, 32:18-33:1, 33:18-35:4, 36:14-18. Philip Morris scientists also charted the effect of the presence of acetaldehyde in cigarettes upon sales. 2022261214-1225 (US 20364).

1701. Philip Morris recognized "[t]here was a practical aspect of the super-additive quality of the reinforcing effects of nicotine and acetaldehyde." According to Paul Mele, a scientist in DeNoble's lab, their supervisor in the Biochemical Research Division, Jim Charles, "discussed with us the importance of finding the optimum ratio of nicotine and acetaldehyde that was reinforcing in the self-administration test." Mele WD, 19:14-19:16.

1702. BATCo researchers were aware as early as 1968 of the importance of nicotine and of the potential value of a product that combined nicotine with some other chemical to increase its pharmacological effects. Minutes written by S.J. Green from a BATCo conference held in Hilton Head, South Carolina, on September 24-30, 1968, included the following conclusion:

> In view of its pre-eminent importance, the pharmacology of nicotine should continue to be kept under review and attention paid to the possible discovery of other substances possessing the desired features of brain stimulation and stress-relief without direct effects on the circulatory system. The possibility that nicotine and other substances together may exert effects larger than either separately (synergism) should be studied and if necessary the attention of Marketing Departments should be drawn to these possibilities.

682633150-3156 at 3152 (US 54206).

1703. By 1978, Lorillard was studying means by which nicotine migration -- the redistribution of nicotine within a cigarette from the tobacco to the outer periphery for the purpose of increasing the amount of nicotine in mainstream smoke -- could be maximized. In a February 23, 1978 memorandum to Harry Minnemeyer, Manager of the Research Department, M.S. Ireland, Manager of Analytical Development, set forth the "steps which are planned in the nicotine migration project," including maximizing migration through the addition of acids or other compounds and determining the maximum amount of nicotine that can be migrated. 82514702-4703 (US 55517).

Researchers for Lorillard studied possible cigarette additives that would facilitate the migration of nicotine from other parts of the cigarette to the cigarette paper, recognizing that "the major portion of the mainstream smoke is generated from the outer periphery of the cigarette." 83896877-6879 at 6878 (US 55922). A 1980 report likewise stated that "[i]t has been demonstrated that the impregnation of cigarette paper with acid can cause migration of nicotine to the periphery. This in turn elevates delivery of nicotine in mainstream smoke." 00114987-4996 at 4987 (US 34264). Lorillard conducted further studies on migration and confirmed these results. 00114962-4975 at 4962 (US 34263); see also 00041734-1735 (US 34189); 000115023-5025 (US 34265); 83896952-6954 (US 55925).

1704. A December 6, 1983 Lorillard memorandum by J.M. Johnson described the purpose of another study of filter additives being "to increase smoke pH and therefore increase free nicotine in smoke by adding an aryl alkyl amine to the filter." The results of the study revealed "increased smoke pH and a six-fold increase in free nicotine." 87632595-2598 (US 56265*); Henningfield WD, 75:22-76:1, 77:8-14.

3. Defendants Have Made False and Misleading Public Statements Regarding Their Control of the Nicotine Content and Delivery of Their Products

1705. Despite the overwhelming evidence of their research into and utilization of methods to control the amount and delivery of nicotine in cigarettes, Defendants have denied, repeatedly and publicly, that they manipulate nicotine content and delivery in cigarettes in order to create and

sustain addiction. Defendants have also repeatedly and publicly claimed that the levels of nicotine delivered by cigarettes are determined by their levels of tar delivery.[16]

a. The Waxman Hearings

1706. In 1994, the United States Congress held a series of public hearings regarding the addictiveness of cigarettes and the tobacco industry's design of cigarettes and manipulation of nicotine. These hearings, before the House of Representatives Subcommittee on Health and the Environment, later became known as the "Waxman Hearings," referring to Subcommittee Chairman Henry Waxman of California. The Chief Executive Officers of six Defendant cigarette manufacturers -- Philip Morris, B&W, RJR, Lorillard, Liggett, and American -- appeared voluntarily at a Subcommittee hearing on April 14, 1994.

1707. During the April 14, 1994 hearing, the CEOs testified under oath and before television cameras to the following:[17]

> Philip Morris did knowingly cause to be transmitted the testimony of President and Chief Executive Officer William I. Campbell. Campbell denied that nicotine is addictive, denied that Philip Morris

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[16] Defendants make the claim that their efforts to manipulate nicotine delivery were well-known in the public health community and therefore cannot be the source of a fraud claim. However, Defendants have taken internally inconsistent positions. While making these claims, they simultaneously argued and presented evidence to support their position that they did not manipulate nicotine delivery. Defendants cannot have it both ways. Moreover, while it is true that the public health community had some understanding of Defendants' design parameters, that understanding fell far short of the much more sophisticated understanding which Defendants possessed and utilized.

[17] Defendants assert that the statements of their C.E.O.s before the Waxman Subcommittee in 1994 constitutes petitioning activity protected from any imposition of liability under the Noerr-Pennington doctrine. See, Eastern R.R. Presidents Conference v. Noerr Motor Freight, Inc., 365 U.S. 127 (1961) and United Mine Workers v. Pennington, 381 U.S. 657 (1965). This legal issue is addressed fully in the Conclusions of Law. The facts, as recounted herein, speak for themselves.

> research establishes that smoking is addictive, and denied that Philip Morris manipulates the amount of nicotine contained in cigarettes.
>
> RJR did knowingly cause to be transmitted the testimony of Chairman and Chief Executive Officer James Johnston. Johnston denied that nicotine is addictive and denied that RJR manipulates the amount of nicotine contained in cigarettes.
>
> American did knowingly cause to be transmitted the testimony of its Chief Executive Officer, Donald S. Johnston. Johnston denied that American manipulates the amount of nicotine contained in cigarettes.
>
> B&W did knowingly cause to be transmitted the testimony of Chief Executive Officer Thomas Sandefur. During this hearing, Sandefur made material misrepresentations regarding B&W's control of the amount of nicotine contained in its cigarettes.
>
> Lorillard did knowingly cause to be transmitted the testimony of Chief Executive Officer Andrew H. Tisch. During this hearing, Tisch denied that Lorillard manipulates the amount of nicotine contained in cigarettes.
>
> Liggett did knowingly cause to be transmitted the testimony of Chairman and Chief Executive Officer Edward A. Horrigan, Jr. Horrigan denied that Liggett manipulates the amount of nicotine contained in cigarettes.

TLT0730001-0850 (US 77011).

1708. In a written statement submitted by Philip Morris on March 25, 1994, to the House of Representatives Committee on Energy and Commerce in connection with the Waxman Hearings, Philip Morris asserted that it "does nothing in the processing of tobacco or the manufacture of cigarettes that increases the nicotine in our products above what is naturally found in tobacco." Philip Morris also stated that the FTC testing method provided consumers with "information concerning the relative nicotine yields of products that permit them to make an informed choice." TLT0730001-0850 at 0362–0363 (US 77011).

1709. On April 14, 1994, William I. Campbell, President of Philip Morris U.S.A., testified at the Waxman Hearings that "Philip Morris does not add nicotine to our cigarettes. Philip Morris does not manipulate nor independently control the level of nicotine in our products." In his written statement to the Committee of the same date, Campbell stated that

> [w]hen creating a cigarette for a tar category, we select a particular tobacco blend and flavors to provide "uniqueness" for a product. . . . So, how do we "manipulate" or independently "control" nicotine as our critics charge? The answer is we don't. We accept the nicotine levels that result from this process.

TLT0730001-0850 at 0546, 0556 (US 77011) (emphasis in original).

1710. Campbell also testified that the amount of nicotine measured by the FTC testing method accurately reflected the amount of nicotine that a smoker of its low tar cigarettes receives. After acknowledging that Philip Morris manufactured its Merit Ultima low tar cigarette using, for 40% of the blend, a tobacco that had a nicotine content higher than that used for the manufacture of some of its other products, Campbell contended that the reason for selecting the high nicotine tobacco was for taste and flavor. Campbell was asked, "You may think that's for taste, but it also produces a higher nicotine level. Isn't that what's happening in your products?" Campbell responded: "No, it isn't. . . . We compensate in our ultra low tar cigarettes by using reconstituted tobacco and expanded tobacco. So that what the smoker gets is what we . . . say in our FTC advertisements, 0.1 milligram of nicotine." TLT0730001-0850 at 0768 (US 77011).

1711. Although Campbell acknowledged that Philip Morris intentionally used tobacco blends with higher nicotine concentrations in the manufacture of "ultra low tar" cigarettes, Campbell testified that Philip Morris did so only for taste. Campbell was asked by a Member of Congress: "I'm asking about the concentration of nicotine in the tobacco. You have blended tobacco. I want to

know if there's a higher concentration in that tobacco in the Ultima [an "ultra low tar" brand] than there would be in a regular cigarette?" Campbell responded, "It's there for taste, yes, sir." Additionally, Campbell was asked, "For whatever reason, do you occasionally decide to use a higher nicotine content tobacco leaf to manufacture one brand than you do to manufacture another of your brands?" Campbell testified in response: "That's the end result. As I say, we do not design the product that way. We design the product for its category in the market, which is generally a tar category." TLT0730001-0850 at 0768, 0769 (US 77011).

1712. In a written statement submitted by RJR on March 24, 1994 to the House Committee on Energy and Commerce in connection with the Waxman Hearings, Reynolds stated that it

> does not . . . establish specific nicotine yields or manipulate nicotine to create, maintain or satisfy "addiction. . . ." It is a simple fact that reducing "tar" yields automatically results in proportional reductions in nicotine.

In a February 28, 1994 letter mailed to FDA Commissioner Kessler in advance of the Waxman Hearings, Reynolds's CEO James W. Johnston claimed that "R.J. Reynolds Tobacco Company does not increase the nicotine in its cigarettes above what is found naturally in tobacco." TLT0730001-0850 at 0368, 0370 (US 77011).

1713. On April 14, 1994, Reynolds's CEO James Johnston testified at the Waxman Hearings that RJR does not "add, or otherwise manipulate nicotine to addict smokers. . . . [W]e do not do anything to hook smokers or to keep them hooked." In his written statement to the Committee of the same date, Johnston claimed that the level of nicotine contained in a cigarette is proportional to and linked to the level of tar. Johnston also stated that the level of nicotine present in a cigarette is not "a result of a decision to 'manipulate' nicotine levels to some carefully controlled 'addictive

level.' The concept of an 'addictive level' [of nicotine] . . . is not a concept known to or understood by Reynolds Tobacco." TLT0730001-0850 at 0562, 0576-0577, 0579 (US77011).

1714. Johnston further testified on April 14, 1994, that Reynolds did not "design our cigarettes with any nicotine levels in the specifications. We design our cigarettes . . . for tar levels, usually within a band. It might be a light cigarette within that band or sometimes a specific tar level objective and the nicotine flows from there. . . ." TLT0730001-0850 at 0722 (US 77011).

1715. In a written statement submitted by B&W on March 25, 1994 to the House Committee on Energy and Commerce in connection with the Waxman Hearings, B&W stated that "[t]he only direct source of nicotine in cigarettes manufactured by Brown & Williamson Tobacco Corporation is the tobacco that is used in the cigarettes." B&W also asserted that "[t]he filtering and ventilation techniques that are utilized by B&W result in the smoker's receiving only a small fraction of the nicotine contained in the tobacco that was used to produce the cigarette." TLT0730001-0850 at 0381 (US 77011).

1716. In an April 14, 1994 written statement submitted to the House Committee on Energy and Commerce in connection with the Waxman Hearings, Thomas E. Sandefur, Jr., Chairman and CEO of B&W, stated that "Dr. Kessler suggested that cigarette manufacturers 'commonly add nicotine to cigarettes to deliver specific amounts of nicotine.' Brown & Williamson has never done that." Sandefur also stated that B&W "believe[s] that smokers can expect to receive lower amounts" of nicotine from cigarettes that yield lower amounts in FTC testing. TLT0730001-0850 at 0594-0595 (US 77011).

1717. Sandefur was accompanied to the Waxman Hearings by Tilford Riehl, B&W's Vice President of Research and Development. In response to questions concerning B&W's "ultra light"

Barclay cigarette, which used tobacco with a nicotine concentration of 2.3% (35% higher than the average amount of nicotine found in tobacco), Riehl did not deny that B&W used a tobacco with a high nicotine concentration to manufacture Barclay cigarettes. Riehl testified, however, that B&W selected the tobacco used for Barclay for its taste. Specifically, Riehl stated: "We blend for taste, not nicotine." TLT073 0001-0850 at 0767 (US 77011).

1718. When asked by a Member of Congress, during a continuation of the Waxman Hearings on June 23, 1994, whether B&W believed "that nicotine is present for taste or is it in cigarettes for its drug-like qualities," Thomas Sandefur, then-Chairman and CEO of B&W, stated under oath, "we very strongly believe that nicotine is a very important constituent in the cigarette smoke for taste." TLT0730851-1975 at 1584 (US 77012). Sandefur further testified at the same hearing that he did not believe that nicotine is a drug. TLT0730851-1975 at 1585 (US 77012).

1719. Sandefur testified at the June 23, 1994 Waxman Subcommittee hearing, that B&W added ammonia to commercially produced cigarettes only "[f]or the benefit of taste, to improve the taste characteristics of our cigarettes." TLT0730851-1975 at 1620 (US 77012).

1720. Sandefur also testified to Congress on June 23, 1994, on behalf of B&W, "We do not manipulate the nicotine levels of our cigarettes. . . ." TLT0730851-1975 at 1673 (US 77012).

1721. In a written statement submitted by American on March 25, 1994, to the House Committee on Energy and Commerce in connection with the Waxman Hearings, American stated that it "does not use nicotine in the manufacture of its cigarettes" and that "nothing is done in the tobacco processing or manufacture of cigarettes by the American Tobacco Company to increase nicotine beyond that naturally occurring in tobacco." TLT0730001-0850 at 0378-0379 (US 77011).

1722. On April 14, 1994, Donald S. Johnston, Chairman and CEO of American, testified at the Waxman Hearings that:

> the American Tobacco Company does not use nicotine in the manufacture of its cigarettes. . . . American has no desire or intent to manipulate nicotine. At no time has the American Tobacco Company attempted to market a cigarette based on its nicotine content. Or more generally, has it ever designed or marketed a cigarette with the purpose or intent of selling nicotine.

TLT0730001-0850 at 0597, 0599 (US 77011).

1723. On March 25, 1994, Alexander W. Spears, Vice Chairman and Chief Operating Officer of Lorillard, testified at the Waxman Hearings that "[w]e do not set levels of nicotine for particular brands of cigarettes." Spears further stated that "[n]icotine follows the tar level," that the correlation between the two "is essentially perfect," which "shows that there is no manipulation of nicotine." In a 1981 study, the Chemical and Physical Criteria for Tobacco Leaf of Modern Day Cigarettes, Spears had previously stated explicitly that "low-tar" cigarettes used special blends of tobacco to keep the level of nicotine up while tar is reduced: "[T]he lowest tar segment [of product categories] is composed of cigarettes utilizing a tobacco blend which is significantly higher in nicotine." Spears did not inform Congress of his earlier statement. TLT0730001-0850 at 0148-0149, 0382-0383 (US 77011); 82495618-5628 at 5620 (US 86932).

1724. In response to questioning by the panel concerning data he submitted at the March 25, 1994 hearing, Spears again contended in testimony on April 14, 1994, that the level of nicotine found in cigarette products is a function of the level of tar in those products. Spears testified that "the statement that nicotine follows tar" was true from the 1950s to 1990 and that he "stick[s] with that statement and [he] believe[s] it is accurate." TLT0730001-0850 at 0707, 0719 (US 77011).

1725. On April 14, 1994, Andrew H. Tisch, Chairman and CEO of Lorillard Tobacco Company, testified at the Waxman Hearings that "the level of nicotine in the products manufactured and sold by Lorillard is solely determined by the tobacco that we buy and the blending of different tobaccos used in our manufacturing. . . . Nicotine levels follow tar levels and are not raised or reduced for particular brands." Tisch also testified that "Lorillard does not take any steps to assure a minimum level of nicotine in our products. Lorillard does not add nicotine to cigarette tobacco for the purpose of manipulating or spiking the amount of nicotine received by the smoker." TLT0730001-0850 at 0596, 0597 (US 77011).

1726. In a written statement submitted by Liggett on March 24, 1994, to the House Committee on Energy and Commerce in connection with the Waxman Hearings, Liggett stated:

> we do not increase the nicotine level of our cigarettes beyond that found naturally in the tobacco from which our cigarettes are made. . . . We do not artificially increase the level of nicotine in our cigarettes to allegedly "addict" smokers or otherwise influence our consumers.

TLT0730001-0850 at 0380 (US 77011).

1727. On April 14, 1994, Edward A. Horrigan, Jr., Chairman and CEO of Liggett, testified at the Waxman Hearings that "Liggett does not increase the nicotine level of our cigarettes beyond the level of nicotine found naturally in the unprocessed tobacco that we use to make our cigarettes. . . . Liggett does not manipulate the level of nicotine in our cigarettes to hook or addict smokers." Horrigan, who formerly had been Chairman and CEO of RJR, also testified that "[i]n all my years in this business world-wide, I have never known of a product-designed [sic] objective or goal that included even the notion of spiking the amount of nicotine in a cigarette to achieve a level that would hook or addict smokers." TLT0730001-0850 at 0600, 0601 (US 77011).

1728. Following Horrigan's testimony at the Waxman Hearings, Representative Waxman sent a request for information to Liggett on May 25, 1994, seeking additional information concerning its use of nicotine in the design of its cigarettes. In its response to a request for information concerning which methods of controlling nicotine it used in its products, Liggett responded: "Liggett does not and has never used any of these methods for the purpose of controlling or changing the levels of nicotine alone in its cigarette brands. . . . Liggett has not conducted any research that was designed to develop methods for the purpose of changing or controlling the level of nicotine alone in cigarettes it sold commercially." LDOJ9511212-1230 at 1216-1218 (US 86933) (Confidential).

1729. In response to Representative Waxman's letter, Liggett also stated that:

> Liggett has conducted no research on nicotine analogues. . . .
>
> Liggett has not performed any research to increase or maintain nicotine levels while decreasing "tar" levels. Liggett does employ traditional blending techniques which maintain the consistency of its products, including "tar" and nicotine deliveries.
>
> Liggett has specified neither minimum nor maximum nicotine levels or deliveries, nor has it taken any steps to alter or adjust the level of nicotine delivery alone at any stage of cigarette production.
>
> [Apart from limited research concerning reduction of nicotine], Liggett has done no other research on adjusting, altering or maintaining nicotine levels or nicotine delivery alone.

LDOJ9511212-1230 at 1220, 1221, 1222-23 (US 86933) (Confidential).

1730. The Tobacco Institute also made a statement before Congress in connection with the Waxman Hearings. On March 25, 1994, the Tobacco Institute's spokesperson, Charles O. Whitley, testified that "nicotine levels are a function of tar levels. Over the past 30 years or so, the consumer demand for lighter cigarettes has led the tobacco manufacturers to reduce tar levels . . . and the

nicotine levels have dropped correspondingly." Whitley further testified that "we do not add nicotine, have not added nicotine, we do not manipulate nicotine." In the written statement submitted by Whitley in connection with his testimony, Whitely stated that FDA Commissioner Kessler's suggestions that cigarette manufacturers add nicotine to cigarettes to produce and sustain addiction were "unequivocally . . . false," and that "when . . . 'tar' levels" are reduced, "nicotine is reduced automatically." TLT0730001-0850 at 0146, 0350 (US 77011).

b. Defendants' False and Misleading Public Statements Continued After the Waxman Hearings

1731. On February 28, 1994, Philip Morris distributed a public statement that stated:

> There is nothing done in the processing of tobacco or manufacture of cigarettes by Philip Morris that increases the nicotine in the tobacco blend above what is normally found in tobacco. . . . Philip Morris provides its consumers with a range of choices in tar and nicotine levels in its products. As a matter of fact, over the years, consumer taste preferences have resulted in products with lower levels of both tar and nicotine. For many years, nicotine levels for all cigarettes have been measured pursuant to FTC methods and publicly displayed in every cigarette advertisement.

682637639-7640 at 7639 (US 30999).

1732. In an advertisement in the New York Times released the day following the CEOs' 1994 Congressional testimony, titled "Smokers and Non-Smokers: Facts You Should Know," Philip Morris stated: "Philip Morris does not 'manipulate' nicotine levels." The advertisement claimed that Philip Morris's methods of "quality control [do] not constitute 'manipulation.'" 2023011263-1263 (US 20371); Farone WD, 98:22-99:17.

1733. On June 23, 1994, after a connection between the use of ammonia technologies and increased nicotine deliveries was publicized, Philip Morris released a press statement saying:

> [t]here is no indication that ammonia compounds in our cigarettes alter the amount of nicotine the smoker inhales. . . . [T]he presence of ammonia compounds in cigarettes does not support Dr. Kessler's allegation that cigarette companies manipulate nicotine levels to "addict" their customers.

2076733633-3633 (US 43887).

1734. In a June 14, 1995, letter to the editor of The New York Times, written by James Morgan, then President and CEO of Philip Morris, criticizing an article that The Times had published regarding Philip Morris's research and marketing practices, Morgan claimed that "basic research regarding 'tar' and nicotine ratios was never used in the company's manufacturing processes to alter, much less 'manipulate,' the natural ratio of 'tar' to nicotine in the cigarettes the company sells." 2505560444-0447 at 0445 (US 86934).

1735. An October 18, 1995 Philip Morris press release stated, in part, that "Philip Morris U.S.A. does not use ammonia in the cigarette manufacturing process to increase the amount of nicotine inhaled by the smoker or to 'affect the rate of absorption of nicotine in to [sic] the bloodstream of the smoker,' or to 'increase the potency of the nicotine a smoker actually inhales.'" 2076733634-3634 (US 43888).

1736. Defendants have also prepared internal "talking points" documents to prepare their spokespersons for public comment on important smoking and health issues. For example, on July 8, 1994, Christopher Proctor sent to all General Managers, BAT Corporate Affairs Managers, and BATCo Board members a memorandum including "Questions and Answers related to U.S. hearings." Recipients were told to use the materials in response to questions from media and staff. Regarding nicotine, BATCo's response was that "BAT does not 'manipulate' the level of nicotine in its products." Recipients were also instructed to respond to questions regarding addiction that

"BAT does not ‘spike' its tobaccos with nicotine. Smoking is not an addiction." 800335882-5886 at 5884 (US 31906).

1737. B&W issued a press release in 1994 that stated: "B&W does nothing in the manufacture of its tobacco products that increases the level of nicotine above that which is naturally found in the tobacco plant, nor does it artificially increase nicotine." 202337394-7394 (US 21965).

1738. In a June 1994 article, BAT spokesman Ralph Edmonson stated, "It is nonsense to say we want to make people more addicted to nicotine." 502575988-5988 (US 86884).

1739. In a 1994 letter to FDA Commissioner David Kessler, James Johnston, Chairman and CEO of RJR, stated that "R.J. Reynolds Tobacco Company does not increase the nicotine in the tobacco we use in the manufacture of our cigarettes." TLT0730001-0850 at 0798 (US 77011) (emphasis in original).

1740. In 1994, Reynolds placed an advertisement in national media outlets, featuring a photograph of RJR's Chairman James W. Johnston holding a burning cigarette with the following quote in large lettering under the photograph: "WE DO NOT ‘SPIKE' OUR CIGARETTES WITH NICOTINE." In the text of the advertisement, Reynolds claimed that:

> Recently, a TV show accused tobacco companies of somehow “spiking” the level of nicotine in our products to “addict” smokers. As Chairman of a tobacco company and a smoker, I want America's 45 million smokers to know that this is sheer nonsense. At R.J. Reynolds we do not increase the level of nicotine in any of our products in order to “addict” smokers. Instead of increasing the nicotine levels in our products, we have in fact worked hard to decrease “tar” and nicotine. Much of the recent controversy has focused on our use of various techniques that help us reduce the “tar” (and consequently the nicotine) yields of our products.

525722360-2360 (US 86935) (emphasis in original).

1741. In a June 21, 1994 press release, RJR contended that its use of ammonia or ammonia compounds in processing tobacco "do[es] not have any technical or function [sic] effect in the finished product." RJR000000052600906970049344 8-3448 (US 86936).

1742. The Tobacco Institute also drafted a 1994 press release that stated:

> Cigarette manufacturers do not "manipulate" the level of nicotine in various brands. Nicotine levels follow "tar" levels -- as manufacturers have reduced "tar" levels and yields over the years to satisfy changing consumer tastes, nicotine levels and yields have fallen correspondingly.

TIMN328214-8215 (US 21284).

1743. On a March 27, 1994, airing of "Face the Nation," Brennan Dawson, Tobacco Institute Senior Vice President of Public Affairs, stated:

> The industry does take the position that . . . not only do they not add nicotine, but they don't manipulate nicotine. So Congress has been told formally by every cigarette manufacturer in the United States that this claim is without foundation.

TLT0730851-1975 (US 77012).

1744. On October 18, 1995, BAT denied in the press that it had "doctored its cigarettes" based on reports from America that ammonia could boost nicotine delivery. BAT stated that "[t]here is no way we add anything to enhance the nicotine." ARU6532615-2615 (US 86883).

1745. Defendants' public denials were likewise reflected in submissions to government bodies. For example, on January 2, 1996, RJR submitted its "Comments of R.J. Reynolds Tobacco Company Concerning FDA's Jurisdictional Analysis" to the Food and Drug Administration. Reynolds stated in its comments that its decades of research concerning nicotine "[did] not reflect an intent to provide smokers with pharmacologically active 'doses' of nicotine. . . . Reynolds's

cigarette design research and the cigarettes that Reynolds has marketed and advertised to smokers demonstrate an intent to provide smoking taste and pleasure." 515639064-9121 at 9070 (US 86939).

1746. In the late 1990s, an RJR scientist gave a presentation to the World Health Organization in which he denied that Reynolds was using ammonia to manipulate nicotine delivery in its cigarettes. Suber PD, United States v. Philip Morris, 7/18/02, 47:15-48:18.

1747. A spokeswoman for RJR told The New York Times in February 1998 that "nicotine levels were not a 'design characteristic' in developing cigarettes . . . [and that its] 'research through the years has focused on reducing total tar and nicotine yield.'" RJR000000014102362470046695 2-6957 at 6954 (US 86941).

1748. On January 29, 1998, Altria CEO Geoffrey Bible testified before the House of Representatives Commerce Committee in hearings that were televised nationwide. Bible stated:

> I'm told that ammonium compounds are used in two ways in our products. In the first instance they are used as a blending agent in the manufacture of what is called sheet tobacco, which is included in the cigarette. . . . It is also used as a flavor. But I'm also told that the ammonium compounds that are used in the cigarettes we sell do not cause the amount of nicotine in smoke to rise. It does not change the form of the nicotine that goes to the brain. And it may result in a slight increase in the amount of nicotine in the mouth, . . . but that the nicotine absorbed through the mouth reaches the brain more slowly than nicotine absorbed through the lung.

MTP0030945-0986 at 0969 (US 76202); 2078124371-4372 at 4371 (US 86938).

1749. In a February 24, 1998 letter to The New York Times written by Peggy Roberts, Director of External Relations, Philip Morris stated that "its use of ammonia compounds in the cigarette manufacturing process does not increase the amount of nicotine delivered to the smoker,

does not increase the amount of nicotine absorbed in the lungs of the smoker, and does not affect the form of nicotine delivered to the smoker's brain." 2076733606-3607 at 3606 (US 43886).

1750. In the 1990s, Brennan Dawson communicated Defendants' public position that "nothing in the cigarette manufacturing process is done with an eye toward manipulating nicotine levels. . . . It's all done with taste in mind." Dawson WD, 63:8-18; BWC3930802-0806 at 0803 (US 86937). Dawson told the Wall Street Journal that nicotine levels "follow" tar levels. BWC3930802-0806 at 0803 (US 86937).

1751. Defendants' public denials of nicotine manipulation continue. As of 2004, Philip Morris's current public Internet website states that: "[S]ome have alleged that we use specific ingredients to affect nicotine delivery to smokers. That is simply not true." ARG0540406-0407 at 0406 (US 88058).

1752. As of 2004, RJR's public Internet website states that RJR "do[es] not add nicotine or any nicotinic compounds to any of our cigarettes, nor do we do anything to enhance the effects of nicotine on the smoker." This statement has been on RJR's website for several years. TLT1020067-0069 at 0067 (US 86942); (no bates) (JD 068012 at 108).

1753. As of 2004, B&W's current public Internet website states that: "Brown & Williamson does not in any way control the level or nature of nicotine in cigarettes to induce people to start smoking or to prevent people from quitting." TLT0770044-0049 at 0044 (US 86656).

c. Testimony Consistent with Fraudulent Public Statements

1754. In deposition and trial testimony, and in discovery responses, Defendants have made the same or corresponding statements denying their ability and efforts to control nicotine.

1755. On June 21, 2002, Hector Alonso, Vice President of Product Development and Technology at Philip Morris, when asked "Does Philip Morris exercise any control over the level of nicotine in the cigarettes that it sells," answered unequivocally "No." Alonso further stated that Philip Morris controls tar delivery, and repeated the oft-invoked public industry position that nicotine follows tar. Alonso PD, United States v. Philip Morris, 6/21/02, 51:6-51:9.

1756. Liggett continues to deny that it manipulates nicotine. In its Answer to the United States' Complaint filed in this case, Liggett stated: "Liggett admits that it has stated in the past and does now state that it does not manipulate nicotine levels." Answer of Liggett Group Inc. to Plaintiff's Complaint for Damages and Injunctive and Declaratory Relief (R. 180, filed 10/30/2000), at ¶¶ 77, 78-80, 82.

1757. Timothy Jackson, Vice President for Operations at Vector Tobacco, the holding company of Liggett as of September 2000, testified in this action that he was "not aware of . . . any way that nicotine is controlled through cigarette design." Jackson also testified that the delivery of nicotine is "directly relat[ed] to tar delivery." Prior to the time that Jackson became Vice President for Operations, he was the President of Liggett Operations for three years and had worked at Liggett since 1983. Jackson's duties at both Liggett and Vector include overseeing all areas relevant to the manufacture of cigarettes. Jackson also participated substantially in the design and manufacture of the Quest cigarette, which expressly and intentionally contains different levels of nicotine. Jackson PD, United States v. Philip Morris, 3/21/03, 8:16-9:1; 27:12-28:3; 11:15-11:19, 18:23-19:13, 65:20-21; 65:2-65:20; 67:16-67:22; 66:23-68:2.

4. Conclusions

1758. The Defendants have repeatedly made vigorous and impassioned public denials -- before Congressional committees, in advertisements in the national print media, and on television -- that neither smoking nor nicotine is addictive, and that they do not manipulate, alter, or control the amount of nicotine contained in the cigarettes they manufacture. The Findings of Fact contained in this Section and Section V(B), supra, provide overwhelming evidence that those statements are false.

1759. As established by the Findings of Fact set forth in this Section, cigarette company Defendants researched, developed, and implemented many different methods and processes to control the delivery and absorption of the optimum amount of nicotine which would create and sustain smokers' addiction. These methods and processes included, but were not limited to: altering the physical and chemical make-up of tobacco leaf blends and filler; maintaining or increasing the nicotine to tar ratio by changing filter design, ventilation and air dilution processes, and the porosity and composition of filter paper; altering smoke pH by adding ammonia to speed nicotine absorption by the central nervous system; and using other additives to increase the potency of nicotine.

1760. The fact that some of these methods and processes may also have been used, as Defendants argued, to improve flavor and taste, especially of low tar cigarettes as they were developed in response to the fears of the public about the adverse health effects of smoking, is in no way inconsistent with these Findings of Fact that Defendants also used them to manipulate, and increase the amount and form of nicotine delivered in cigarettes.

1761. Nor is the fact that during the 1970s, the public health community may have encouraged the development of low tar cigarettes because it believed -- erroneously -- that nicotine levels would fall as tar levels fell, in any way inconsistent with these Findings of Fact. What the

public health community did or did not know is irrelevant to the issue of what Defendants knew about the relationship between nicotine and tar and whether they knowingly made false public statements about that relationship.

1762. The words of Defendants themselves establish that the goal of their extensive efforts, through research and experimentation, to control the levels of nicotine delivery was to ensure that smokers obtained sufficient nicotine to create and sustain addiction:

> -- Philip Morris listed as one of the achievements of its Electrophysiological Studies Research Group a discovery "that there are optimal cigarette nicotine deliveries for producing the most favorable physiological and behavioral responses." ¶947, supra.
>
> -- RJR's "top priority [was] to develop and market low 'tar' brands . . . that: [m]aximize the physiological satisfaction per puff -- the single most important need of smokers." ¶1431, supra.
>
> -- BATCo named as a "high priority" development of "alternative designs (that do not invite obvious criticism) which will allow the smoker to obtain significant enhanced deliveries should he so wish." ¶1460, supra.
>
> -- The "major objective" of Lorillard's study of filter design was to "increase the physiological impact and/or nicotine to tar ratio in ultra low tar cigarettes." ¶1488, supra.

1763. In sum, the evidence as presented in these Findings of Fact is overwhelming that Defendants have, over the course of many years, time and again -- and with great self-righteousness -- denied that they manipulated the nicotine in cigarettes so as to increase the addiction and dependence of smokers. Those denials were false.

D. The Government Has Failed to Prove by a Preponderance of the Evidence that Defendants Deliberately Chose Not to Utilize or Market Feasible Designs or Product Features that Could Produce Less Hazardous Cigarettes.

1. Introduction

1764. The cigarette company Defendants have made many efforts and have used many different scientific approaches, over the last forty years, to develop and market less hazardous cigarettes. These Defendants knew that there was an enormous market for such cigarettes and an enormous profit to be made by whichever company was first to achieve success. For that reason, they invested hundreds of millions of dollars, as well as the time and creativity of hundreds of scientists and technical assistants, to reach that goal. They still failed.

1765. The Government alleges that the Defendants failed because they did not wish to undermine the commercial viability of their existing brands by suggesting that they were less safe, or provide any ammunition to plaintiffs in the smoking and health litigation which they greatly feared. Based on the facts presented, infra, however, the Court cannot find that the Government has proved, by a preponderance of the evidence, that the cigarette company Defendants deliberately chose not to develop, market, and profit from less hazardous cigarettes in order to insulate their existing brands from competition and reduce their litigation exposure.

2. Defendants Have Long Acknowledged Internally the Existence of a Market for a Genuinely Less Hazardous Cigarette[18]

1766. Over the past four decades, the cigarette company Defendants have repeatedly recognized consumer interest in smoking cigarettes that are truly less hazardous. See Harris WD, 140:3-145.

1767. In a June 1966 report by Philip Morris researcher Myron E. Johnston, Jr., sent to top scientists Helmut Wakeham and Robert Seligman, Johnston noted: "If we could develop a . . . 'healthy' cigarette that tasted exactly like a Marlboro, delivered the nicotine of a Marlboro, and was called Marlboro, it would probably become the best selling brand." 1000338644–8671 at 8651 (US 21487).

1768. Similarly, in a May 25, 1966 report to Lorillard President J.E. Bennett, Alexander Spears, then Lorillard's Director of Basic Research and later its Chief Executive Officer, wrote that the development and marketing of a cigarette that yielded tar with "little or no tumorigenic [capable of causing tumors] response [in mouseskin painting tests], would be regarded as a highly significant development by the scientific community":

> Undoubtedly, such a product would place the corporation in a highly enviable position, and in the writer's opinion a two or threefold increase in sales could result within a short period. . . . On the other hand, if we fail to pursue this research and/or a competitor marketed a cigarette whose smoke condensate gave little tumorigenic response, the writer is of the opinion that a significant sales loss could result.

81577610-7625 at 7611-7612 (US 55403).

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[18] The Court is distinguishing between cigarettes which actually reduce the smoker's consumption of harmful constituents and those which, despite their marketing, do not (e.g., light/low tar cigarettes). See Section V(E), infra.

1769. In discussing one scientist's conception of a "safe cigarette" in its "Long Range Strategic Plan; External Forecast; 1979-1983," RJR noted internally: "If this concept received national consumer media, such as Reader's Digest, the dynamics of demand in the marketplace could change dramatically." 500676525-6577 at 6540 (US 22087).

1770. Lorillard also recognized that the first cigarette company to market a less hazardous cigarette successfully would reap substantial and unilateral financial rewards. In a November 1977 letter, Benito Vila of Lorillard wrote to company marketing executive Richard E. Smith that since "I don't know of any smoker who at some point hasn't wished he didn't smoke," "I am 100% sure we would have a gigantic brand" if Lorillard could develop an acceptable alternative method to deliver nicotine. 01244294-4299 at 4294 (US 21419).

1771. An undated draft memorandum, titled "Notes on Group Research and Development Conference, March 1978," found in the files of S.J. Green, who served as a scientist, manager, and director of BATCo's Research and Development Department in the late 1970's, recognized that a "reduced biological activity" cigarette could be made and offered many "marketing opportunities":

> Cigarettes of substantially reduced biological activity (SRBA) can be made by product modification and will continue to present a range of marketing opportunities. By SRBA is meant cigarettes where epidemiology would show no greater incidence of disease for smokers than non-smokers. But there remains a need for credible biological tests to facilitate developments. Credibility will continually evolve but could be provided by outside independent medical and scientific advice. . . . Defensive research will need to be provided for as far ahead as can be seen and this may well include social aspects.

110083832-3838 at 3837-3838 (US 34964).

1772. Similarly, in a March 14, 1983 interoffice memorandum from RJR's R.A. Lloyd, Jr., Brand Manager, to Mike McKee, a Manager in the New Brands and Strategic Research Department, Lloyd commented on recent patents applied for or granted to Philip Morris and Imperial Tobacco Company:

> It is quite likely that smoking devices similar to those described in these patents or other new products perceived as "safer" will be introduced to the marketplace within the next few years by major tobacco companies. The company which can introduce such products, which also supply a degree of user satisfaction which approaches that of current cigarette products, will become the dominate [sic] company in the industry almost overnight. It is reasonable to assume that the company who introduces such a product might capture as much as 25 share points in the first year if supply could keep pace with demand.

501541129-1132 at 1131 (US 21740).

1773. And again in 1990, Philip Morris indicated to the Altria Board of Directors that "[w]e believe there is a potential consumer demand for a radically new smoking device that will provide a pleasurable smoking experience, address consumer concerns about health risks and social acceptability, and still be a profitable business venture." 2046741061-1074 at 1061 (US 22185).

1774. In early 2001, B&W stated that the development and marketing of potentially reduced exposure cigarettes, "[f]rom a strategic standpoint, . . . represent both a defensive need as well as an offensive opportunity." 271098692-8695 at 8694 (US 22033) (Confidential).

3. Defendants Received Conflicting Messages From the Government and the Public Health Community About Their Efforts to Create and Market Less Hazardous Cigarettes

1775. Over the last few decades, Defendants have received inconsistent messages from the government and the public health community regarding their efforts to create and market less

hazardous cigarettes. Beginning in the 1950s, public health authorities, including the Surgeon General, pushed the industry to develop lower tar/nicotine cigarettes and other nonconventional less hazardous cigarettes. In the 1960s, public health authorities, including the Surgeon General, began emphasizing the need for consumers who could not quit to compare brands, using the FTC uniform system for cigarette labeling, in order that they might choose which is the least harmful to their health. At the same time, the FTC prosecuted cigarette manufacturers for their low tar/less hazardous cigarette advertisements if they could not substantiate the health claims made.

1776. During the late 1940s and early 1950s, the FTC brought a series of cases alleging that the cigarette companies were engaging in unfair and deceptive advertising, involving what the FTC considered to be unsubstantiated health claims. Langenfeld WD, 37:15-23.

1777. Cigarette brands directly affected by the FTC formal actions during this period made up roughly 70 percent of all the cigarettes sold in the United States in 1954, and the companies subject to the various consent decrees or other compliance agreements with the FTC sold virtually all the cigarettes sold in the United States in 1954. Langenfeld WD, 37:24-39:6.

1778. The first such action occurred when the FTC brought proceedings against Brown & Williamson for Raleigh cigarette advertisements that stated "Right for taste and right for the throat!" beginning in 1947. Brown & Williamson ultimately agreed to cease making the claim. Langenfeld WD, 39:12-21.

1779. Beginning in 1950, the FTC also successfully challenged several health related claims made in R.J. Reynolds's advertisements of Camel cigarettes. (no bates) (JD 061525).

1780. In 1950, the FTC successfully challenged Lorillard's advertisements that Old Gold cigarettes were lowest in nicotine and throat-irritating tars and resins. Langenfeld WD, 42:5-43:11.

1781. During 1951 and 1952, the FTC brought challenges to advertisements for several Philip Morris cigarettes and American Tobacco Company's Lucky Strikes cigarettes. Langenfeld WD, 43:16-47:2. The FTC found that Philip Morris's ads had made several unsubstantiated health claims. After Philip Morris assured the FTC that it had abandoned the ads, the complaint was dismissed. The FTC also pursued challenges to Chesterfield advertisements run by Liggett. Langenfeld WD, 47:3-49:4.

1782. Despite the claim of Government expert Dr. Harris that the FTC had "toothless involvement," (Harris TT, 10/14/04, 2548:4-6) the Court finds that these successful FTC legal challenges undoubtedly discouraged Defendants from continuing to advertise the health benefits of their cigarettes.

1783. There was also public criticism during this time of the substance of Defendants' health claims. For example, a December 21, 1953, article in Advertising Age, titled "Cigaret Makers Urged to Purge Medical Claim," stated:

> Cigaret advertisers were urged today by the National Better Business Bureaus to adopt an eight-point code to eliminate unfounded health claims in cigaret advertising. Kenneth B. Wilson, NBBB President said . . . the code should be adopted . . . because of growing evidence that the general public bitterly resents the use of deceptive "health" claims in cigaret advertising and because public resentment of objectionable cigaret advertising impairs public confidence in all advertising.

(no bates) (JD 043377).

1784. Still, some health claims continued. For example, an April 19, 1954, issue of Newsweek magazine contains an advertisement in which Lorillard compares its Kent Micronite filter to cellulose and cotton filters, asserting that its filter is best: "If you need the protection of a filter cigarette . . . get KENT, the cigarette that takes out far more nicotine and tars than any other filter

cigarette, old or new." The same edition of Newsweek contains an advertisement for Viceroy cigarettes, touting its Estron filter and proclaiming that Viceroy gives you "double filtering action." (no bates) (JD 011827).

1785. Likewise, the Kent "Voice of Wisdom" Campaign, which continued into 1955, also contained health claims. See generally, Harris TT, 10/18/04, 2727-2739.

1786. Notwithstanding the successful FTC challenges in the early 1950s, Defendants did continue to make health claims. As a result, the FTC issued a letter in 1954 to all tobacco companies announcing its intention to adopt uniform standards for cigarette advertising "to prevent the use of false or misleading claims." (no bates) (JD 000332 at 276).

1787. In 1955, the FTC adopted the "Cigarette Advertising Guides," proscribing any implicit or explicit health claims in cigarette advertising. The Guides did, however, allow comparative ads claiming that a cigarette was "low in nicotine or tars" provided it has "been established by competent scientific proof applicable at the time of dissemination that the claim is true, and if true, that such difference or differences are significant." 50202 3956-3957 at 3957 (JD 003616); (JD 021949).

1788. Given this exception, and calls from the public health community to develop cigarettes with reduced tar yields, the American cigarette manufacturers responded by the mid to late 1950s with a heated "tar derby" of competing claims about the effectiveness of various filters: "[C]igarette companies advertised that certain brands were lower in 'tar' and nicotine and, by implication, less dangerous." (no bates) (JD 001032 at 1-49, n.174). See also (no bates) (JD 004344 at 8343). See Section V(E), infra.

1789. Faced with the "tar derby" and perceived consumer confusion, the FTC concluded that, "[i]n the absence of uniform testing procedures, it was impossible to make claims about 'tar' and nicotine levels that could be substantiated . . . ." (no bates) (JD 001032 at 1-49, n.174).

1790. Accordingly, on December 17, 1959, the FTC informed tobacco manufacturers that it would henceforth consider "all representations of low or reduced tar or nicotine, whether by filtration or otherwise . . . as health claims" that would be barred in advertising. 1005150070 (JD 004534). The FTC considered that simply listing tar and nicotine deliveries constituted an implied health claim that those cigarettes would be less harmful. Harris TT, 10/19/04, 2902:19-2903:3. The FTC further "inform[ed] the industry that in its opinion the evidence then available would support a complaint against any marketer who made any reference to tar or nicotine content, charging that such a reference was false and misleading." 670310575-588 at 3 (JD 040931).

1791. A month later, the FTC requested that the cigarette manufacturers agree to stop all references to tar and nicotine in their advertising, and the manufacturers acceded. See, e.g., 1005150056-57 (JD 004535); 1005150051-52 (JD 003617).

1792. The FTC threatened to sue the tobacco companies if they did not comply with the ban on tar and nicotine advertising. 670310575-588 (JD 040931 at 3); 501016129 (JD 000706); 521058489 (JD 000543).

1793. In 1964, the FTC chose not to adopt certain cigarette advertising restrictions because the industry had adopted its own the provisions on health-related advertising in the 1964 Advertising Code. Langenfeld TT, 3/10/05, 15195:12-16; see also Langenfeld WD, 63:14-68:20.

1794. As detailed in Section V(E)(1)(b), infra, the FTC, in 1971, later reversed this policy, adopted its own standardized test method for determining tar and nicotine yields for cigarettes, and

first permitted, then later required, that cigarette manufacturers advertise the tar and nicotine yields of their cigarettes. The new FTC policy was driven by two goals: (1) publishing standardized information so that consumers could meaningfully compare brands; and (2) creating an incentive for the tobacco companies to compete on FTC-measured tar yields, thereby bringing more low tar products to the market. See ¶2051, infra.

1795. In 1999, the FDA commissioned the Institute of Medicine to formulate standards by which "potential reduced-exposure products," or "PREPs" could be assessed. In 2001, an Institute of Medicine Committee published a report highlighting the significant gaps in knowledge about the mechanisms of smoking-related diseases and the resulting difficulties in evaluating reduced risk. 99053048-3558 (JE 032485). The Committee recognized that manufacturers must "have the necessary incentive to develop and market products that reduce exposure to tobacco toxicants." Id. at 99053068 (emphasis in original). The IOM stressed that "the confidence with which the adverse effects or harm reduction potential of PREPs can be extrapolated, especially at low doses, is uncertain." Id. at 99053071. Finally, the Committee concluded that "[t]here is no one panel or group of tests that the committee could recommend at this time that would, as a whole, serve to assure that morbidity and mortality would decrease with use of [cigarette design modifications]." Id. at 99053253.

4. As Part of the Effort to Make Less Hazardous Cigarettes, Defendants Experimented with General and Selective Reduction

a. General Reduction

1796. The technique of general reduction attempts to reduce the inherent risks of cigarette smoking by decreasing the levels of all mainstream smoke constituents. Townsend WD, 79:5-9.

Since the 1950s, the Defendant cigarette manufacturers have developed and implemented means for general reduction in commercial cigarettes. Townsend WD, 79:10-16; Whidby WD, 29:4-30:1. Coggins, United States Dep. 6/27/02, 23:2-14.

1797. The general theory behind across the board filtration stems from a basic toxicology principle that "less ought to be better." Townsend WD, 80:9-18. In other words, if the smoke yield is reduced, a smoker's exposure to smoke will be reduced, and the smoker's health risks will also be reduced. Id.

1798. Successful general reduction techniques include the use of more efficient filters, the use of processed tobacco labeled reconstituted tobacco; the use of processed tobacco labeled expanded tobacco; reduction of the circumference of the cigarette which leads to burning less tobacco; the use of filter ventilation; the use of porous cigarette paper; and the use of faster burning papers. Townsend WD, 85:1-86:3 (discussing JDEM 060489). All of the cigarette manufacturing Defendants have used each of these general reduction techniques in cigarettes that are sold commercially. Townsend WD, 86:4-6; Townsend TT, 10/7/04, 1856-24-1857:8.

1799. Since the 1950s, the medical, scientific, and public health communities have offered guidance or suggestions about worthwhile general reduction techniques which should be explored. Townsend WD, 80:19-82:19; Robinson, United States Dep., 11/13/03, at 293:12-295:23; (no bates) (JD 000826 at 43). In the 1960s, Drs. Ernst L. Wynder and Hoffman stated that the "most important first step toward the reduction of the tumorigenic and cilia-toxic activity of cigarette smoke" was to encourage the cigarette industry to manufacture and promote cigarettes with low tar and nicotine levels. Townsend WD, 81:11-14; see also (no bates) (JD 000742 at 535).

1800. Since the cigarette manufacturer Defendants developed and incorporated various techniques for the general reduction of mainstream smoke constituents, there has been a 60% reduction in total amount of mainstream smoke generated from each cigarette on a sales-weighted average basis, as measured by the FTC method. Townsend WD, 79:12-16; Farone TT, 10/12/04, 2042:9-18.

1801. As noted, the use of filters is one way that cigarette companies are able to achieve a general reduction of cigarette smoke. Cigarette filters trap smoke particles through a variety of physical mechanisms in order to achieve substantial reductions in the yields of tar and nicotine. Townsend WD, 86:14-17; see also (no bates) (JD 000682 at 321-22).

1802. Although it is possible to design a filter that has 99.9-plus percent removal efficiency, Townsend WD,89:23-90:3, these have not been proven to be acceptable to consumers because they are very difficult to draw smoke from. Id.; see also 501543929-3943 at 3941 (JD 060075).

1803. Another general reduction technique is the use of reconstituted tobacco sheet ("RTS"). Townsend WD, 90:5-12. Reconstituting tobacco was a process invented in the late 1940s. It collects the small pieces of tobacco that are generated through the processing of tobacco, but are too small to be used in cigarettes. Id. Small pieces of lamina, tobacco dust, and tobacco stems are used in manufacturing reconstituted tobacco. These materials are placed into a centrifuge to which water is then added. The water extracts materials from the tobacco, including nicotine and flavor components, which are separated from the pulp that is created by the centrifuge. The tobacco pulp is then made into paper and the materials that were separated from the pulp are reapplied to the paper. This sheet is then dried and cut into pieces that can be used in cigarette manufacturing. Townsend WD, 91:2-11 (discussing JDEM 060507).

1804. The nicotine content of RTS is far less than that of the components that initially go into its making. Townsend WD, 92:8-14. In addition to having lower tar and nicotine yields, reconstituted tobacco, when burned, produces tar with lower biological activity. Townsend WD, 92:18-23.

1805. Another approach to the general reduction of smoke yields is to burn less tobacco. At various times since the 1950s, Defendants have reduced the circumference and length of the tobacco rod of their commercial cigarettes. Townsend WD, 94:4-6. As a result, less tobacco is used to fill the rod. With less tobacco available to be burned, the tar and nicotine yields of cigarettes are reduced. Townsend WD, 93:21-22; see also Townsend WD, 94:22-95:4.

1806. In addition, Defendants use expanded tobacco. Townsend WD, 94:7-10; 500965533-5569 (JD 060222). To expand tobacco, it is placed in carbon dioxide under very high pressure, which is then quickly released. The carbon dioxide escapes from the tobacco and actually expands its size, much like what happens with popcorn. Townsend WD, 94:12-18. The larger volume of expanded tobacco allows defendants to use less tobacco per cigarette, leading to an overall reduction in tar and nicotine yields. Townsend WD, 94:22-95:4; Mosberg, United States Dep., 4/23/02 at 151:25-152:18.

1807. Air dilution, through use of filters and porous paper, is another general reduction technique employed by the cigarette manufacturing Defendants. Townsend WD, 97:3-6. The introduction of air into the cigarette via these techniques reduces the amount of tobacco that is burned because less air is drawn through the tobacco column. Consequently, total smoke yields are reduced. Townsend WD, 98:9-12. The cigarette manufacturer Defendants have been using air diluted filters in commercial cigarettes since the 1950s and 1960s. Townsend WD, 98:13-20.

1808. Filter ventilation refers to the placement of perforations or vent holes in a cigarette filter. When a smoker or a smoking machine smokes the cigarette, air is drawn from the outside through the holes. That air from the outside mixes with the smoke thereby diluting it and reducing the tar and nicotine yields.[19] Townsend WD, 97:10-98:4.

1809. Defendants have also increased paper porosity, an air dilution technique that functions similarly to filter ventilation. Townsend WD, 98:5-8. With this technique, the cigarette paper wrapping the tobacco rod can be made very porous so that more fresh air enters the tobacco during puffing, diluting the smoke. Id. The public health community has supported the use of porous paper as a method of reducing tar and nicotine yields, as well as certain gas phase components. (no bates) (JD 000866 at 454-455).

1810. Significant reductions in mainstream smoke constituents have been realized by use of the general reduction techniques discussed above. Townsend WD, 103:19-23. For example, Reynolds's Winston cigarette in the mid-1950s yielded approximately 38 milligrams of tar per cigarette. Today's Winston, by virtue of various general reduction techniques such as improved filters, longer filters, porous paper, circumference reduction, and use of expanded tobacco, now yields approximately 15 milligrams per cigarette. Townsend WD, 102:1-103:4 (discussing JDEM 060493); see also 512784375-4400 (JD 060155); 51157877-7916 (JD 062534).

b. Selective Reduction

1811. Since the 1950s, Defendants have also employed selective reduction techniques to develop potentially less hazardous cigarettes. Townsend WD, 22:6-13. See also id. at 31:1-33:2,

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[19] There are conditions under which a ventilated cigarette yields higher tar and nicotine levels than those measured using the FTC method. See Section V(C)(2)(c)((2)), supra.

40:15-41:2, 42:20-43:2; Whidby WD, 29:4-12; 30:17-19. The theory behind selective reduction is that, if a compound in cigarette smoke which is responsible for the inherent health risks of smoking is reduced or eliminated, the health risks of smoking should decrease. Townsend WD, 32:12-21; see also id. at 44:1-6.

1812. Cigarette smoke is composed of thousands of compounds which exist in very low amounts. Id. at 35:14-18; 38:1-7; 44:9-12; see also Farone TT, 10/6/04, 1719:8-1721:25. For that reason, efforts to develop less hazardous products through selective reduction have proven difficult. In addition, efforts to reduce certain constituents or compounds can actually cause an increase in other harmful constituents or compounds.

1813. Over the past 50 years, Defendants have attempted to reduce selectively Benzo(a)pyrene, phenols, ciliastats, and tobacco-specific nitrosamines ("TSNAs"), among many others, because these compounds are proven to be hazardous to smokers. Townsend WD, 44:13-73:2. While the attempts to incorporate these selective reduction techniques in many commercial cigarettes have not won consumer approval, the following facts demonstrate the substantial efforts Defendants have made to research and utilize selective reduction in order to manufacture potentially less hazardous cigarettes.

(1) Defendants' Efforts to Reduce Benzo(a)pyrene

1814. Benzo(a)pyrene ("BaP") is formed from the cigarette combustion mechanisms that take place during smoking. BaP is only one of the many polycyclic aromatic hydrocarbons (PAHs) present in cigarette smoke. Robinson, United States Dep., 11/13/03, 255:8-22.

1815. Defendants have attempted to remove or reduce selectively both BaP and other PAHs. Id. at 22:14-23:15, 46:11-47:9, 49:3-12, 51:20-52:2, 54:21-56:3; Rodgman, United States Dep.,

6/26/02, 227:7-229:23; (no bates) JD 060507; Lilly, United States Dep., 5/14/02, 145:5-146:3; Lilly, United States Dep., 5/15/02, 73:24-75:3; Farone TT, 10/6/04, 1693:16-1694:19; 1001532403 (US 35549); 1001532384-2388 at 2385 (US 35548); 1004858161-8166 at 8163 (US 35920); Robinson, United States, Dep., 11/12/03, 209:3-12; 213:7-25; 214:1-10; 255:8-22.

1816. Lorillard became interested in reducing the levels of benzo(a)pyrene in cigarette smoke after the noted researcher, Dr. Wynder, suggested that it might be responsible for the biological effects of cigarette smoke condensate observed in mouse skin-painting experiments. Robinson, United States Dep., 11/12/03, 213:7-25. In the 1950s, Lorillard engaged in collaborative research efforts with Drs. Wynder and Hoffman, and sponsored research at Armour Research Foundation, in an effort to determine how to reduce levels of benzo(a)pyrene in cigarette smoke. Robinson, United States Dep., 11/12/03, 209:3-12. However, Drs. Wynder and Hoffman found that adding nitrates to cigarettes reduced BaP, but increased tobacco-specific nitrosamines, which are carcinogenic compounds. Townsend WD, 23:9-15.

1817. Lorillard eventually developed technologies associated with reconstituted leaf, puffed tobacco, filter technology and some paper technology that substantially lowered those BAP levels. Robinson, United States Dep., 11/12/03, 214:1-10.

(2) Defendants' Efforts to Reduce Phenols Through Use of Charcoal Filtered Cigarettes

1818. Phenols are a group of toxic, volatile compounds in cigarette smoke which act as tumor promoters. Townsend WD, 52:17-53:2; JD 000742 (at 231).

1819. Defendants have worked to remove or reduce phenols and have competed in development of product innovations that might accomplish this goal. Townsend WD, 53:5-6, 52:22-

53:2; (no bates) JD 060241; Wakeham, Hoberman and Hulse Dep., 9/26/97, 88:5-89:11, 89:20-90:16; (no bates) (US 22034); Robinson, United States Dep., 11/12/03, 211:8-212:1, 212:4-18; 213:2-6. For example, Defendants have used carbon and cellulose acetate filters to remove some of the more volatile phenols. Townsend WD, 54:21-55:3, 55:9-12; Whidby WD, 66:17-19.

1820. In the early 1960s, Lorillard came out with its phenol-reducing filter. On May 23, 1962, Lorillard announced that "Kent had a new filter with a 90% efficiency for phenol." Harris WD, 107:7-11. Thereafter, Lorillard actively and continuously promoted the potential health advantages of its phenol-reducing filter in its advertising and "persisted in advertising the health advantages of the phenol-reducing process in its new Micronite filter." Id. at 110:5-14.

1821. BATCo and Brown & Williamson also researched phenol reduction. In 1962, the BAT Group convened a conference of its affiliated companies, including Brown & Williamson, to discuss strategy for reduction of phenols. 107468730-8764 (US 20252). In the early 1960s, Brown & Williamson scientist R.B. Griffith developed a prototype three-part filter -- consisting of a Millecel gray paper filter treated with potassium carbonate, a charcoal center section, and mouthpiece including cellulose acetate treated with a plasticizer -- aimed at removing phenols as well as other gas phase compounds and particulate matter. 01124441-4444 (US 22034).

1822. Defendants have researched and designed charcoal-filtered cigarettes[20] in order to reduce phenols. Charcoal filters were first introduced in 1954 in American Tobacco's Tareyton cigarette, and quickly became a focal point of selective reduction efforts when, in 1962, researchers

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[20] The terms "charcoal" or "activated carbon" were often used interchangeably during the trial to describe these filters. See, e.g., Townsend TT, 3/8/05, 14675:25-14676:16. For the sake of simplicity, the Court uses the term "charcoal" to refer to filters containing activated carbon material.

Ernst Wynder and Dietrich Hoffman published an article stating that reduction of phenols in cigarette smoke would be a good path to take to reduce the risks of cigarette smoking. Harris TT, 10/18/04, 2784:14-18. As discussed in more detail below, after the publication of Wynder's article, Defendants marketed a series of charcoal filtered products that were commercially available throughout the 1960s. Harris TT, 10/18/04, 2784:22-2785:2.

1823. For example, Brown & Williamson tested and marketed Avalon, which utilized charcoal filters, but the product was quickly withdrawn. (no bates) (JD 010580). Brown & Williamson reported one of the "most frequent criticisms of smoke quality of the AVALON samples" was that "there is a taste associated with carbon [charcoal] filters." Id.

1824. The marketing of charcoal filters was hampered by FTC regulations which prohibited unsubstantiated health claims and prevented Defendants from informing consumers of potential benefits from the reduced exposures or deliveries offered by charcoal filters. In fact, the FTC publicly expressed its reservations about statements regarding reduced exposures or deliveries offered by charcoal filters. In its June 30, 1967 Report to Congress, the FTC complained about alleged "comparatively overt attempts to allay health anxieties . . . made by manufacturers of charcoal filtered cigarettes . . . creating the impression that these filters prevent the passage of tars and gaseous effusions." 92382035-2095 at 2058 (US 57179). Consequently, Defendants did not feel free to communicate the potential health benefits of charcoal filtered cigarettes. Had such benefits been communicated, consumer acceptance might have been higher despite the unpleasant taste associated with the filters. Townsend WD, 26:16-27:2; 27:16-28:4; (no bates) (US 342223); (no bates) (US 20092 at 2).

1825. Each Defendant has, at one time or another, marketed a charcoal-filtered cigarette, and charcoal filtered cigarettes remain in the marketplace today. Farone TT, 10/6/04, 1747:14-20.

(a) Philip Morris

1826. In 1964, Philip Morris test marketed the Saratoga cigarette, which used a charcoal filter and which was, in the view of a Philip Morris researcher, "superior to anything in the market place" from a health standpoint. Results of research Philip Morris conducted in 1969 on the biological effects of whole fresh smoke and the gas phase of cigarette smoke in unfiltered and charcoal-filtered cigarettes included the finding that, "[c]arbon filters effectively reduce the biologically active components of smoke." 1000036347-6366 at 6354 (US 20070). Philip Morris discontinued production in 1964 after the initial phase of testing, citing poor taste and lack of consumer acceptance. 1000307159-7164 at 7160-61 (US 20092).

1827. When Philip Morris introduced the Saratoga brand, it did not advertise its potential for harm reduction because it feared that an explicit health claim would violate the 1955 FTC Cigarette Advertising Guides. Harris TT, 10/18/04, 2790:24-2791:3. In an October 18, 1964 presentation, Helmut Wakeham, Philip Morris's Director of Research, told the Board of Directors:

> With these [invivo mucus flow and respiratory dynamics] tests as criteria we did put together a charcoal filter product with performance superior to anything in the market place. That product was known as Saratoga. Physiologically it was an outstanding cigarette. Unfortunately then after much discussion we decided not to tell the physiological story which might have appealed to a health conscious segment of the market. The product as test marketed didn't have good 'taste' and consequently was unacceptable to the public ignorant of its physiological superiority.
>
> Strenuous efforts by Manufacturing, Leaf, and R & D to improve the taste of Saratoga were underway when the Smoking and Health Report was issued. These efforts resulted in Philip Morris USA Multifilter which has both good taste and good physiological

> performance and which was introduced into the market place last spring.
>
> For this product we did embark on a publication and endorsement program but it was, I fear, a case of "too little and too late." The imposition of FTC rules and the Industry Advertising Code took the starch out of the program although we did make an oral presentation of the mucus flow results at a scientific meeting in Chicago.

(no bates) (US 20092 at 1-3).

1828. Even though the Saratoga cigarette was initially withdrawn from test market, it was re-introduced to the national market as the Philip Morris Multifilter cigarette in 1964 after efforts were made to improve the taste of the cigarette. Farone, TT, 10/06/2004, 1747:21-23. The Multifilter, which differed somewhat from Saratoga, utilized both charcoal and cellulose acetate [a synthetic adhesive]. Farone TT, 10/06/2004, 1748:7-16. On March 19, 1964, Philip Morris issued a press release regarding the introduction of Multifilter in Lexington, KY. 2010020100-0102 (JD 041241) (APO). The press release contained information regarding the presence of activated charcoal granules in the filter but did not contain any explicit health claim because of the FTC Cigarette Advertising Guides. According to the press release, the Multifilter package had a special insert describing the action of the multi-filter system.

1829. Philip Morris's Multifilter went on the market in 1964. In 1972, its name was changed to Benson & Hedges Multifilter. That product, utilizing a charcoal filter, is still on the market today. In addition to the Benson & Hedges Multifilter, Philip Morris has other cigarette brands on the market which utilize charcoal filters, including Parliament Light 100s, Lark, and Lark Lights. Farone TT, 10/06/2004, 1759:17-1760:16.

1830. Philip Morris has claimed that consumers frequently complain about the poor taste of carbon filter cigarettes. However, in April 1984 Philip Morris reported on a Public Opinion Liking ("POL") Study, a consumer test regularly utilized by Philip Morris to evaluate potential new cigarette brands, that compared a regular Merit cigarette to one utilizing a charcoal filter. The purpose of the study was "[t]o determine consumer acceptability of Merit 85mm with charcoal filter relative to control Merit 85mm." The POL Study Leader summarized the results:

> The results, based on this sample of the control and experimental cigarettes, indicate that the experimental cigarette [the version with the charcoal filter] was preferred and rated significantly higher on the qualitative attributes by the Merit 85mm and Merit Ultra Lights 85mm smokers. These results support previous results from a Richmond Product Placement Panel test . . . run in 1976.

2075008054-8067 at 8054 (US 87572).

1831. Philip Morris's product development efforts involving charcoal filter technology continue to this day with the SCoR project. In the late 1990s, Philip Morris undertook its SCoR program to develop a conventional looking, lit-end cigarette product that removes certain harmful constituents from the cigarette smoke. To accomplish the intended reduced deliveries, Philip Morris included a plug-space-plug filter -- whereby activated carbon is sandwiched in the space between two "plugs" of another filter material. See Alonso PD, United States v. Philip Morris, 7/11/03, 74:24-75:16; 75:18-77:4. In the late 1960s and early 1970s, Philip Morris researched precisely this plug-space-plug design utilizing charcoal. 1000320914-0914 (US 88024) (March 1970 document concerning plug-space-plug filter using carbon, stating that "project is economically feasible"); 1000320619-0619 (US 88025); 2028631322-1339 (US 88022) (November 1974 report); Farone WD, 167:1-8 ("There is nothing in [SCoR] that represents a new technical breakthrough that was

not available in 1980, as far as I've seen."). At the time the trial began, Philip Morris had not yet test-marketed any SCoR product. Szymanczyk WD, 172:9-11.

(b) R.J. Reynolds

1832. Reynolds introduced a carbon filer cigarette, Tempo, in 1964. Townsend WD, 58:18-20. At the time, carbon-filtered cigarettes had less than 5% of the cigarette market. Townsend TT, 3/8/05, 14679:7-8.

1833. After nearly 15 years on the market, Tempo was withdrawn by Reynolds in 1980 due to its lack of consumer acceptance and sales. Townsend TT, 3/8/05, 14679:15-17, 14689:3-9. Although Tempo had achieved approximately .4% of the market when it was launched, after about three to five years on the market, it began a substantial decline to the point where its share of the market was negligible. (no bates) (JD 000879); Townsend TT, 3/8/05, 14686:21-14687:13.

1834. Reynolds continues to research the commercial viability of carbon-filtered cigarettes. Townsend WD, 61:22-62:2.

(c) Lorillard's York Cigarette

1835. Lorillard began marketing its York charcoal filter cigarette in 1963. Coggins, United States Dep., 6/27/02, 122:14-21.

1836. Lorillard analyzed numerous issues relating to carbon filtration, including: (a) carbon types; (b) effect of plasticizers and binders; (c) effects of carbon weight on efficiency; (d) effects of location on the carbon section within the cigarette filter; (e) effects of aging on carbon filtration; (f) efficiency of carbon filters for volatile smoke components; (g) spectrum of smoke components affected by carbon; (h) properties of carbon which affect its selectivity toward cigarette smoke

components; and (I) taste and aroma issues related to charcoal filters. 01242068-2118 at 2085-2097 (JD 020283).

1837. By July 1964, Dr. Spears and other Lorillard scientists stated that "we as a cigarette manufacturer are not confident at this time, that we can provide a highly efficient charcoal filter in keeping with our standards of quality." 00065925-5926 at 5925 (US 34223). Dr. Spears stated that the filters altered the taste of the cigarette smoke to the point where it "bec[ame] undesirable to most smokers." 1000307159-7164 at 7160 (US 34223).

1838. Dr. Spears explained in this letter that it is "currently possible to produce a carbon filter cigarette without this undesirable taste quality by using low activity carbon, small amounts of carbon or by adding a flavor such as menthol to the carbon, we do not consider these procedures as adequate solutions, since each impairs the efficiency of the filter for volatile smoke components." 00065925-5926 at 5925 (US 34223).

1839. Lorillard took its York charcoal filter cigarette off the market in 1964 or 1965 because of its unacceptability to consumers. Coggins, United State Dep., 6/27/02, 123:2-11

(3) Defendants' Efforts to Reduce Ciliastats

1840. Ciliastats in cigarette smoke impair the function of the cilia, which are hair-like structures lining the long passageways in the lungs that are responsible for removing foreign matter, including particulate matter. Aldehydes, which are carcinogenic compounds present in cigarette smoke, are one type of ciliastats. Townsend WD, 56:6-59:3; Townsend TT, 3/8/05, 14676:17-14677:22. Over the years, the cigarette manufacturing Defendants have researched various ways to potentially reduce aldehydes. See, e.g., Townsend WD, 57:4-7; Townsend TT,10/6/04,1747:21-23, 1743:25-1744:3, 1744:17-1747:20; 207458814-8905 at 8822 (JD 054065); Harris TT, 10/18/04,

2761:8-20; (no bates) (JD 04426); Robinson, United States Dep., 11/12/03, 211:19-212:11; Spears, BCBS Dep., 3/23/00, 144:4-22; 03645135-5329 at 5303 (JD 020169); 00061704-1752 (JD 020259); 01211241-1245 (JD 024760).

1841. For example, in 1966, BATCo instituted Project Conqueror (650003616-3642 (JD 011426)) to design a cigarette based on ciliastasis research. Harris TT, 10/18/04, 2761:8-20. The BAT Group ceased ciliastasis research by the late 1960s. Read WD, 36:8-19.

1842. The American Tobacco Company sponsored research compendiums by Larson Haag and others that included ciliastisis work. Larson and Haag's work was relied upon by the Surgeon General in his 1979 Report. (no bates) (US 64071 at 14-105, 14-116).

1843. Defendants have marketed various cigarette brands that reduced some ciliastats. Townsend WD, 58:14-17. For example, Philip Morris engineered Multifilter to be less ciliatoxic by using both charcoal and cellulose acetate in the filter. Farone TT, 10/6/04, 1748:7-16; See also (no bates) (US 26080 at 1-2) (Wakeham describing a "product prototype" with a "multifunctional filter" which uses a plug-space-plug configuration employing charcoal and specially treated papers for phenol and hydrogen cyanide removal).

1844. While there was consumer interest in the brands that reduced ciliastats, consumer acceptance of these brands has been low because of poor taste. Townsend WD, 61:4-6, 11-17.

(4) Defendants' Efforts to Reduce Delivery of Tobacco-Specific Nitrosamines

1845. Defendants have also researched ways to selectively reduce or eliminate tobacco-specific nitrosamines ("TSNAs"), a carcinogenic class of compounds. Townsend WD, 65:4-12; Lilly, United States Dep., 5/14/02, 241:2-242:5; Farone TT, 10/6/04, 1692:25-1693:13, 1762:10-18, 1763:7-17; Honeycutt, United States Dep., 4/23/02, 115:19-23; Blackie 30(b)(6), United States Dep.,

10/11/01, 10:10-11:11, 12:15-13:24, 16:22-18:2, 35:6-23, 38:10-39:2, 40:5-21; Robinson, United States Dep., 11/13/03 at 263:17-22, 264:23-265:22, 266:4-267:6.

1846. By 1980, Philip Morris had developed at least three different technologies for lowering the oxides of nitrogen ("denitrification") contained in reconstituted tobacco leaf, a tobacco filler created from bits of tobacco leaf discarded during the manufacturing process. Philip Morris found that each of the three processes reduced the formation of nitrosamines well beyond the technologies then in use, and concluded that each of the three was commercially and economically feasible.

1847. Philip Morris secured at least three patents on various denitrification processes. 2028516499-6546 (US 37394) (electrodialysis) (Patent No. 4,566,469); 2051804769-4776 (US 78963) (patent for "dissimilatory denitrification" that also recognized that "smoking products having lowered amounts of oxides of nitrogen present in smoke are desirable."); 2028596292-6292 (US 23057) ("thermophilic process") (Patent No. 4,685,478); see also 2022203905-3906 (US 20355) (1981 process improvement).

1848. None of the three processes were used by Philip Morris in the years after they were created. Farone WD, 172:11-173:16.

1849. By 1982, Philip Morris developed another way to reduce the oxides of nitrogen in its cigarettes -- blending and preparing tobaccos that would deliver lower levels of oxides of nitrogen. Farone WD, 168:18-169:22.

1850. Bright tobacco, also known as flue-cured tobacco, is one of the main tobaccos used in cigarettes sold in the United States. Bright tobacco has traditionally been cured by heating it in barns with propane heaters. Burley tobacco is the other main tobacco used in American cigarette

production (typically the blend in domestic commercial cigarettes is 2/3 burley and 1/3 bright tobacco). Burley tobacco, which is naturally higher in alkaloids that promote TSNA formation, is "air-cured." PM3000136161-6165 at 6161 (US 61555) (describing tobacco curing methods and content of "important ingredients" in various strains including sugars, nicotine, and total volatile bases); Farone WD, 44:2-45:22, 46:16-47:21. In a patent application Philip Morris submitted in 1982, Philip Morris described its discovery of a method to air-cure Bright tobacco and reduce harmful nitrogen oxide ("NO") in smoke:

> This novel tobacco, when formulated as a smoking article, such as a cigarette, and smoked, presents the aroma and taste of a blended tobacco smoking article and may be substituted in whole or in part for burley tobacco in blended tobaccos while substantially maintaining the subjective qualities of the burley tobacco and yet, as compared to the burley tobacco-containing blends, provides a reduced NO content in the smoke.

1000015245-5246 (US 22133); 511351011-1019 at 1017 (US 88040) (Patent No. 4,516,590, filed November 26, 1982, issued May 14, 1985); see also 2026526349-6353 (US 86964) (Patent No. 4,607,646, submitted in Feb. 1984, issued to Cliff Lilly on August 26, 1986, patenting a method for treating bright tobacco to create a tobacco with Burley's smoking characteristics, but without Burley's "less desirable features").

1851. This process allowed substitution of air-cured Bright tobacco for burley tobacco, and thus represented a potential advance in reducing the delivery of harmful TSNAs to smokers. Philip Morris did not pursue utilization of air-cured Bright further. Farone WD, 169:23-171:17. When the air-cured bright tobacco was substituted for burley tobacco in the control cigarettes, as described in the experiments discussed in the patent, there were instances in which carbon monoxide ("CO"),

hydrogen cyanide ("HCN"), FTC tar, and aldehyde ("RCHO"), deliveries were increased. 511351011-1019 at 1017 (US 88040).

1852. By 1985, Philip Morris had demonstrated its ability to use tobacco blend selection to reduce TSNAs. On April 1, 1985, Philip Morris scientists Sue Tafur and Ed Lambert wrote a memo to Ted Sanders, a high-level Philip Morris scientist, which was copied to other Philip Morris scientists including Jim Charles, Robert Ferguson, Robin Kinser, and William Morgan, reporting on their experiment "to determine if it is possible to deliver adequate nicotine to MS [mainstream] smoke while reducing mainstream TSNA by using an experimental filler blended from a high alkaloid tobacco with low alkaloid and oriental tobaccos. This work was designed to provide a preliminary indication of the feasibility of the concept." Tafur and Lambert concluded that "[t]he data presented here indicate that the approach to delivering adequate nicotine to MS while reducing TSNA can be met by judicious blending of tobaccos." 2001113614-3618 (US 22216).

1853. In 1998, Reynolds discovered a method to reduce TSNAs from flue-cured tobacco. Blackie 30(b)(6), United States Dep., 10/11/01, at 66:3-17; see also Beasley WD, 76:21-77:8. Through a series of laboratory experiments, Reynolds determined that TSNAs are formed when certain combustion products of direct-fire curing (the prevailing curing method used by U.S. farmers) interact with compounds in the tobacco leaf. Reynolds then discovered that using heat exchange curing (preventing the products of combustion from contacting the tobacco) reduced TSNAs in flue-cured tobacco by over 90%. Townsend WD, 66:3-17. Reynolds shared this data with other Defendants.[21] (no bates) (JD 060117); (no bates) (JD 060141); (no bates) (JD 060138). RJR did not

[21] Once discovered by RJR, Philip Morris contributed $35 million to tobacco growers to convert their tobacco curing facilities. Philip Morris now requires flue-cured tobacco from all its (continued...)

share this information with Star Scientific, which was actively researching lowering TSNAs. Other domestic cigarette manufacturers have switched to using low TSNA flue-cured tobacco as part of their tobacco blend. 505724149 (US 93144); Townsend WD, 69:12-14. See also Coggins, United States Dep., 6/27/02 at 156:23-157:15.

1854. Lorillard experimented with numerous approaches to reducing TSNAs. Currently, Lorillard reduces the TSNAs in its commercially marketed cigarettes by using tobacco that has been cured using a heat exchange method, rather than curing with direct heat. Lorillard also reduces TSNAs through its use of reconstituted leaf and puffed tobacco. Robinson, United States Dep., 11/13/03, 266:4-267:6. In fact, all of the domestic and offshore flue-cured and burley tobacco Lorillard purchases is low or zero TSNA. Coggins, United States Dep., 6/27/02, 167. Lorillard also experimented with applying materials such as ascorbic acid to the tobacco. The acid would oxidize the tobacco-specific nitrosamines and eliminate them from the leaf. Id. at 264:23-265:16.

1855. Brown & Williamson has also conducted research into reducing TSNAs. Project Nitro, for example, was an early attempt to reduce TSNAs in United States burley tobacco. Honeycutt, United States Dep., 4/23/02, 115:19-23.

1856. More recently, in November 2001, Brown & Williamson began test-marketing "Advance," which contains tobacco cured using a patented process to reduce levels of TSNAs. See Section V(D)(5)(c)(4), infra.

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[21](...continued)
growers. Szymanczyk WD, 172:12-21.

5. Defendants' Efforts to Develop/Market Potentially Less Hazardous Non-Conventional Products

a. Philip Morris

(1) Accord

1857. In the early 1970s, Philip Morris began work on Project Delta, an early, but important, precursor to the electrically heated cigarette. Farone TT, 10/7/04 Tr., 1841:21-1842:11. Prior to the Accord, Philip Morris worked on other non-conventional cigarette projects called Delta and Sigma. Lilly United States Dep., 5/15/02, 73:16-17, 78:17-79:4. Project Delta used carbon as the heat source for the tobacco, thereby reducing the temperature under which smoke was generated. Lilly, United States Dep., 5/15/02, 73:16-17, 78:17-79:4. With lower temperature, both combustion and pyrolysis are reduced resulting in reductions in the formation of PAHs and aldehydes, both of which are carcinogenic compounds in cigarette smoke. Farone TT, 10/6/04, 1694:4-16, 1694:20-1695:6.

1858. Philip Morris devoted a significant number of scientists to researching the chemical, physical and thermodynamic flow of the Delta cigarette. This work led to publications, patents, and later to the development, in the 1980s, of the projects which preceded today's Accord. Lilly, United States Dep., 5/15/02, 79:6-14, 80:6-18.

1859. Philip Morris developed Accord to, among other things, "address consumer concerns about health risks" and as a direct competitive response to R.J. Reynolds's "Premier" product. 2046741061-1074 at 1061-62 (US 22185) (following R.J. Reynolds's introduction of Premier, Philip Morris "immediately accelerated its work in this area to develop a competitive smokeless product"); see Section V(D)(5)(b)((2))((a)) , infra, on Premier.

1860. Philip Morris spent, through 2003, over $370 million in operating expenses and nearly $50 million in capital expenses developing the Accord cigarette. Szymanczyk WD, 170:9-171:3. See also 2046741061-1074 at 1074 (US 22185) (noting plans to have forty-four researchers working on the Beta/Accord project and projecting a $100 to $150 million five-year development cost). In 1998, Philip Morris began to sell it in one limited domestic test market.

1861. With the Accord, Philip Morris's electrically-heated smoking "system," the purchaser receives a kit -- a starter set of shorter, specially-designed cigarettes and a dark rectangular heating device approximately the size of a large candy bar. To smoke Accord, the smoker inserts a cigarette into the end of the heating device. When a smoker inhales on the inserted cigarette, the inhalation triggers the device's electrical heating element, which heats the cigarette to a temperature below that necessary to create combustion and delivers smoke to the smoker. The device permits a maximum of eight puffs per cigarette, and information about the activity and puff count is provided to the smoker on a small LED [light emitting diode] display on the device. As a result smokers cannot compensate by drawing harder or blocking ventilation holes. 525335580-6084 at 5678 (US 20919).

1862. Accord substantially reduced harmful constituents compared to some of the best-selling products on the market today. Farone TT, 10/7/04, 1845:21-1848:3; see also PM3001435021-5261 (JD 050079); JDEM 040039. Philip Morris's own internal research demonstrated that Accord substantially reduced the delivery of fifty-two harmful constituents believed likely to contribute to smoking-related diseases. For example, the level of total polycyclic aromatic hydrocarbons dropped below a measurable amount, the carbon monoxide delivery became extremely low, there was a 90% reduction in 1.3-butadiene production, and the delivery of tobacco-specific nitrosamines ("TSNAs") dropped 50% below conventional cigarettes. Philip Morris

research has shown that mutagenic activity in the Accord cigarette is lower than in conventional cigarettes, and the Ames test on Accord found essentially no mutagenic activity in the Accord. Lilly PD, United States v. Philip Morris, 5/14/02, 246; 525335580-6084 at 5678 (US 20919).

1863. However, Philip Morris has never informed potential consumers in the test market, through promotional or marketing materials, of its conclusion that Accord is a reduced exposure product and a potentially reduced harm product. Farone WD, 179:13-23. Indeed, in a presentation to the Altria Board of Directors in late 1996, Philip Morris stated, "By controlling the heat applied to the tobacco, [Accord] addresses in significant ways criticisms made of our current cigarettes," but that in marketing Accord to consumers, "we do not want to disparage our existing brands." 2086120855-0890 at 0855, 0871 (US 45812).

1864. In 2001-2002, Philip Morris commissioned its longtime advertising agency, Leo Burnett, to develop a set of Accord ads that included the messages that Accord "reduces certain smoke compounds," including fifty-two compounds that "are harmful to smokers." The advertisements also included a chart that compared Accord to an unidentified light cigarette in its reduction of harmful compounds. Philip Morris has not used these ads. Instead, the Accord advertising campaign continues to focus on sidestream smoke alone (i.e., that Accord is less annoying to others because less smoke is emitted), rather than health issues. Dudreck PD, United States v. Philip Morris, 6/21/02, 33:1-34:24; Dudreck PD, United States v. Philip Morris, 8/26/03, 465:22-466:25, 467:21-468:12 (Confidential); LB0037946-7950 (US 21855); Harris WD, 229:10-230:23.

1865. Philip Morris continues its efforts to improve the acceptability of Accord and to develop sound scientific evidence to support a claim for risk reduction.

(2) Next

1866. In response to the theory advanced by some segments of the public health community that a cigarette with very little nicotine would potentially reduce the harm associated with cigarette smoking, Philip Morris developed and marketed cigarettes with virtually no nicotine. Beran WD, 3-11.

1867. In the mid-1980s, Philip Morris purchased General Foods which, among other things, manufactured decaffeinated coffee with a process called super-critical extraction. Philip Morris scientists developed a method to use the same process to remove nicotine from tobacco.

1868. In 1989, Philip Morris introduced de-nicotinized cigarettes under the brand name of Next De-Nic in certain test markets. The Next De-Nic marketing was followed by a test market launch of Benson & Hedges De-Nic, in order to associate the de-nic concept with a successful existing brand. Beran WD, 155:23-156:3, 157:15-17; (no bates) (JD 053828); (no bates) (JD 053835); Lilly United States Dep. 5/14/02 at 169:15-170:7, 176:8-18; Langenfeld WD, 136:7-8. Philip Morris wanted to communicate to consumers that this was a breakthrough product which had removed virtually all of the nicotine from the cigarette. Beran WD, 159:2-5

1869. Because consumers complained that the taste was flat and too mild, Philip Morris made an enormous effort to improve the flavor and taste. The company expended approximately $300 million in attempting to develop and commercialize the de-nic product. Beran WD, 156:5-157:17; 2024750510-0522 (JD 053838); 202425677-5997 (JD 055103); Lilly United States Dep. 5/14/02 at 177:10- 178:4; see also Townsend WD, 27:9-13.

1870. At the same time, certain members of the public health community and anti-smoking organizations opposed Philip Morris's effort to market a virtually nicotine-free cigarette. For instance, the Coalition on Smoking OR Health filed a petition with the FTC and alleged:

> The package labels and advertisements for Next cigarettes falsely and misleadingly imply that Next cigarettes are a safe, non-addictive alternative to traditional tobacco products. . . . Philip Morris USA has not substantiated and cannot substantiate any implied claims that Next cigarettes contain so little nicotine as to eliminate the concern about either addiction or the health effects of nicotine. In addition, Next cigarettes may be more dangerous than traditional ultra-low "tar" cigarettes because Next cigarettes contain far higher levels of "tar" than other cigarettes with comparable levels of nicotine and higher levels of carbon monoxide than several other brands of ultra-low tar cigarettes.

Langenfeld WD, 136:8-30; (no bates) (JD 067562 at 2).

1871. The Coalition requested that the FTC take action against Philip Morris:

> [The Coalition] urge[s] the Federal Trade Commission to take prompt action (1) to require Philip Morris USA to stop making the false and deceptive claims currently begin made for Next cigarettes and (2) to require Philip Morris USA to take corrective action to undo the false and misleading statements provided by Philip Morris USA to consumers with regard to these products.

Langenfeld WD, 136:8-30; (no bates) (JD 067562 at 14).

1872. The FTC opened an investigation into Next cigarettes and requested that Philip Morris provide information regarding its advertising and marketing of Next De-Nic. Ultimately, Philip Morris withdrew the other "De-Nic" products from the market in 1991, claiming poor consumer acceptance. Thereafter, the FTC closed its investigation of Next De-Nic. Langenfeld WD, 136:31-137:9.

(3) Nicotine Analogue Program

1873. Over a period of more than ten years from the early 1970s to the mid-1980s, Philip Morris attempted to identify a synthetic nicotine analogue that would replace the nicotine naturally found in cigarettes. Development of a synthetic nicotine analogue would reduce the adverse cardiovascular effects of smoking, such as increased blood pressure and increased heart rate. Mele WD, 7:16-8:3; DeNoble WD, 5:7-11, 7:8-22; DeNoble TT, 1/6/05, 8990:10-17; Levy WD, 6:27-31; Levy TT, 2/9/05, 12701:10-25.

1874. As part of the program, Philip Morris created a laboratory of chemists who, over a period of years, produced hundreds of synthetic nicotine analogues. DeNoble TT, 1/6/05, 8991:8-24. The company invested substantial research and development funds in these efforts. DeNoble TT, 10/7/04, 1968:2-5.

1875. Philip Morris scientists wrote numerous published articles about the research being conducted in connection with its nicotine analogue program. Farone TT, 10/7/04, 1968:16-21. While the project was going on, Philip Morris communicated with the Government about its nicotine analogue program and the company sought patents on inventions that were produced from the program's research. Farone TT, 10/7/04, 1968:12-15, 22-24.

1876. The procedure for developing and testing nicotine analogues at Philip Morris was as follows: Organic chemists within Philip Morris would create a synthetic nicotine analogue. Drs. DeNoble and Mele would then perform testing with rats in-house at Philip Morris to assess the analogue's central nervous system effects. The analogue was then sent to scientists outside of Philip Morris, who conducted tests to assess its cardiovascular effects. Mele WD, 8:4-12; DeNoble WD,

8:16-19, 13:11-22; DeNoble TT, 1/6/05, 8993:3-18, 8993:22-8995:4 (DeNoble); Levy TT, 2/9/05, 12702:5-12703:3.

1877. The evidence at trial demonstrated that 2'-methylnicotine was tested and was shown to cause some cardiovascular effects, predominantly an increase in blood pressure. DeNoble TT, 1/6/05, 8997:25-9000:4, 9001:13-9007:3; 2056152563-2575 (JD 043875); 202345389-0704 (JD 054257).

1878. The Government presented no evidence as to what occurred in connection with Philip Morris's nicotine analogue program after 1984. Dr. Farone, for example, testified merely that the Philip Morris nicotine analogue program continued after he left the company. Farone TT, 10/7/04, 1968:9-11. Dr. DeNoble testified that he does not know whether Philip Morris continued its nicotine analogue research after he and Dr. Mele left the company in 1984. DeNoble TT, 1/6/04, 9007:4-10, 9008:9-12.

1879. No evidence has been presented that Philip Morris ever identified or developed any workable nicotine analogue, or suppressed the development or marketing of any such analogue.

b. R.J. Reynolds

(1) The Multijet Filter

1880. By the late 1960s, RJR had developed a cigarette filter that, according to Reynolds's research, reduced the retention of smoke particulate matter in a smoker's lungs by 63%. Unlike the filters Defendants designed for cigarettes they marketed as "low tar" cigarettes, the "multijet" filter limited one form of smoker compensation -- puffing harder on cigarettes to obtain more nicotine -- and yielded tar and nicotine deliveries to human smokers that closely matched their FTC machine-measured yields. The multijet filter accomplished this by increasing its efficiency as flow rate

increased -- that is, the harder a smoker puffed on the cigarette, the less material passed through to the smoker. Farone WD, 133:13-134:1. See 514901941-1966 at 1941 (US 30086); 504210090-0091 (US 29749); see also Townsend TT, 3/8/05, 14790:25-14800:1, 14801:17-14803:9.

1881. By 1971, RJR believed its multijet filter product had a "satisfactory taste" and work had "progressed to the point where a complete cigarette design . . . [was] feasible and makable." 512279835-9836 at 9835 (US 30037). The company found that this prototype compared favorably to an existing Reynolds brand on the market, Vantage, which Reynolds admitted was commercially feasible at the time. 512279835-9836 at 9835 (US 30037); see also Townsend TT, 3/8/05, 14810:2-21.

1882. The same document notes that the marketing department "had reservations" about selling it because Reynolds's marketers expressed "concern that the utilization [in marketing] of the retention story, scientifically endorsed, may jeopardize the rest of the Company's cigarette business." 512279835-9836 (US 30037).

1883. Reynolds never incorporated the multijet filter into marketed products. RJR revived the idea in the 1990s, again recognizing its potential ability to modify the particle size of the smoke aerosol delivered to smokers, but again did not develop the filter for use in any commercialized product. 510926982-6983 (US 87554); 510827052-7068 (US 87555). Townsend testified that the product had significant problems: (1) the jet would become clogged and (2) it was difficult to draw smoke through the cigarette. Townsend WD, 157:21-158:6.

(2) Heated Tobacco Products

(a) Premier

1884. R.J. Reynolds actively pursued a program to develop, and ultimately market, a cigarette that heated, rather than burned, tobacco. In the early 1980s, Reynolds's researchers discovered that a small carbon heat source, combined with an aluminum heat conductor, tobacco and glycerol, could produce smoke without burning the tobacco. Townsend WD, 142:11-21. With that innovation, RJR began work on what would become Premier. The product development objectives for Premier were to simplify the mainstream and sidestream smoke chemistry by eliminating or reducing harmful compounds produced by burning tobacco, to minimize the potential for biological activity (as measured by toxicological assays and tests frequently used to study cigarettes and cigarette smoke), and to minimize environmental tobacco smoke. Townsend WD, 126:6-9; Burger, United States Dep., 7/26/01 71:4-72:8; see also 507141075-1463 (JD 060325). Reynolds succeeded in meeting all of its product development objectives. Townsend WD, 126:10-11; 507141075-1463 at 1080-83 (JD 060325).

1885. The Premier cigarette had two major sections: (1) a front-end piece containing an insulated carbon heat source, tobacco, and an aluminum capsule containing tobacco, flavor and glycerol; and (2) the mouth-end piece containing a two-part filtration system. Townsend WD, 127:1-128:8; 507141075-1463 (JD 060325); (no bates) (JDEM 060500).

1886. With the exception of the tobacco roll, no component of Premier was available on the market when its development of Premier began. Townsend WD, 142:11-21. The technology underlying Premier was so innovative that Reynolds secured sixty foreign and domestic patents covering it. Townsend WD, 126:12-15; Farone TT, 10/12/04, 2078:6-23 (Farone).

1887. Premier was lit and smoked similarly to other cigarettes, but it did not burn tobacco and burned very little paper. See Gentry TT, 10/14/04, 2387:6-9 (Gentry). Unlike other cigarettes, it did not burn down to a butt, nor did it produce loose ash. Townsend WD, 140:22-141:2. When a smoker puffed on Premier, heated air was drawn through an aluminum capsule, where it volatilized glycerol, flavors from natural spray-dried tobacco, and a small amount of added flavor contained within a porous alpha-alumina substrate. Townsend WD, 128:9-20. Heated air also passed through and volatilized natural tobacco flavor from a tobacco roll that surrounded the capsule. The vapor then passed through a tobacco-paper filter, which imparted additional tobacco flavor. The vapor was cooled within the tobacco-paper filter, allowing it to condense and form an aerosol that contained the particulate and vapor phases of the mainstream smoke of Premier. Gentry TT, 10/14/04, 2386:12-21; Coggins, United States Dep., 6/27/02, 84:12-85:9. Finally, the smoke passed through a polypropylene filter. Townsend WD, 128:9-20.

1888. The smoke from conventional cigarettes that burn tobacco is an aerosol generated by cooling a mixture of hot gases produced by the combustion, pyrolysis and distillation of tobacco. In contrast, Premier's smoke was an aerosol generated primarily by distilling and condensing glycerol and volatile tobacco constituents. (no bates) (JDEM 060498); (no bates) (JDEM 060499); 507141075-1463 at 1151-1155 (JD 060325). Compared to a tobacco-burning reference cigarette, the smoke from Premier demonstrated a reduction in the number of compounds detected by 82-96%, and a reduction in the amount (by weight) of the compounds detected by 84-97%. (no bates) (JDEM 060499); 507141075-1463 at 1155-1161 (JD 060325); see also Farone TT, 10/6/04, 1618:24-1620:11. For example, reductions in specific mainstream smoke constituents of Premier versus a reference cigarette included a 99% reduction in polycyclic aromatic hydrocarbons (including BaP),

a 96% reduction in phenols, a 91% reduction in carbonyls (some of which are ciliastats), a 95% reduction in NOx, a 99% reduction in hydrogen cyanide, a nearly 93% reduction in benzene, and 99% reduction in acrylonitrile, and a 90-plus % reduction in nitrosamines. Townsend WD, 131:1-17 (discussing JDEM 060499); see also Farone TT, 10/6/04, 1618:24-1620:11.

1889. Over the course of the approximately eight-year period of research, development and ultimate test marketing of Premier, Reynolds dedicated hundreds of scientists, as well as other employees to the project. See Iauco, United States Dep., 5/7/02, 143:1-25. From beginning to end, Reynolds spent nearly $1 billion on the Premier project. Townsend WD, 125:22-126:2; id. at 143:7-11; Farone TT, 10/7/04, 1813:19-1814:11.

1890. In addition to the smoke chemistry tests described above, Reynolds conducted a battery of biological and toxicological tests on Premier, both in vivo (live animal) and in vitro (testing on cells outside a living animal), as well as testing with smokers of Premier. Townsend WD, 132:21-24.

1891. Reynolds's genetic toxicity testing of Premier versus reference cigarettes indicated that Premier's smoke was not genotoxic in any of the numerous in vitro or in vivo assays used. Townsend WD, 133:1-12.

1892. Pharmacokinetic and smoking behavior studies revealed that there was no difference in the relative amounts of plasma cotinine, the major human nicotine metabolite, formed from nicotine absorbed from the reference cigarette and Premier. Townsend WD, 134:4-9; see also 507141075-1463 at 1259-1312 (JD 060325). The presence of plasma cotinine is significant because it indicates the amount of nicotine exposure.

1893. Following the research, development and testing of Premier, Reynolds retained a peer review committee composed of scientists and various members of the public health community (some connected to the tobacco industry and some totally independent of it) to review its work. 507141075-1463 at 1080 (JD 060325); Suber, Small and Fubini Dep., 11/20/97, 166:16-167:5. The peer review committee members were Dr. James Crapo (Department of Medicine, Duke University), Dr. John Doull (Department of Pharmacology, Toxicology and Therapeutics, University of Kansas Medical Center), Dr. Ronald Estabrook (Department of Biochemistry, Southwestern Medical School, University of Texas Health Sciences Center), Dr. Dietrich Hoffmann (American Health Foundation), Dr. Albert Koestner (Department of Pathology, Michigan State University), Dr. Robert Neal (Chemical Industry Institute of Toxicology), Dr. Herbert Rosenkranz (Department of Environmental Health Sciences, Case Western Reserve University School of Medicine), Dr. Thomas Slaga (University of Texas System Cancer Center), Dr. Robert Squire (Division of Comparative Medicine, Johns Hopkins University), Dr. Steven Tannenbaum (Department of Applied Biological Sciences, Massachusetts Institute of Technology), Dr. Mark Utell (Co-director, Pulmonary Disease Unit, University of Rochester Medical Center) and Dr. Gerald Wogan (Professor of Toxicology, Massachusetts Institute of Technology). Townsend WD, 135:6-23. The purpose of the review was to evaluate Reynolds's experimental design and methodology, as well as data interpretations and conclusions, in accordance with processes customarily used in scientific peer reviews. Id. The committee concluded that Reynolds's product development objectives had been achieved through the research and development program. Townsend WD,136:10-18; 507141075-1463 at 1080-83 (JD 060325). The committee did not render any conclusions regarding Premier's potential reduction in health risks. See id. at 1081.

1894. Reynolds published the results of its chemical, biological and toxicological research on Premier in a 743-page peer-reviewed monograph called Chemical and Biological Studies on New Cigarette Prototypes That Heat Instead of Burn Tobacco. Townsend WD, 134:14-18; Farone TT, 10/7/04, 1815:11-1816:9; 507141075-1463 (JD 060325).

1895. Reynolds also presented a series of abstracts related to Premier at the Society of Toxicology's annual meeting early in 1988. HHS0830126-0135 (JD 042085).

1896. In its monograph and public presentations, Reynolds articulated both Premier's characteristics and Reynolds's goals for the project as follows: (1) "to provide the taste and smoking enjoyment our customers demand;" (2) to the extent possible, "to simplify the chemical composition of mainstream and sidestream smoke emitted by the new cigarette;" (3) "to minimize the biological activity of the mainstream and sidestream smoke emitted by the new cigarette;" and (4) "to achieve significant reduction of environmental tobacco smoke from the new cigarette." 515194617-4619 at 4618 (JD 041998); 507141075-1463 (JD 060325).

1897. In August 1988, Reynolds submitted a report explaining the design of its new cigarette to the FDA. (no bates) (JD 060405). In addition, Reynolds submitted a report to the FTC concerning advertising issues and cooperated with FTC requests for information. 507349165-9287 (JD 041934); 575101341-1344 (JD 041947).

1898. Prior to its test market introduction, Reynolds conducted limited testing of Premier to assess its acceptability with consumers. The first large-scale consumer testing of Premier was conducted in January, 1988. Overall acceptability of Premier was extremely low. The stated intent of consumers to purchase Premier was significantly below that compared to tobacco-burning cigarettes (16% for Premier, versus 51% for Reynolds's Now brand, and 76% for Reynolds's Camel

Light brand). The primary factors limiting the overall acceptance of Premier in the consumer testing were artificial taste, aftertaste, and aroma. Follow-up research suggested that while taste was the primary contributor to the low overall acceptability of Premier, changes in smoking ritual (e.g., lighting difficulty, absence of visual cues indicating remaining puffs) also played a role. 507543977-4004 at 3981 (JD 041936).

1899. Reynolds introduced Premier into test markets on October 17, 1988, in St. Louis, Missouri, and Phoenix and Tucson, Arizona. Townsend WD, 140:12-15. Premier's introduction was accompanied by a print advertising campaign in local media that described the reduced emissions from the new product. (no bates) (JD 065280); (no bates) (JD 065281); (no bates) (JD 065282).

1900. At the time Premier was sold, scientists at Reynolds believed that Premier was a potentially less hazardous cigarette because it had significant reductions in harmful compounds and biological activity. Gentry TT, 10/14/04, 2387:10-2388:3; Townsend TT, 3/8/05, 14811:16-14814:5 (indicating Dr. Townsend's belief that Premier is a safer cigarette). However, Reynolds was concerned about the FTC's regulations requiring that all health-related claims be substantiated. Townsend TT, 3/8/05, 14848:12-16.

1901. The FTC investigated the scientific claims about Premier to determine whether the statements in Reynolds's advertisements for Premier were substantiated. Townsend WD, 28:11-12. After concluding its investigation, the FTC took no action against Reynolds for its advertising of Premier. Id.

1902. On February 28, 1989, RJR withdrew Premier from the test market, citing poor market performance. 507543977-4004 at 3984 (JD 041946); Townsend WD, 142:22-143:6; JD

000866 (at 457) ("A recent attempt to market a modified cigarette that 'heats rather than burns tobacco' has not been accepted by consumers."). Premier's retail share of market in the test cities peaked at 0.57% in the test market's third week. After that point, Premier began to experience a declining share trend. By February, 1989, Premier's market share was down to 0.14% and declining. (no bates) (JD 041936 at 50754 3984).

1903. RJR believes that two principal factors led to Premier's poor performance in the test markets: lack of consumer acceptance of the product due to its different taste and different smoking characteristics (i.e., difficult to light and did not burn down), and the negative media attention regarding product taste and possible intervention by the FTC and/or the FDA. (no bates) (JD 060554); HHS1562363-2373 (JD 000557); Townsend WD, 28:5-12, 140:18-141:7; Burger, United States Dep., 7/26/01, 82:8-14; id. at 127:13-128:4; DiMarco, Burton Dep., 8/14/02, at 188:19-20.

1904. In an internal Marketing Research Report, titled "Comprehensive Overview of Consumer Reactions to Premier," dated May 11, 1989, RJR's evaluation of the product concluded that "the overall acceptability of Premier NM [non-menthol) was extremely low. . . . Only 9% of Premier smokers were interested in purchasing more product, vs. 28% for NOW and 38% for Camel Lights. 5/11/89 Comprehensive Overview of Consumer Reactions to Premier, 507543977-4004 at 3980-3981 (JD 041936).

1905. Premier encountered some resistance from public health advocates, as well. In March 1988, FDA Commissioner Frank Young summarized his meeting with public health groups, stating that

> [t]he health professional groups believe that FDA should assert regulatory jurisdiction over this product. They said that there were many unknown variables regarding whether this was actually a safer

> alternative to smoking conventional cigarettes. They argued that the abuse potential with this type of product could actually be higher because the general public perceives this to be a safer alternative and they firmly believe that FDA is the appropriate agency to regulate this product. . . . The health professional groups also said that introduction of this product to the market will encourage a segment of the population to continue to smoke who probably would have stopped smoking conventional cigarettes. They believe a growing population of people in this country are trying to stop smoking and the introduction of this product may encourage these people to continue to smoke and may encourage people to start to smoke at a younger age.

HHS0741270-1271 (JD 065276).

1906. The following month, Surgeon General Koop voiced similar complaints in a letter to FDA Commissioner Young, noting:

> In its public statements and marketing plans, RJR states regarding the product: "a majority of the compounds produced by burning tobacco are eliminated or greatly reduced, including most compounds that are often associated with the smoking and health controversy." To me, this suggests a health claim that the product is "safe" or "safer" than conventional products, which could result in reduced quitting by smokers, increased relapse by ex-smokers, and increased initiation by adolescents.

HHS0681659-1660 (JD 042075).

1907. The Coalition on Smoking OR Health petitioned the FDA to regulate Premier, stating that

> both the specifics and the overall theme of the advertisements are clear; use this product, and you will reduce your risks of cancer and possibly other diseases associated with the smoking habit. . . . This product is a "safer" alternative to using the more conventional cigarettes.

It continued, "[w]ho does Reynolds think it is fooling when it uses words like 'controversial compounds' or 'cleaner.' These words are nothing but transparent euphemisms for 'healthier' and

'safer.'" HHS0813096-3110 (JD 042083). John Slade, in his petition, noted that "[p]eople who smoke are not concerned about the dirtiness of smoke; they are concerned about its toxicity. . . . Reynolds is fully aware of this, of course." 10/11/88 letter from J. Slade to F.E. Young, FDA, HHS0830014-0023 (JD 042084).

1908. Others in the public health community responded favorably to Premier. In an internal memorandum from Dr. Jack Henningfield, one of the Government's experts in this case, who was at the time working in the Addiction Research Center of the Intramural Research Program in the National Institute on Drug Abuse, to Dr. Jerome Jaffe, the Director of the HHS Addiction Research Center, Dr. Henningfield stated

> [f]rom the standpoint of carcinogenicity and possibly other disease states resulting from particulate matter and other combustion products of tobacco smoking, the data and public statements from RJR suggest that this nicotine delivery system is of lower toxicity than conventional cigarettes. These conclusions are consistent with the physical characteristics of the system: there is no direct exposure to either tobacco or tobacco generated smoke although CO [carbon monoxide] and nicotine delivery appear comparable to cigarettes; moreover, no tobacco is burned (RJR: "tobacco is warmed not burned") and no tobacco smoke is either produced or inhaled . . . [t]he available data presented by RJR in scientific meetings, press briefings, and Congressional testimony suggest that this nicotine delivery system is safer than conventional cigarettes with regard to cancer and diseases caused by direct exposure to tobacco or tobacco smoke.

HHS0130224-0227 at 0227 (JD 065279).

1909. Similarly, an internal appraisal within the FDA stated that Premier appeared to be "a safer alternative." HHS0681735-1757 at 1736 (JD 042077).

1910. Despite the internal belief and external acknowledgment of the harm-reducing potential of Premier, Reynolds never directly informed consumers that it was potentially less

hazardous and never marketed it with explicit health related messages. Juchatz TT, 11/22/04, 6682:15-20. In fact, the evidence below suggests that years before Premier was test-marketed in 1988, Reynolds's management and counsel had determined that Premier would not be marketed as risk-reducing because it would suggest that smoking conventional cigarettes causes disease. See Section V(H)(1)(a)(¶¶3873-3878), infra (DiMarco/Juchatz evidence).

1911. In 1982, newly appointed Research & Development Department Director Dr. Robert DiMarco indicated, during his "Law Department orientation," that the consensus in the scientific community was that smoking caused disease and that it was his responsibility to make a cigarette with reduced mutagenicity -- a cigarette less likely to cause the cellular changes that can lead to cancer. DiMarco's perspective alarmed the company and the industry. See generally 505741150-1153 (US 23009); 505741141-1142 (US 20746); 505741143-1147 (US 20747); 505745988-5992 (US 20748). Reynolds's chief counsel at the time, Sam Witt, stated that outside industry lawyers Ed Jacob and Tim Finnegan of Jacob, Medinger and Finnegan felt that it could be "devastating" if Dr. DiMarco, "as the company's chief scientist," were to testify about causation and take a position contrary to that of the industry. See Juchatz TT, 11/22/04, 6672:4-6675:7 (discussing, in part, 505741143-1147 (US 20747), 6684:2-6686:15 (confirming that Witt authored US 20747).

1912. Lawyers and management imposed specific conditions on DiMarco in exchange for permitting him to go forward with the development of Premier (and for keeping his job). Specifically, any "less hazardous" product developed by DiMarco was not to have the term "safer" associated with it because it implied that Reynolds's existing products were unsafe -- an admission that could be used against the company in litigation. In addition, he was not to otherwise conduct research that, if subpoenaed, might jeopardize the company's legal defenses, might prove

embarrassing for the company, or otherwise would be "hard to handle" for the company. Juchatz TT, 11/18/04, 6585:14-6587:5 (discussing 505741150-1153 (US 23009)); 505741141-1142 (US 20746); 505741143-1147 (US 20747); 505745988-5992 (US 20748)); see also Juchatz TT, 11/18/04, 6590:19-6591:16 (Reynolds Law Department "reach[ing] an understanding . . . to work with him [DiMarco] in an effort to devise a way in which he could do what he wanted without creating any serious legal problems"); id. at 6592:23-6593:21, 6594:25-6596:8 ("The objectives of the Law Department were to allow him to do what he wanted to do, but minimize the risk."); id. at 6609:6-6611:22 (outside lawyers thought DiMarco should be fired if he did not come around); id. at 6615:19-6617:9 (outside industry counsel Jacob and Finnegan expressed concern to RJR about DiMarco admitting causation).[22]

1913. In the fall of 1987, Reynolds sent Peter Hutt, a Covington & Burling lawyer who had previously served as Chief Counsel of the United States Food and Drug Administration ("FDA"), to meet with representatives of FDA and other government health officials. According to meeting minutes, Hutt refused to discuss "safety issues" with the FDA because the "tobacco industry" maintained that "conventional cigarettes are not unsafe, and that it would never reverse this position." He made clear that RJR would not

> promote or label . . . [Premier] as safer than conventional cigarettes . . . [because] such a claim would be an indictment of the tobacco industry and its long standing position that conventional cigarettes are not unsafe . . . nor did RJR have any intention of jeopardizing the industry's long standing position.

HHS0880359-0364 at 0360 (US 85828).

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[22] While Defendants told the Court that they intended to produce Dr. DiMarco to explain these events, and he was on the defense witness list (see Juchatz TT, 11/18/04, 6618:21-6619:8), Defendants did not call him.

1914. In a letter about a separate September 1987 meeting he had about Premier with the Director of the Centers for Disease Control's Office on Smoking and Health, Mr. Hutt commented: "[Y]ou asked whether Reynolds agreed that cigarettes caused the health problems I had mentioned. I responded that they did not[;]" and "I again responded that Reynolds did not agree that the current cigarette is unsafe and would not contend that the new cigarette is safer or safe." 506147781-7783 at 7782 (US 93089).

1915. In testimony in this case, RJR's Chief Executive Officer during its test-marketing of Premier, Gerald Long, confirmed RJR's commitment to protect Defendants' position that cigarettes are not harmful:

> [O]ne of the guidelines that we had right from the beginning [of putting together the marketing strategy was] that Premier could not be and would not be marketed as a safer cigarette because of the implications on the tremendous business that we had at hand already. . . .
> [I]f we had come out and stated here you have Premier, the safer cigarette or the safest cigarette or anything indicating to that, the implication would have come back on our own products and our competitive products in the industry which we were aware of that would have stated that they were not safe products, and since our position was that we were marketing, the industry and -- ourselves and the industry were selling and marketing safe cigarettes, then we couldn't say in one of our brands that we were coming out with something that was safe, while all the rest was not safe. . . .
>
> The negative implications, I think, are quite obvious, that if we came out very strongly with a product, presuming that the product could deliver and it was the product that was in our opinion and the research showed it to be some kind of a -- some kind of a product that was considered to be safer than any of the conventional cigarettes on the marketplace, it would have had a substantially negative effect on the rest of the tobacco industry, and we felt we weren't ready to take on that obligation. . . . What kind of negative effects? It would have turned around and said to people, well, the tobacco companies are publicly admitting we do not market safe cigarettes.

Long PD, United States v. Philip Morris, 10/18/01, 86:3-90:25.

1916. Reynolds asserts that Premier failed because of low consumer acceptance. However, RJR knows that consumer acceptance is affected by perceived health benefits. As David Iauco, RJR's head of business development, told the Philadelphia Inquirer in December 1997 (concerning RJR's Eclipse cigarette), "No smoker is going to switch to a lower-risk product unless they know of a benefit and believe it. There will be trade-offs and adjustments, things that the smoker will have to give up." 525413253-3262 at 3259 (US 87556).

1917. RJR's marketing of Premier focused not on its potential health benefits, but instead on its purported cleanliness and courtesy benefits. See, e.g., Juchatz TT,11/22/04, 6682:15-19.

1918. Reynolds stuck with this advertising plan even though it had learned through testing ad campaigns that "the claim 'smoke-free' didn't mean anything" to consumers. Long PD, United States v. Philip Morris, 10/18/01, 87:5-7. Likewise, Reynolds's marketing executives concluded that

> most [smokers] did not realize that the product had other [than low ETS] unique attributes (i.e., . . . reduction in alleged controversial compounds). . . . As a result, many smokers who tried the product were not adequately prepared for its unique properties.

507543977-4004 at 3986 (US 85829); see also deBethizy PD, United States v. Philip Morris, 4/17/02, 122:6-8 (Premier's "taste was dramatically different and people were unprepared for it").

1919. Philip Morris reached similar conclusions about Reynolds's marketing approach to Premier. Philip Morris hired consultants to evaluate Reynolds's marketing of Premier and found it to suffer from exactly the problem Reynolds's executive Iauco articulated: Premier's advertising was "ineffective in communicating a relative advantage over the smoker's current brand." 2022259027-9061 at 9027 (US 20363); see also Farone TT, 10/7/04, 1818:10-1819:4, 2107:4-2108:3 (See Farone testimony that Premier print advertisement was "fuzzy" because it didn't compare Premier to other

marketed products such as Winston or Marlboro, did not inform consumers that the "compounds" are actually factors that cause disease or that there are carcinogens, and did not identify any chemicals in particular that might be harmful that were reduced by Premier.)

1920. From beginning to end, RJR spent nearly $1 billion on the Premier project. Townsend WD, 125:22-126:2; 143:7-11.

(b) Eclipse

1921. In 1989, after withdrawing Premier from test marketing, RJR shifted its focus to development of another cigarette that reduced the burning temperature to reduce the formation and delivery of harmful constituents. Reynolds first test-marketed this product -- Eclipse -- seven years later, in 1996. Unlike Premier, Reynolds began marketing Eclipse in April 2000 with a claim that it may present less risk of lung cancer, chronic bronchitis, and emphysema. Townsend WD, 143:13-144:3, 148:7-11, 152:5-8; (no bates) (US 85276); (no bates) (US 85277) (indicating that Reynolds R&D staff were working to achieve major improvements in Eclipse's lightability and taste/satisfaction).

1922. As part of Reynolds's efforts to improve the taste characteristics of Eclipse, it added a very small amount of tobacco in lieu of Premier's aluminum capsule, as well as with the carbon heat source. Reynolds also added a small piece of reconstituted tobacco paper that is wrapped around the heat source. Townsend WD, 144:4-23.

1923. Eclipse looks like and is smoked much the same way as any other cigarette. (no bates) (JD 065125 at 3). Because Eclipse primarily heats, rather than burns, tobacco, there are some important design differences that distinguish it from other cigarettes. Id. At the tip of Eclipse is a heat source made primarily of high purity carbon. The heat source also contains binders and a small

amount of tobacco. The heat source is surrounded by a specially designed continuous-filament glass-mat insulator that reduces heat loss to the surrounding air. The glass-mat insulator is made from a continuous-filament glass that was specifically engineered to be non-respirable. A thin layer of tobacco paper is sandwiched between two layers of the glass insulator. The tobacco paper and the tobacco in the heat source burn when Eclipse is lit to provide tobacco taste when the cigarette is first lit and while it is being smoked. Townsend WD, 144:4-18; (no bates) (JD 065125 at 3).

1924. Immediately behind the heat source is a tobacco roll that contains two segments. The first segment is a roll of processed cut tobacco that is fortified with glycerin (a common food ingredient that is found in most cigarettes). The second segment of the tobacco roll contains another processed tobacco blend. At the mouth-end of the cigarette is a cigarette filter made from cellulose acetate (the filter material used in most cigarettes). Holding the cigarette together are cigarette papers and laminates of cigarette paper and food-grade aluminum foil. The foil helps to retain the heat and conduct it through the cigarette. (no bates) (JD 065125 at 3).

1925. The smoker lights an Eclipse by puffing on the filter while the heat source is exposed to a flame. As the smoker puffs on an Eclipse, heated air flows through the dual segment tobacco roll and the filter. As the heated air passes through the cigarette, it produces smoke by vaporizing the glycerin and by releasing flavorants, aroma, taste and flavor components (including nicotine) from the tobacco. After about six or seven minutes, the heat source self-extinguishes, and the cigarette stops producing smoke. The carbon heat source and a few other components of the heat source assembly are the only parts of the cigarette that burn. Therefore, an Eclipse is the same size when it is finished as it was before it was lit. Id.

1926. Reynolds's primary internal goal and design criteria for Eclipse was risk reduction. Doolittle PD, United States v. Philip Morris, 5/10/02, 202:4-7. By the time Reynolds first test marketed Eclipse in 1996, it already had concluded that it had met that primary design goal. deBethizy PD, Hoskins v. Reynolds, 9/25/97, 169:15-171:15. However, for the first four years of the Eclipse test-market, from 1996 to 2000, RJR marketed Eclipse in the same way it had marketed Premier as a "cleaner" cigarette because it produced very low levels of secondhand smoke, rather than as a healthier cigarette. deBethizy PD, United States v. Philip Morris, 4/17/02, 56:8-11, 60:3-61:2, 61:22-63:11, 65:2-5; Doolittle PD, United States v. Philip Morris, 5/10/02, 202:18-23.

1927. In 2000, Reynolds began making limited health claims relating to the product. After first advising consumers that the best choice for smokers who worry about their health is to quit, promotional materials state that, compared to other cigarettes, Eclipse "may present less risk of cancer, chronic bronchitis, and possibly emphysema." Townsend WD, 29:22-30:6; id. at 152: 1-8; Beasley WD, 80:8-17; id. at 81:5-7; (no bates) (JDEM 060621); (no bates) (JD 061302).

1928. Reynolds communicated its belief that Eclipse may present less risk of certain diseases in advertisements, point of sale materials, and its Eclipse website, www.eclipse.rjrt.com. Townsend WD, 152:9-13; see also (no bates) (JD 061302) (after indicating that "the best choice for smokers who worry about their health is to quit," the advertisement states "Eclipse may present less risk of cancer. Eclipse produces less inflammation in the respiratory system, which suggests a lower risk of chronic bronchitis, and possibly even emphysema."). Today, in 2005, Reynolds says Eclipse "may present less risk of cancer associated with smoking." (no bates) (JD 068012).

1929. The delay in making these claims from 1996 until 2000 is attributable to the additional time Reynolds took to construct and apply its own internal scientific testing approach for

labeling a cigarette less hazardous -- what it refers to as the "Four Step Methodology." Townsend WD, 149:8-150:8. Reynolds's Four-Step Methodology is a tiered-testing approach to product evaluation. In general, the four steps of the methodology are (1) chemical testing and analysis, (2) biological and toxicological testing, (3) human testing, and (4) independent scientific verification. 525073272-3277 at 3275 (US 78746); 431109741-9741 (US 47648).

1930. The first step involves an extensive understanding of smoke chemistry. If the chemistry shows a simplification of the smoke, or dramatic reductions in key target compounds, then the product is evaluated under the second step, which is biological testing. At the second step, using both in vivo and in vitro testing, the product is evaluated to determine whether it shows significant reduction in biological activity. If the product makes those showings, then, at the third step, it is evaluated by human smokers to see if there are indications that consumers will purchase the product. If the product shows consumer acceptance potential, the data will, at the fourth step, be evaluated by an expert independent scientific panel which will determine, in its expert judgment, whether the new product presents less risk. Townsend WD, 149:19-150:8.

1931. Reynolds conducted extensive testing on Eclipse, including biological studies, (performing genetic toxicology, cytotoxicity, animal studies), human behavior studies and human evaluations. Richter United States Dep. 3/8/02, at 190:3-196:4 (identifying the studies performed by Reynolds). The results of the chemistry studies showed substantial differences between the smoke composition of Eclipse and the tobacco burning cigarettes tested. Townsend WD, 146:2 - 147:11; (no bates) (JDEM 060501); (no bates) (JD 065125). The chemical composition of the smoke from Eclipse is much simpler (i.e., contains fewer compounds and substantially smaller

quantities of compounds) than that of cigarettes that produce smoke primarily by burning tobacco. Id. at 2.

1932. A comprehensive toxicological testing program using in vitro cellular test systems and rodents was developed to assess the potential biological activity of the smoke from Eclipse compared to the smoke of a variety of cigarettes that primarily burn tobacco (the Kentucky 1R4F or 1R5F reference cigarettes or commercially available cigarettes). (no bates) (JD 065125). The results of all the in vitro tests conducted on Eclipse indicate that the smoke from Eclipse is less likely to produce genetic damage and to reduce cellular growth rate than the smoke from tobacco-burning cigarettes. Id. at 25-26.

1933. Reynolds also conducted comparative in vivo toxicological assays using rodents on Eclipse compared to tobacco-burning cigarettes. In general, effects observed among the animals exposed to smoke from Eclipse were fewer and less severe (in some cases, entirely absent) compared to those observed among the animals exposed to smoke from the 1R4F. Townsend WD, 147:7-11; (no bates) (JD 065125 at 26-28).

1934. Reynolds also conducted studies with human smokers of the Eclipse cigarette. Reynolds's studies compared a number of behavioral and physiological end-points in smokers when they were smoking Eclipse compared to when they were smoking their usual brands. Townsend WD, 147:16-148:5; (no bates) (JD 065125 at 36-39). Results indicated that the smokers were exposed to dramatically fewer mutagens when they were smoking Eclipse, compared to when they were smoking their usual brands of tobacco-burning cigarettes. (no bates) (JD 065125 at 34-35).

1935. Reynolds shared its research with the public health community. For example:

- In April 1996, representatives of Reynolds met with the FDA during which they disclosed that R.J. Reynolds intended to conduct a market test of Eclipse. 517663284-3285 (JD 065286). Following that meeting, Reynolds provided the FDA with information relating to the extensive testing done on Eclipse. 520943728 (JD 065287).

- On August 23, 1996, RJR funded a conference at Duke University Medical Center titled "Eclipse and the Harm Reduction Strategy for Smoking," where scientists and health researchers discussed whether products like Eclipse were safer. 522269118-9121 (JD 065296).

- Reynolds initiated contact with CDC and met on three occasions with CDC representatives in 1997-1998 to discuss scientific studies of Eclipse and plans for marketing the product. See Richter United States Dep. 3/8/02, 188:23-189:6, 209:7-210:19; 519419882-9884 (JD 065298).

1936. Reynolds also made several scientific presentations and published extensively regarding Eclipse. Reynolds's Web site lists more than seventy such presentations or publications since 1995 alone. (no bates) (JD 065125); see also Richter United States Dep. 3/8/02, 201:18-202:2 (acknowledging that Reynolds published many studies in peer reviewed journals). Moreover, Reynolds's patents relating to Eclipse are publicly available. See Richter United States Dep. 3/8/02, 207:23-208:12.

1937. Reynolds has established two websites regarding Eclipse. One is for consumers; the other is for scientists. Beasley WD, 82:7-12. All of the data regarding Eclipse and the comparisons to tobacco-burning cigarettes are available are the Internet. deBethizy, United States Dep., 4/17/02, 109:17-110:7; id. at 222:11-21.

1938. To evaluate the Eclipse cigarette as a potential product modification aimed at risk reduction, Reynolds asked Dr. Bernard M. Wagner to identify an appropriate group of experts with

"experience and scientific recognition in the fields of analytical chemistry, genetic toxicology, pharmacology, inhalation toxicology, carcinogenesis, veterinary and human pathology, clinical pulmonary diseases, and clinical cardiology." (no bates) (JD 060235 at 1).

1939. The panel concluded:

- The chemistry of the mainstream smoke from the ECLIPSE cigarette is much simpler than that of cigarettes that burn tobacco. Many of the compounds that have been identified as possible health hazards have been substantially reduced in this new cigarette."

- "The new cigarette produces negligible amounts of sidestream smoke and both the sidestream and related environmental tobacco smoke have been shown to be much simpler in chemical composition when compared with cigarettes that burn tobacco."

- "The biological activity of the ECLIPSE mainstream smoke, as well as the smoke condensate, is substantially less than that of cigarettes that burn tobacco."

- "In a small number of human studies, smoking ECLIPSE may reduce the risk of inflammatory disease, changes in cellular activity, pulmonary clearance, pulmonary permeability, etc. often associated with smokers, as compared to tobacco-burning cigarettes."

(no bates) (JD 060235 at 3); Townsend WD, 151:13-22.

1940. The panel's overall study findings suggest that Eclipse may present less risk of developing cancer, chronic bronchitis, and emphysema as compared to tobacco-burning cigarettes. (no bates) (JD 060235 at 32, 34); see also Townsend WD, 151:1-12.

1941. By the end of 1999, Reynolds had conducted sufficient research on Eclipse to meet the four criteria it had established for a potentially less hazardous product. As it had in the past, Reynolds contacted the FDA in early 2000 and requested a meeting to discuss the company's plans

to test market Eclipse. 520737199-7200 (JD 041953). In March 2000, Reynolds briefed the FDA on Eclipse and provided the FDA with a summary of the science behind Eclipse. 521556628-6628 (JD 041956); 521561627-1627 (JD 041958); see also 521561595-1595 (JD 041957) (advising of test market in Dallas/Fort Worth area and providing letter and large brochure that will be sent to physicians and health care workers). Reynolds's scientists also presented data on Eclipse to the Society of Toxicology, the International Congress of Toxicology and the Tobacco Chemists Conference. Richter United States Dep. 3/8/02, 206:3-15; 206:22-208:20.

1942. Eclipse was the first product that Reynolds developed for which it felt it had sufficient data to be able to substantiate the claims it was making. Townsend TT, 3/8/05, 14869:23-14870:4, 14873:3-7; Townsend WD, 30:21-23 ("The scientific evidence supporting the claims Reynolds makes for Eclipse is much stronger than any scientific evidence I have seen for any conventional, tobacco-burning cigarette.").

1943. As with Premier, Eclipse encountered some resistance from public health advocates. On April 9, 1996, Reynolds announced that it would begin market research on Eclipse in certain cities. Townsend WD, 148:7-11. That same day, a petition was filed asking the FDA to regulate Eclipse. 515218535-8560 (JD 062455); 515443333 (JD 062456); (no bates) JD 062455).

1944. In June 2000, the Society for Research on Nicotine and Tobacco (SRNT), a loose-knit organization whose participants included a number of individuals from the government, urged the FDA to assert jurisdiction over Eclipse. 521226957-6960 (JD 041955). Congressman Waxman also relied on the SRNT letter in calling on the FDA to regulate Eclipse. HHA4593094-3095 at 3094 (JD 042057) ("The Society for Research on Nicotine and Tobacco and other experts in tobacco control

that have reviewed the publicly available data on Eclipse have concluded that there is insufficient and conflicting evidence to support RJR's claims.").

1945. On August 1, 2000, the National Center for Tobacco-Free Kids urged the FTC to take action against the advertising for Eclipse. 524543577-3580 (JD 041961); see also 524408016-8026 (JD 065306); 525333677-3678 (JD 065307).

1946. On the other hand, some members of the public health community lauded the introduction of Eclipse. HHS0680035 (JD 042072) ("The analyses of the mainstream smoke content show similarity to the 'ultra low tar' reference cigarette, especially in terms of tar, nicotine and particles. However, Eclipse contains less combustion products and more water and glycerin which is the primary aerosol vehicle in Eclipse"); HHS0752062-2064 at 2062 (JD 004667) ("The eclipse product has been designed to lower exposure to such combustion products by heating the tobacco rather than burning it. The smoker is thus able to obtain the aroma and taste of tobacco with less potential toxicity. On the face of it, this is a good idea if you are a smoker. If you will, it is a win/win situation.").

1947. In addition, in 1996, public health activist John Slade wrote in a letter to the FDA:

> The present management of RJRTC may well be committed to reducing the harm caused by its products. Its willingness to spend large sums to develop Eclipse in the first place, its willingness to openly publish the chemistry and toxicology work on the product, and its eagerness to engage in dialogue with public health workers about this product suggest that this is the case.

517156964-6984 at 6973 (JD 041949).

1948. Eclipse is currently available nationwide at retail in certain chains such as 7-Eleven and Circle K. Harris WD, 228 8-9; Townsend WD, 148:12-15. There are some smokers who have switched and smoke only Eclipse. However, on the whole, the brand is struggling in the

marketplace. Reynolds hopes that as more smokers become aware of the product its market performance will improve. Townsend WD, 148:16-149:6.

1949. Currently, the FDA is investigating Reynolds's advertisements for Eclipse. Townsend TT, 14866:22-24.

(3) EW/Winston Select

1950. The purpose of EW, which built on an earlier research project known as Project CC, was to create a "tobacco burning" cigarette that had the potential to reduce health risks. Gentry WD, 4:4-17, 5:3-6; Gentry TT, 10/14/04, 2385:22-2386:03; id. at 2388:7-8; see also Gentry TT, 3/8/05, 14853:15-14854:13.

1951. There were two special components to the EW cigarette RJR introduced. The first was a "carbon scrubber" filter and the second was a "low nitrogen" blend of tobacco. Each contributed independently to EW's risk-reducing potential. The low nitrogen blend reduced constituents such as free radicals and nitrosamines, both of which are believed to play a role in disease formation. The carbon scrubber filter was an updated version of a charcoal filter. As explained further above, charcoal (or activated carbon) has the potential to selectively reduce harm-causing constituents. Cigarettes with such filters have historically earned a small market share in the United States, because of the unpopular "off-taste" associated with it. Gentry WD, 5:18-6:20, 13:6-18; see also Gentry TT, 10/14/04, 2383:18-2384:5; Townsend TT, 3/8/05, 14704:10-14705:5, 513039845-9847 (US 22095) (Confidential). Reynolds concluded that EW's filter "took care of most, if not all" of the taste problem, while at the same time being "more effective" in selectively reducing these harmful constituents than RJR's predecessor charcoal filter product, Tempo, or any

other cigarette on the market at the time. Townsend TT, 3/8/05, 14705:6-14706:2; 511689507-9510 (US 22090).

1952. By 1994, RJR had developed six consumer acceptable EW products -- "four consumer acceptable light styles," and in response to requests from the Marketing Department, "two consumer acceptable full-flavor styles." 511689507-9510 at 9507 (US 22090) (Confidential); see also Gentry WD, 10:11-18.

1953. The tobacco blend and filter complemented each other to produce overall reductions in targeted smoke compounds under FTC smoking conditions. Gentry WD, 7:1-10; id. at 13:6-15; see generally id. at 15:16-17:8; see also Report of Canada's Expert Committee on Cigarette Modifications, Conference Proceedings. (no bates) (JD 000676) (at 36-37). However, certain smoke constituents, including some that are suspected carcinogens and tumor promoters (e.g., BaP, formaldehyde and phenols), were either not reduced or increased with the EW technology. Gentry WD, 7:5-6. An aggregation of the mass of all target compounds showed an approximate 50% reduction under FTC conditions. (no bates) (JD 000676) (at 37).

1954. Reynolds's biological activity and toxicity testing of EW showed some significant reductions in biological activity under certain tests (e.g., whole smoke cytotoxicity, whole smoke sister chromatid exchange, mutagenicity under one salmonella strain, and irritancy). Mouse skin painting showed that EW did not possess any different toxicity or tumor-promoting potential compared to commercial cigarettes of comparable tar yield. Sub-chronic inhalation studies showed a decrease in nasal histopathology with EW, but no difference in larynx, trachea, or lung biological endpoints when compared to a commercial cigarette of comparable tar. 521753172-3701 at 3191-95 (JD 067735).

1955. Other tests also showed no significant difference compared to the control cigarette (e.g., condensate toxicity, condensate sister chromatid exchange, and mutagenicity under a different salmonella strain). (no bates) (JD 000676 at 38-39).

1956. Reynolds performed additional research on EW by subjecting it to more stressful smoking conditions. The results of the research indicated that the reductions in smoke constituents that were achieved when studying EW under FTC conditions were significantly diminished, or eliminated, when EW was smoked under more human-like conditions. Gentry TT, 10/14/04, 2466:15-17; Townsend WD, 63:18-22. As one example, acetaldehyde showed approximately 50% reduction under FTC smoking conditions, but there was no reduction when EW was smoked under more human-like conditions. Gentry TT, 10/14/04, 2466:16-23; Townsend TT, 3/08/05, 14860:9-14863:7 (discussing Overview of EW Smoke Chemistry, JD 067874 (at 18-19) (reductions under FTC smoking conditions did not exist under more intense smoking for various constituents). These results led Dr. Townsend to conclude that EW probably did not reduce risk and that there were "serious questions as to whether that particular execution of EW would offer any health benefit as it would be used by smokers." Townsend WD, 63:15-22.

1957. By 1993, certain scientists in the company were confident enough of EW's potential to reduce exposure and its performance on established biological tests that they reached a consensus on scientific claims that RJR could place on a package insert for EW. These claims included favorable comparisons to competitors' products, including the Marlboro Lights 85 brand, based on established biological tests. 511689507-9510 at 9507 (US 22090) (Confidential). In testing EW, Reynolds substantiated: (1) reductions in chemistry, Gentry WD, 11:1-5, 15:13-21:19 (discussing data in 515873569-3776 (US 85886), comparing EW version to Marlboro Light 85s), 25:3-28:7

(compared to Marlboro Light 85s, reporting substantial reductions in nitrosamines, which are possible human carcinogens, and other oxides of nitrogen, which may be linked to emphysema), 28:21-29:3; (2) reductions in biological activity in both in vitro and in vivo tests, Gentry WD, 29:4-34:1 (discussing 517400643-0671 (US 30327) (Confidential), showing that EW prototypes had "statistically lower" mutagenicity scores compared to Marlboro Light 85s), 34:2-42:19 (discussing genotoxicity results reported in 520984125-4133 (US 80287), 521967676-7677 (US 30519)), 46:18-56:25 (discussing cytotoxicity results reported in 520984104-4117 (US 80285), 510941930-1938 (US 89101), and 510959750-9752 at 9750, 9752 (US 51536)), 42:23-44:13 and 44:17-46:17 (discussing in vivo sensory/Alarie irritation test results reported in 510768455 (US 87557) and 511325258-5260 (US 30011)); (3) success in human smoker studies, Gentry WD, 58:10-61:10 (discussing 520009013-9027 (US 89100)); and (4) review of this research by a panel of "independent" scientists, Gentry WD, 62:13-68:12 (discussing the data presented to the panel in 515305298-5537 (US 89102) and the panel's report, 518379726-9740 (US 30345)).

1958. By 1994, RJR had sponsored extensive consumer concept and product testing for EW and found that the stronger and clearer the reduced exposure message, the greater the consumer interest in the product. 508128536-8563 at 8545, 8553 (US 85883); 515873569-3776 at 3681-3684, 3687-3688 (US 85886) (message of "50% reduction in alleged cancer causing compounds" was preferred over the traditional taste claim in consumer testing by a wider margin than the amount by which the less specific "50% reduction in controversial compounds" was preferred to a taste claim). In light of these results, the marketing research team at RJR repeatedly recommended that its executives use a reduced exposure claim for EW. 515873569-3776 at 3685 (US 85886).

1959. As it did with Eclipse, Reynolds made the results of its research regarding EW technology publicly available in the peer reviewed literature and at scientific conferences. Gentry WD, 55:14-15; see also 520984104-4117 (US 80285); 520984125-4133 (US 80287).

1960. To assess the potential commercial viability of EW, Reynolds incorporated the technology into an existing commercial brand, called "Winston Select", and test marketed it in the state of Oklahoma. Beasley WD, 83:21-84:7. Outside of the test market, Winston Select maintained its original configuration (i.e., it did not contain the EW technology incorporating the carbon filter and low nitrogen blend). Gentry TT, 10/14/04, 2388:20-2389:3; Beasley WD, 84:8-11. Winston Select/EW was sold in Oklahoma for approximately two years, from 1995-1997. Gentry WD, 4:19-22; Gentry TT, 10/14/04, 2359:15-24; Townsend TT, 14703:19-14704:9; 517005979-5980 (JD 067723).

1961. However, RJR never informed consumers in the Oklahoma test market that the EW version of Winston Select had the potential to reduce risk. Instead, the EW/Select marketing campaign focused on taste. Townsend TT, 3/8/05, 14726:10-23.

1962. Initially, the new Winston Select performed well and showed an increase in market share. Townsend TT, 3/08/05, 14710:1-5; Beasley WD, 84:16-21. This early success, however, was short-lived and was attributed to heavy promotions and price reductions in the Oklahoma test market, rather than to the product attributes. Beasley WD, 85:3-20; Gentry TT, 10/14/04, 2390:13-14; see also 518793384-3395 at 3385 (JD 067728). Blind product testing indicated that some smokers reported that the taste of the Winston Select/EW was deficient compared to the regular Select brand style. 517005979-5980 (JD 067723). Dissatisfaction with the test marketed Winston Select EW was evidenced by the fact that core smokers of Winston Select began switching to other brand styles.

518793615-3629 (JD 067729). The fall-off in Winston Select/EW market share in the second year of introduction was much more dramatic than in non-EW test markets. 12/18/96 Memorandum from R.C. Pasterczyk to E.C. Leary and J.D. Weber, 517005979-5980 (JD 067723).

1963. Winston Select/EW was pulled from the market after it began to lose significant market share. Although Winston Select/EW reached a 1.25% market share when it was first marketed in 1995, its market share later dropped significantly. Before it was pulled from the market, Winston Select/EW's market share had dropped more than one-third from the time of its introduction. Beasley WD, 87:7-16. RJR's standard for whether a new line is sufficiently consumer acceptable is whether, during its start-up or test market period, it achieves sales levels of between 0.3% to 0.5% of market share; sales at such a level would indicate "a very successful product." Townsend TT, 3/8/05, 114681:5-14684:5, 14685:2-14686:13. At no time did Winston Select/EW dip below 0.9% of market share. Reynolds did not consider Winston Select to be a commercial success because it was not a new line extension. Rather, it was a product replacement to an existing line extension, so it benefitted from inheriting market share from its predecessor version of Winston Select. Instead of gaining market share or even holding its own because of that advantage, Winston Select/EW lost market share compared to where it started, and lost market share at a rate twice the national average for regular Winston Select. Beasley WD, 88:7-13.

1964. In 1993, RJR chief counsel Wayne Juchatz asked the company's outside law firm Jones Day Reavis and Pogue to conduct a thorough assessment of EW (then named "Project CC" internally) and its proposed potential marketing strategies, and to prepare a report for "attorneys defending Reynolds against future claims involving [EW]." In June 1994 Jones Day provided

Reynolds with a 200-page report containing legal analysis and recommendations. Juchatz TT, 11/22/04, 6687:16-6688:25 (discussing 515873569-3776 at 3575 (US 85886)).

1965. Jones Day noted that, in light of the scientific findings and the results of consumer tests conducted in 1993, "it appears that, in terms of both taste and price, [EW] is now ready to be introduced onto the market." Noting that RJR set as a benchmark for EW the reduction of 50% of "alleged carcinogenic compounds," and concluding that they succeeded, Jones Day determined that "there are currently no regulations or statutes that prohibit the marketing of [EW]" as a potentially reduced exposure product. 515873569-3776 at 3581, 3667, 3672, 3699 (US 85886).

1966. Jones Day acknowledged that "'50% less claimed cancer causing compounds' is more appealing to consumers than 'reduces controversial compounds' or 'reduces irritancy,'" and that any of these messages regarding "personal concern" were more appealing to consumers than the message concerning the taste of the cigarette. Jones Day advised that any such direct, aggressive claims "may increase Reynolds' exposure to certain claims in smoking and health litigation," the most dangerous of which being that plaintiffs would posit that, with the development of EW, "Reynolds believes that other cigarettes are dangerous and must be redesigned to avoid future liability." 515873569-3776 at 3709-3766 (US 85886). For these reasons, Jones Day recommended against making any reduced risk claims, even watered down ones such as "reduces irritancy" or "cleaner smoke." Juchatz TT, 11/22/04, 6693:23-6694:2.

1967. Jones Day's advice was contrary to the desired approach of "[m]any in Reynolds R&D Division, including Dr. David Townsend, [who] appear to favor strongly an aggressive approach . . . ." 515873569-3776 at 3687-3690 (US 85886); Townsend TT, 3/8/05, 14720:21-14721:6

(Townsend admitted that he urged taking an aggressive approach to marketing EW with health claims).

1968. Internal disagreement existed amongst scientists at Reynolds continued regarding both the commercial viability and risk-reduction potential of the EW technology. Gentry TT, 10/14/04, 2390:1-8; Townsend TT, 3/8/05, 14728:25-14729:10. While certain scientists believed that EW was consumer acceptable and provided potential risk reductions, others did not agree. Townsend TT, 3/08/05, 14855:17-22; 14857:14-14858:2; (no bates) (JD 067830 at 51758 6757); Townsend TT, 3/08/05, 14858:21-14860:7 (discussing 700248426-8429 at 8429 (US 22184)).

1969. An August 1997 memo about EW from Dr. Robert Suber, which was copied to 25 RJR employees, including Gentry, Townsend, and Deborah Pence, titled "Revised Consensus to Claims Using the CS Filter and Low Nitrogen Tobacco," 70028426-8429 (US 22184), demonstrated the existence of a "consensus for commercial EW from a scientific perspective" with regard to the following claims that were reached after "conduct[ing] a number of chemical and biological assays on this product" and "are based on a competitive evaluation of other products within a local market":

-- "The potential risks of smoking may be reduced due to the decrease in irritants, cytotoxins, and some carcinogens in the vapor phase";

-- "Breakthrough filter giving good taste, but [sic] a significant reduction of many controversial or unwanted compounds may (might) reduce potential risks of smoking";

-- "Decrease in many controversial compounds in whole smoke (with explanation insert) may (might) reduce potential smoking risks";

-- "Decrease in irritants which may (might) potentially reduce the risks of smoking – throat harshness[,] throat irritation";

-- "Decrease in many (some) vapor phase irritants, cytotoxins and genotoxins which may (might) potentially reduce the risks of smoking";

-- "The potential risks of smoking may be reduced due to the decrease in free radicals in smoke";

-- "Decrease in many (or most) controversial compounds in the vapor phase or whole smoke (with further information on pack or insert to define terms "controversial" and "many") may (might) reduce the potential risks of smoking"; and

-- "Breakthrough in filter technology giving good taste, but [sic] significant reduction in most (or many) vapor phase compounds (or reduction in unwanted vapor phase compounds) may (might) reduce potential risks associated with smoking."

70028426-8429 at 8428-8429 (US 22184); Townsend TT, 3/8/05, 14715:6-15, 14716:7-14718:25, 14722:13-14723:1.

1970. Blind product testing indicated that some smokers reported that the taste of the Winston Select/EW was deficient compared to the regular Select brand style. (no bates) (JD 067723). Dissatisfaction with the test marketed Winston Select EW was evidenced by the fact that core smokes of Winston Select began switching to other brand styles. (no bates) (JD 067729). The fall-off in Winston Select/EW market share in the second year of introduction was much more dramatic than in non-EW test markets. (no bates) (JD 067723). Reynolds's President and Chief Operating Officer, Lynn Beasley, oversaw the Winston brand at the time the EW technology was test-marketed in Reynolds's Winston-Select brand. Beasley WD, 84:12-13. Ms. Beasley testified that the major indicators of consumer acceptance -- blind product testing, in-market tracking, and share of market performance -- suggested that Winston Select/EW proved to be less consumer

acceptable than regular Winston Select. Beasley WD, 87:3-6. RJR discontinued the EW/Select test market in the summer of 1997. Gentry WD, 4:18-22; Townsend WD, 62:8-12.

1971. RJR has not abandoned the EW concept, and has returned it to the laboratory to improve performance. As of 2004, it was "still working on the technology." Townsend WD, 64:1-5.

c. BATCo and Brown & Williamson

(1) FACT Cigarette

1972. In the mid-1970s, B&W internally acknowledged a "scientific consensus on alleged ill effects of smoking" that included harm from constituents in the gas phase of cigarette smoke, including carbon monoxide ("artherosclerosis, permeable arteries, displacement of oxygen in blood"), nitrogen oxide ("obstructive pulmonary disease, emphysema"), and hydrogen cyanide ("cilatoxic"). In response, B&W developed FACT, a "low gas" cigarette to compete with low tar products:

> The gas reduction segment is expected to emerge in the next 1-2 years. The low gas segment is also seen as a means to eventually stem the decline in smoking incidence through positive statements to smoking consumers and passive smokers alike.

777076768-6792 at 6773, 6790 (US 54623).

1973. While B&W believed that FACT presented a potential health benefit, it also believed there were several impediments to offering "health reassurances." 777076768-6792 at 6768 (US 54623). B&W concluded that Liggett's and Lorillard's prior low gas products had failed in part because of "an inability of the positioning to communicate . . . distinct health hazards arising from cigarette gases." 777076768-6792 at 6771 (US 54623); see also 681879254-9715 at 9293 (US 21020).

1974. B&W chose not to market FACT with health claims. Brown & Williamson concluded, based upon

> [e]xtensive testing of FACT advertising over a three-year period," that "consumers do not perceive low gas as a different benefit than low 'tar' [and] low gas per se is not a compelling consumer benefit [and thus] it will not yield successful advertising if presented without substantial problem definition and elaboration.

66705296-9299 at 9296 (US 69068); 777076771-6792 at 6771 (US 54623) (four prior attempts by other manufacturers to market low gas products had failed to achieve significant penetration because of "an inability of the positioning to communicate … distinct health hazards arising from cigarette gases."). A B&W Brand Manager stated explicitly in a memorandum to, among others, the Vice President of Brand Management:

> We do <u>not</u> support definition in advertising of the problem of gas in order to specifically communicate its consumer benefit and distinguish it from low "tar." To supply such definition would require overt references to the alleged ciliatoxic and cardiovascular ill effects of smoking. The possible ramifications of this in the Legal, Regulatory, and Policy area are appalling.

667059296-9299 at 9296 (US 69068) (emphasis in original).

(2) Project Ariel

1975. Project Ariel was the first practical device to alter or avoid combustion, and thus reduce delivery of harmful compounds in smoke. Ariel was a ceramic tube placed in the middle of a conventional cigarette to run the complete length of the rod. The tube was connected to a mouthpiece, which was isolated from the tobacco that surrounded the ceramic rod. Nicotine or nicotine plus flavor was placed inside the tube so that when the tobacco burned, the nicotine and flavor were released when the hot zone reached that portion of the ceramic tube. In this way, the

tobacco never underwent combustion. Farone WD, 177:22-178:12. It was patented in 1964 and was based on research done for BATCo at Battelle Laboratories. (no bates) (US 20581 at 301121935). Ariel had the look and feel of a regular cigarette. Farone WD, 177:10-179:7.

1976. Some scientists at BATCo believed that Project Ariel was feasible. On February 13, 1963, Sir Charles Ellis wrote to BATCo Production Director D.S.F. Hobson to suggest a gradual transfer of responsibility for Ariel from Battelle to BATCo, and proposing a "definite phrase stating that BAT will undertake the commercial realisation of the project." Ellis went on to state:

> There is now no doubt that the project is feasible, and it is important that we carry out this further study to see whether from this beginning we can develop something more sophisticated. I have myself smoked two crude versions of the devices . . . and obtained a marked nicotine effect without, of course, any combustion products.

301121935-1936 (US 20581); see also 301121911-1917 at 1917 (US 22023) (February 18, 1963, Battelle report confirming that "it was possible to smoke a complete cigarette and get some satisfaction out of it. These experiments make it appear very likely that a satisfactory device can be developed.")

1977. In July 1966, BATCo scientists again confirmed that with regard to Ariel, "the original objective is feasible and achievable." 105534272-4285 at 4283 (US 20241). In May 1967, BATCo in-house scientists also concluded that "the ARIEL design provides . . . a satisfying smoke which, within present knowledge, is ‘healthy.'" 301099888-9902 at 9890 (US 21547).

1978. There were technical challenges with Project Ariel. B&W Researcher, Dr. Ivor W. ("Wally") Hughes noted that, apart from the technical challenges of constructing such a novel “heat -- don’t burn” device, Ariel showed problems with “smoke” quality which could inhibit consumer acceptance of the device. (no bates) (US 20115 at 1-2).

1979. In December 1964, Battelle submitted its "Final Report on the Biological Part of Project Ariel" prior to the transfer of Project Ariel to BAT. Battelle highlighted the principal problem that plagued efforts to develop a "heat-don't burn" device in the 1960s. While "[a] physiologically acceptable aerosol has thus been produced by electrically heating aluminum tubes containing tobacco extract and different additives," 301121057-1086 at 1066 (US 20578) (emphasis in original), there had been no success "changing over from the electric heater to a practical heating system as provided by burning an outer wrapper of treated tobacco." Id. at 1061.

1980. In July 1966, a year and a half after Project Ariel had been transferred to BAT, BAT scientists reported, "irritation is above normal; the overall flavour of the smoke is not particularly pleasant and is lacking in 'body' [and] [t]he aerosol itself does not persist as long as that from a normal cigarette. . . ." 105534272-4285 at 4278 (US 20241) at 4. BAT scientists concluded:

> The devices which have been made to date are still a considerable way from being acceptable and easily produced, and it would be misleading to under-estimate the amount of effort required to develop the devices to the required acceptability both in smoke quality and ease of production.

Id. at 4279.

1981. BAT scientists acknowledged that, given the multitude of problems encountered in Project Ariel, "[t]here is some merit in considering the circumstances which led to the origin of the idea" -- the idea of reducing or eliminating smoke components formed during combustion. They noted that, "[i]n this context, the trend to reduction in tar content (in other words, an increase in the nicotine to tar ratio) is becoming increasingly important, and a number of ways of achieving this are available [e.g., the M.A.H. Russell medium nicotine, low tar concept]." Id. at 4283. In the years that

followed, BAT gradually shifted its focus to more conventional potentially reduced exposure projects. Read WD, 41:1-6.

(3) Project Airbus

1982. Brown & Williamson briefly re-considered an Ariel-type device -- called "Airbus" -- in the late 1980s. "AIRBUS was intended to directly compete with [R.J. Reynolds's] Premier in the concept of 'heating but not burning' tobacco." 620611363-1377 (JE 053344). Airbus had some technical challenges:

> After extensive research with this design, it must be concluded that within the constraints of cigarette size and the properties of known materials, the design cannot deliver a nicotine-flavored aerosol without burning or severely charring tobacco. Over 100 different prototype configurations were constructed using various fuels, insulators and aerosol generator formulations in attempts to lower aerosol generator temperatures below charring conditions.
>
> A mathematical model, constructed to simulate the [Airbus] design, indicated a need for an insulation material ten-times better than conventionally known materials. Only with this type of material could a non-charring condition be achieved. . . .
>
> Even if temperature could be controlled, several other problems exist with the design such as:
>
> - Poor delivery efficiency or aerosols/flavors.
> - Messy debris after burning.
> - Fallout of aerosol generator during smoking.
>
> Based on all of the above difficulties, no further investigative study is recommended. . . .

Id. at 620611369.

1983. Brown & Williamson's "Airbus Review" also advised against further investigation of an Ariel device after Reynolds' failed test market of Premier had "revealed significant product deficiencies in taste, aroma, and smoking mechanics":

> Not only are consumers disappointed by Premier's taste and aroma, they are reluctant to make adjustments to their normal smoking routines in order to accommodate the special needs of the product as indicated by the instruction booklet attached to packs. . . .
>
> [This] is further complicated by the fact that Premier is being positioned as part of the cigarette category. . . . Trial, however, leaves people feeling they've been misled. Things like the unusual foil overwrap, the instruction booklet, the need for a certain type of lighter and Premier's physical appearance all surprise the consumer. [The] consensus is that it is not a "real" cigarette.

Id. at 620611370.

1984. Like BATCo, Brown & Williamson shifted its focus from heat-not-burn-type devices to more conventional potentially reduced exposure projects. Id. at 620611366.

1985. In March of 1989, before the September 1989 Vancouver conference for the BAT Research Policy Group,[23] "it was agreed at that time that the technology to make Airbus happen had to be further developed and it would be transferred . . . to Southampton and became project Nova." Wigand TT, 11595:1-4; 401062678-2678 (JD 011688).

(4) Advance

1986. In November 2001, Brown & Williamson began test-marketing "Advance" -- a conventional potentially reduced-exposure product. Advance contains tobacco cured using a

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[23] The Research Policy Group ("RPG") was comprised of the scientists from each of the BAT Group cigarette companies. The RPG set strategic priorities for BAT Group research and development.

patented process to reduce levels of TSNAs – tobacco-specific nitrosamines that are normally formed during the curing process and have been identified as potential carcinogens – and utilizes a new patented triple filter to further reduce deliveries of toxins produced during combustion. Scientists at B&W believed Advance was a potentially reduced-exposure cigarette. Wessel 30(b)(6) PD, United States v. Philip Morris, 3/19/03, 42:1-43:1 (Confidential); Harris WD, 231:4-10; Honeycutt PD, United States v. Philip Morris, 4/23/02, 13:23-15:6, 61:3-66:6; USX5110274-0292 (US 89063); StarUSvPM000251-0363 (US 85920) (Confidential).

1987. Moreover, Brown & Williamson considered Advance to be the first conventional potentially reduced exposure product that smokes like a "real" cigarette in order to meet the consumer needs of taste, aroma, and smoking mechanics:

> Advance . . . is a conventional cigarette. It burns. You get smoke. . . . You don't have to overly manipulate to light it. It lights like a conventional cigarette. . . . You don't have to have a lot of mechanical contraptions, either external to the smoke or internal to the cigarette, to conduct the act of smoking. That is a conventional cigarette.

Wessel 30(b)(6), United States Dep., 3/19/03, at 71:16-72:17.

1988. In October 1999, B&W entered into an agreement with an independent tobacco company, Star Scientific, Inc., ("Star") to develop a product, called Advance, utilizing tobacco cured by Star's patented process for creating low-TSNA bright tobacco. USX5110274-0292 (US 89063); Honeycutt PD, United States v. Philip Morris, 4/23/02, 59:2-17, 68:25-70:3. Under the agreement, Star was responsible for test marketing Advance, and generating the onserts that were used in the test market. Blackie WD, 180:4-10.

1989. In late 2000 and early 2001, Star Tobacco introduced its initial version of the reduced TSNA cigarette "Advance" in test markets in Richmond, Virginia, and Lexington Kentucky. Wessel 30(b)(6), United States Dep., 3/19/03, at 18:2-19:21.

1990. On April 25, 2001, Brown & Williamson and Star Tobacco entered into an agreement to supersede their October 1999 agreement in its entirety and to provide for other commercial agreements. 000251-0363 (US 85920) (Confidential). This "Restated Master Agreement" transferred to Brown & Williamson full responsibility for all aspects of the market testing and product rollout of Advance, including marketing, advertising, packaging, labeling, product design, description, disclosure and comparative contents. Id. B&W began a new test market in Indianapolis in November 2001, using its redesigned packaging and onsert. Wessel 30(b)(6) PD, United States v. Philip Morris, 3/19/03, 24:2-10, 28:1-15.

1991. Star Scientific's version of Advance used a charcoal filter. Blackie 30(b)(6), United States Dep., 10/11/01, at 92:15-94:20. In addition to the federally mandated warnings, Star voluntarily placed additional information about the product and the harms of smoking on the package, and added an informational "onsert" attached to the package. Star's package included such statements as "Smoking can take YEARS off your life. It is much safer for you to QUIT than to switch or smoke" and "Star's processing methods greatly reduce SOME cancer-causing chemicals (nitrosamines) and its special filter reduced SOME toxic gases in cigarette smoke." 524942388-2389 (US 52963) (emphasis in original); 524942390-2391 (US 88038*); Wessel 30(b)(6) PD, United States v. Philip Morris, 3/19/03, 19:3-22:23.

1992. Brown & Williamson's refined version of Advance used a three-part, TRIONIC™ filter:

> The filter element nearest the tobacco section contains a sophisticated Ion-Exchange Resin (or IER). The IER acts as a pre-filter and pulls out specific substances -- primarily those known as "aldehydes" -- from the smoke passing through it.
>
> The next section of the TRIONIC™ Filter contains a special activated carbon [that] filters as efficiently [as] standard charcoal, but provides better taste. What's more, since the initial IER section has already worked on removing aldehydes from the smoke, the carbon element can now "concentrate" on filtering other substances, such as isoprene.
>
> The third and final stage of the TRIONIC™ Filter is composed entirely of cellulose acetate. Cellulose acts as a filter of "particulates" (sometimes referred to generically as "tar").

271098483-8484 at 8483 (JE 036407).

1993. Both Star Scientific's Onsert and B&W's Onsert communicated the following:

- Both state the company is providing this information so adult consumers have a basis for making informed choices.
- Both state there is no such thing as a safe cigarette.
- Both state there is not enough medical information to know if the product lowers health risks.

Compare Star's onserts (no bates) (US 52963) with (no bates) (US 88038)) and Brown & Williamson's onsert (no bates) (US 87216). Both onserts contained the mandatory Surgeon General's warnings. See id. Both Brown & Williamson's and Star Tobacco's onserts contain similar statements about compensation and the limitations of the FTC method for measuring tar and nicotine yields. Id.

1994. Brown & Williamson's onsert contained some additional specific information, regarding reductions of toxins and potential carcinogens that Star Tobacco's onsert did not:

- Brown & Williamson's onsert lists 44 of the "Hoffman analytes" -- potentially harmful smoke constituents "listed in proposed regulations by the MA [Massachusetts] Dept. of

Public Health" including tar and nicotine -- and reports the reductions of these -- both as absolute levels and percent change -- achieved with the Advance product as compared to the top two selling light cigarettes. Star Tobacco's onsert contains less information about reductions in Hoffman analytes, listing only 16.

Compare Star's onserts (no bates) (US 52963) with (no bates) (US 88038) and Brown & Williamson's onsert (no bates) (US 87216.

1995. B&W made the following changes in Star's Advance Onsert:

- affirmatively removed Star's statements on the package that referred to "cancer-causing chemicals";

- deleted Star's statements that "Smoking related diseases can KILL you," "Smoking can take YEARS off your life," and "It is still better to QUIT than to switch or smoke";

- eliminated Star's text references to "carcinogens (cancer-causing chemicals)" and "potent cancer causing chemicals in tobacco and tobacco smoke" in the onsert. B&W instead referred to "toxins";

- deleted Star's onsert statement that "ALL SMOKED TOBACCO PRODUCTS ARE ADDICTIVE AND POSE SERIOUS HEALTH HAZARDS"; and

- deleted Star's statement explaining that "Because many smokers smoke to get nicotine, they tend to smoke more intensely when smoking 'lights' or 'ultra lights,' and that because of such nicotine-driven compensation 'lights' and 'ultra-lights' are NOT NOW viewed by health scientists as reliably less hazardous." Instead, B&W stated in minuscule type only that smokers "can increase or decrease the amount of smoke that they take in depending on how they smoke their cigarettes" and thus actual delivery may differ from the FTC test measurements.

Compare 524942388-2389 (no bates) (US 52963) with 524942390-2391 (US 88038*) with TLT0960001-0002 (US 87216) (onsert to B&W Advance). See also Wessel 30(b)(6) PD, United States v. Philip Morris, 19:3-22:23; Blackie TT, 10/26/04, 3897:15-3900:15.

1996. Before test marketing of the refined Advance product, Brown & Williamson provided copies of its onsert to the National Association of Attorneys General ("NAAG"), which enforces the Master Settlement Agreement ("MSA") reached between Defendants and the states. 282402357-2454 (JD 012690). In both Arizona and Indiana, where Brown & Williamson conducted extensive test marketing of Advance,

> Brown & Williamson personnel went to visit not only the attorney general but also other state officials and local officials, advised them of the [test market] plans, gave them examples of the advertising materials and the cigarettes themselves so that they could be informed about what B&W was doing, and given an opportunity to comment and ask questions.

Mellen, United States Dep., 7/22/04, at 314:19-315:23. Neither NAAG, nor its individual member Attorney Generals, have complained about Brown & Williamson's onsert for, or marketing of, Advance. Id.

d. Lorillard's Zero Tar and PMO Projects

1997. As discussed above, ciliastasis is a condition in which the lung's cilia, the hair-like structures lining the lung passageways that are responsible for removing foreign matter such as particulate matter from cigarette smoke, become immobilized, or static, and cease their cleansing function. Lorillard conducted a significant amount of research relating to one compound in particular, phenol methyl oxadiazole ("PMO"), as a possible solution to the problem of ciliastasis.

See, e.g., (no bates) (JD 020259) (reporting a range of 1969-1970 PMO biological studies); 01417692-7714 at 7692 (US 20047).

1998. Lorillard could not demonstrate by consistent experimental proof that PMO resulted in a health benefit. Indeed, a number of the tests, including a long term chronic inhalation study in dogs that was done by the Tobacco Working Group incorporating some of Lorillard's PMO research, did not show that the addition of PMO to tobacco provided any prophylactic effect. (no bates) (JD 020261 at 1); and 504210547-0915 at 0547-0550 (JD 061133). Lorillard never marketed a commercial cigarette containing PMO. Coggins, United States Dep., 06/27/02, at 33:2-21, 148:21-24.

e. Liggett's Project XA

1999. By the early 1970s, Liggett had developed a new cigarette product, known as "XA," that internal research led it to conclude was less hazardous to smokers. Liggett saw XA as a way to increase its market share, which had fallen to around 5%, by attracting smokers who desired a cigarette that was potentially less harmful than the cigarette they had been smoking. Ross PD, Washington v. American Tobacco, 10/22/98, 97:1-98:25; Harris WD, 174:13-175:2.

2000. The XA product utilized palladium as a catalyst to alter the chemical reactions occurring in a burning cigarette, thus modifying the composition of cigarette smoke. LATH00312201-2202 (US 22149); Albino TT, 3/29/05, 17099:11-19, 17106:23-17107:1. By 1972, researchers at Liggett had determined that the smoke from XA cigarettes contained lower concentrations of polycyclic aromatic hydrocarbons ("PAHs"), some of the most harmful constituents in cigarette smoke. 681879254-9715 at 9485 (US 21020); LATH00312201-2202 (US 22149). By 1976, Liggett researchers had concluded, using the standard mouseskin-painting model,

that the smoke condensate from XA cigarettes reduced overall tumors in mice by 85-88%, and cancerous tumors by 77-100%. Harris WD, 174:13-175:2; LG 2013584–3587 (US 21208); LG166090–6102 at 6101 (US 21195) (Figure 2); Meyer PT, Washington v. American Tobacco, 11/10/98, 5441:14-5443:2; Mold PD, Cipollone v. Liggett, 11/25/85, 100:2-105:15. Liggett also performed animal inhalation studies and chemical analyses that showed that the addition of palladium did not adversely affect the test animals or create threatening byproducts. Id. at 104:17-105:15 (skin painting and inhalation studies "demonstrated that we had, in fact, eliminated the animal carcinogenicity"); 681879254-9715 at 9487 (US 21020).

2001. Liggett spent twelve years and significant amounts of money to produce XA. Despite that investment, Liggett chose, for a variety of reasons, not to market it. Albino TT, 3/29/05, 17103:9-11. First, Liggett concluded that the XA cigarette lacked consumer acceptability because it had a metallic taste, like gunpowder, and was not smokeable. Bereman, United States Dep., 4/23/02, at 67:2-13. Second, Liggett also believed that the FTC Guidelines would not permit it to make health claims about XA. Mold, Cipollone Dep., 12/13/85, at 283:22-284:08 ("we had been told that we couldn't say about the health benefits of this directly because The Federal Trade Commission would object"); LG2013239-3253 (US 34095); (no bates) (JD 010547 at 7-11) (discussed with Harris TT, 10/18/04, 2810:20-2816:15); Ross, Washington Dep., 10/22/98, 112:21-114:21.

2002. Third, other Defendants suggested they did not support the marketing of XA. Philip Morris "threatened to do everything in its power to prevent the marketing of the new cigarette." 681879254-9715 at 9295 (US 21020). According to Liggett President Kinsley V. Dey, that pressure from Philip Morris not to market XA in the United States contributed to Liggett's decision. Mold

PD, Cipollone v. Liggett, 11/26/85, 191:17-193:18. Ernest Pepples, B&W's representative on the Tobacco Institute's Committee of Counsel, threatened Liggett's "very existence" if it marketed the XA cigarette, including freezing Liggett out of joint defense agreements, and perhaps excluding Liggett from the Tobacco Institute as well, because selling XA would be an admission against the interest of all Cigarette Company Defendants. Meyer PT, Washington v. American Tobacco, 11/10/98, 5511:4-5518:13.

2003. XA's technology remained dormant at Liggett for nearly two decades. Shortly after creation of Liggett's affiliate Vector Tobacco in the late 1990, Drs. Bereman and Albino, Liggett-turned-Vector scientists, developed the Omni cigarette based on the XA technology and managed to market the product.

6. The Government Has Not Proven by a Preponderance of the Evidence that Defendant Had a "Gentleman's Agreement" Not to Develop a Less Hazardous Cigarette and Not to Do In-House Biological Research on the Hazards of Smoking

2004. The Government alleges that Defendants had a so-called "Gentleman's Agreement" that "[a]ny company discovering an innovation permitting the fabrication of an essentially safe cigarette would share the discovery with others in the industry and no domestic company would use intact animals [in] in-house bio-medical research." TT, 9/21/04, 122:3-7 ("Gov't Opening Stmt.). The Government claims that Defendants did this, "[f]irst, to avoid generating evidence that a potentially hazardous cigarette was necessary or possible; and second, to avoid generating internal evidence showing that some of their current products were likely less harmful than others." Id. at 121:10-13.

2005. As demonstrated above, there is abundant evidence of active competition on health claims amongst Defendants for the past 50 years. Moreover, the evidence is clear that Defendants conducted in-house biological research and did compete in attempting to develop and market potentially less hazardous cigarettes.

2006. The Court finds that the evidence offered by the Government, including the testimony of Dr. William Farone and Dr. Jeffrey Harris, does not support a finding that a "Gentleman's Agreement" existed.

2007. First, Dr. Harris had no direct personal knowledge of any "Gentleman's Agreement." Moreover, he conceded that there were ways the companies could get around any such "Gentleman's Agreement" if they wanted to by using a contract laboratory, such as Battelle, either in the United States or in a foreign country, or they could do it through a foreign affiliate. Harris TT, 10/18/04, 27432:22-2743:15.

2008. Second, the bulk of Dr. Farone's testimony belies the existence of a broader agreement not to compete in the development of less hazardous cigarettes. He described a myriad of projects at Philip Morris, discussed in detail in Section V(D)(4), supra, all dealing with safer cigarette development such as nitrosamine removal, modification of tobacco, selective filtration efforts nicotine analogue research, supercritical nicotine extraction, and work with electrically heated cigarettes. Farone TT, 1623:17-24, 1678:4-1672:1, 1690:9-1691:7, 1692:25-1695:17, 1954:25-1957:2; Farone WD, 91:8-11.

2009. Dr. Farone's knowledge was based only on hearsay from other Philip Morris scientists, who themselves had no personal knowledge of the events in question.

2010. Third, Dr. Farone testified that he did not know the date the so-called "Gentleman's Agreement" was entered into. Farone TT, 10/6/04 1783:60-10. Nor did he know who was present or who entered into it. Farone TT, 10/7/04, 1897:2-4. He admitted that he "didn't know the names of the companies" and "didn't know if there were one, two, three, or four companies that were supposed to be part of this agreement." Farone TT, 10/12/04, 2058:18-2059:9.

2011. The Government, and Dr. Harris, rely on the following language in a February 18, 1964 document by Helmut Wakeham, Philip Morris's Vice President for Research & Development, titled "Smoking and Health: Significance of the Report of the Surgeon General's Committee to Philip Morris Incorporated." 0000335612-5625 (US 22986); Harris WD, 122:3-125:12.

> Competitive pressures suggest a break up of the common front approach of the industry through TI and TIRC. While R.J. Reynolds continues to advocate a joint front, sit tight, status quo approach (it has the most to lose from any change in status quo), others like American and Liggett and Myers, sanguine for improved competitive positions, show signs of bolting and have capitalized with their new products on early reactions to the report. The greater the longer term market impact of the report, the more intense will there be health competition, which is to say technical competition, among major tobacco companies.

Harris WD, 124:1-12.

2012. Dr. Harris also relied on certain language on page 8 of this document, which states: "The industry should abandon its past reticence with respect to medical research." The language cited simply does not evidence any such "Gentleman's Agreement."

2013. The Government and Dr. Harris also point to Wakeham's draft presentation, titled "Need for Biological Research by Philip Morris Research and Development." 0001607055-7061 (US 76155); Harris WD, 152-57. In the document, Wakeham wrote:

> We have reason to believe that in spite of the gentlemans [sic] agreement from the tobacco industry in previous years that at least some of the major companies have been increasing biological studies within their own facilities.

0001607055-7061 at 7058 (US 76155). This single sentence reference is not sufficient to prove, by a preponderance of the evidence, that such an "Agreement" existed.

2014. The Government also looks to a December 1981 memo from Frank Colby to Jay Giles. 501626469 (US 21576). In this memo, Dr. Colby writes that "information was obtained that Philip Morris-U.S.A. does not live up to the alleged 'gentlemen's agreement' of not having animal laboratory facilities on their premises in this country." Id. Not only does Dr. Colby use the term "alleged gentlemen's agreement," this exhibit simply provides further evidence that the cigarette manufacturing Defendants did in-house biological research despite any alleged agreement. Indeed, the evidence outlined earlier in this Section, shows that Reynolds had been conducting or sponsoring biological research since the 1960s. Mosberg United States Dep. 4/23/02, 30:15-31:15; (no bates) (JDEM 060502); (no bates) (JD 067970); (no bates) (JD 060235).

2015. Dr. Robert DiMarco, a former Reynolds's scientist, who worked there from 1982-1992, stated that he was unaware of any agreement between the companies not to conduct laboratory research on the companies' U.S. premises and noted that RJR had an animal facility that was used extensively. DiMarco, Burton Dep., 8/14/01, at 118:22-119:1.

2016. Dr. Harris and Dr. Farone also cite a March 1983 draft memo prepared by Drs. Rodgman and Colby of Reynolds regarding "Biological/Consumer Preference Research Conducted by Philip Morris" as evidence of the alleged "Gentleman's Agreement." 501543470-3517 (US 21737); Harris WD, 157:5-12, 159:2-19 (describing Demonstrative #6); Farone WD, 137:7-138:7.

Dr. Harris acknowledges that the memo indicates that (1) "[t]hroughout the domestic industry, the 'Gentlemen's agreements were operative in the early days," (2) one-half of this "early days" agreement involved sharing discoveries that would permit the manufacturing of a "safe" cigarette, and that (3) at least two companies violated the alleged agreement not to conduct in-house biological research. 501543470-3517 at 3504 (US 21737). Dr. Harris also concedes that this document suggests that the alleged gentleman's agreement became inoperative. Harris WD, 160:3-6. Most significantly, Dr. Farone conceded that, despite this alleged agreement, all companies were, in fact, doing in-house biological testing "at one point or another" and that at least Reynolds and Lorillard were doing in-house testing on live animals. Farone TT, 10/12/04, 2060:25-2061:21.

2017. The evidence shows that the Defendants have devoted substantial resources to developing and marketing potentially less hazardous cigarette products. Further, the evidence shows that the Defendants have conducted extensive biological research, both in-house and by using contractors. Accordingly, the Court finds that the Government has failed to establish the existence of a "Gentlemen's Agreement" amongst Defendants.

7. Conclusions

2018. After weighing and evaluating all the specific Facts found in the foregoing Section, the Court concludes that the Government has failed to carry its burden of proving, by a preponderance of the evidence, that Defendants deliberately chose to sabotage the successful marketing and production of less hazardous cigarettes. As these Facts demonstrate, Philip Morris and RJR, in particular, as well as Lorillard and Liggett to a lesser extent, spent many years, enormous amounts of money, and the creative energies of their top scientists to investigate different approaches to production of cigarettes which would present fewer health risks to the public.

2019. Those efforts failed for many reasons: some approaches proved to be scientific and technological failures, such as the effort to reduce nitrogen oxide and harmful TSNAs, and the effort to develop a nicotine analogue; some could not gain consumer acceptability because of unpleasant taste, such as the charcoal filter cigarettes Saratoga, Tempo, and York; some could not gain consumer acceptability because they were too dissimilar from traditional cigarettes, such as Accord, Premier, and Eclipse.

2020. The Government may well be correct that more effective marketing and advertising which focused on the health benefits of these newly developed cigarettes could have overcome the consumer resistence to them. However, Defendants were operating in a regulatory climate where their fears of litigation with the Federal Trade Commission were by no means unreasonable given cases which the Commission had actually brought and won. Moreover, Defendants faced petitions filed with the FTC by advocacy groups which believed that cessation of all smoking was the only effective answer to the public health problem, and therefore opposed introduction of any new cigarette, no matter how much less risk it might pose to health.

2021. Finally, it simply strains credulity to conclude that these Defendants -- whose prime mission in life is to make money -- would pour hundreds of millions of dollars, as well as huge amounts of scientific and technical resources, into the development and marketing of less hazardous cigarettes and then deliberately choose to reject the benefits of their investment of money and brainpower. Defendants understood full well that the first company to succeed in producing a consumer-acceptable less hazardous cigarette would dominate the market in record time.

2022. For these reasons, the Court finds that the Government has not proved, by a preponderance of the evidence, that Defendants deliberately kept less hazardous cigarettes off the market.

E. Defendants Falsely Marketed and Promoted Low Tar/Light Cigarettes as Less Harmful than Full-Flavor Cigarettes in Order to Keep People Smoking and Sustain Corporate Revenues

2023. For several decades, Defendants have marketed and promoted their low tar brands as being less harmful than conventional cigarettes. That claim is false, as these Findings of Fact demonstrate. By making these false claims, Defendants have given smokers an acceptable alternative to quitting smoking, as well as an excuse for not quitting.

2024. Defendants used a combination of techniques to market and promote their low tar brands. Defendants' marketing has emphasized claims of low tar and nicotine delivery accompanied by statements that smoking these brands would reduce exposure to the "controversial" elements of cigarette smoke (i.e., tar). Since the 1970s, Defendants also have used so-called brand descriptors such as "light" and "ultra light" to communicate reassuring messages that these are healthier cigarettes and to suggest that smoking low tar cigarettes is an acceptable alternative to quitting. In addition to appealing advertising and easily-remembered brand descriptors, Defendants have used sophisticated marketing imagery such as lighter color cigarette packaging and white tipping paper to reinforce the same message that these brands were low in tar and therefore less harmful. See Section V(E)(5), infra (Defendants' deceptive marketing of low tar cigarettes).

2025. Even as they engaged in a campaign to market and promote filtered and low tar cigarettes as less harmful than conventional ones, Defendants either lacked evidence to substantiate their claims or knew them to be false. Indeed, internal industry documents reveal Defendants'

awareness by the late 1960s/early 1970s that, because low tar cigarettes do not actually deliver the low levels of tar and nicotine which are advertised, they are unlikely to provide any clear health benefit to human smokers, as opposed to the FTC smoking machine, when compared to regular, full flavor cigarettes.

2026. As Defendants have long been aware, nicotine delivered by cigarettes is addictive (see Section V(B)(3), supra (addiction)). Defendants' internal documents demonstrate their understanding that, in order to obtain an amount of nicotine sufficient to satisfy their addiction, smokers of low tar cigarettes modify their smoking behavior, or "compensate," for the reduced nicotine yields by taking more frequent puffs, inhaling smoke more deeply, holding smoke in their lungs longer, covering cigarette ventilation holes with fingers or lips, and/or smoking more cigarettes. See Section V(E)(2)(b), infra (smoker compensation). As a result of this nicotine-driven smoker behavior, smokers of light cigarettes boost their intake of tar, thus negating what Defendants have long promoted as the primary health-related benefit of light cigarettes: lower tar intake.

2027. Defendants did not disclose the full extent and depth of their knowledge and understanding of smoker compensation to the public health community or to government regulators.

2028. Defendants' conduct relating to low tar cigarettes was intended to further their overarching economic goal: to keep smokers smoking; to stop smokers from quitting; to encourage people, especially young people, to start smoking; and to maintain or increase corporate profits.

1. Low Tar/Light Cigarettes Offer No Clear Health Benefit over Regular Cigarettes

a. History of Health Claims

2029. In the early 1950s, on the heels of a series of studies linking smoking and disease, the Defendant cigarette manufacturers began making health claims, often using models in doctors' white coats, in their advertising:

- American Tobacco Co. made representations "that its cigarettes were less irritating to the throat than competing brands, offered one's throat protection, were easy on one's throat, and provided protection against throat irritation and coughing. . . ." Federal Trade Commission, In the Matter of American Tobacco Co., Complaint, Findings, and Order in Regard to the Alleged Violation of Sec. 5 of an Act of Congress Approved Sept. 26, 1914 (47 F.T.C. 1393), decided June 20, 1951.

- R.J. Reynolds Tobacco Co. "represented to the public . . . that the smoking of such cigarettes . . . aided digestion"; "represented that the wind and physical condition of athletes would not be impaired by the smoking of as many Camel cigarettes as desired"; and "represented that the smoking of Camel cigarettes was soothing, restful, and comforting to the nerves, and protected one against becoming 'jittery' or 'unsure' when subjected to intense nerve strain …." Federal Trade Commission, In the Matter of R.J. Reynolds Tobacco Co., Complaint, Findings, and Order in Regard to the Alleged Violation of Sec. 5 of an Act of Congress Approved Sept. 26, 1914 (46 F.T.C. 706), decided March 31, 1950.

- Liggett & Myers Tobacco Co. represented "'directly or by implication, that Chesterfield cigarettes can be smoked by an [sic] smoker without inducing any adverse affect upon the nose, throat and accessory organs of the smoker.'" FTC v. Liggett & Myers Tobacco Co., 108 F. Supp. 573 (S.D.N.Y. 1952).

- Lorillard made comparisons between the tar and nicotine yields of its cigarettes and those of its competitors. For

> example, Old Gold advertisements included statements that Old Gold was "lowest in nicotine and throat irritating tars and resins when compared with 6 other leading brands." Langenfeld WD at 42:5-10 (citing In the Matter of P. Lorillard Co., 46 F.T.C. 735 (1950)).

2030. As discussed in great detail in section V(E)(1)(a), infra, the FTC successfully prosecuted the Defendant cigarette manufacturers' for some of these health claims. See In the Matter of American Tobacco Co., 47 F.T.C. 1393 (F.T.C. 1951); R.J. Reynolds Tobacco Co., 46 F.T.C. 706 (1950), modified, 192 F.2d 535 (7th Cir. 1951), on remand, 48 F.T.C. 682 (1952); Federal Trade Commission v. Liggett & Myers Tobacco Co., 108 F. Supp. 573 (S.D.N.Y. 1952), affirmed on opinion below, 203 F.2d 955 (2d Cir. 1953); P. Lorillard Co. v. Federal Trade Commission, 186 F.2d 52, 56-57 (4th Cir. 1950).

2031. Those prosecutions led to public calls for a ban on advertisements containing such health claims. (no bates) (JD 043377) (Advertising Age (Dec. 21, 1953)) ("Cigarette advertisers were urged today by the National Better Business Bureau to adopt an eight point code to eliminate unfounded health claims in cigarette advertising.").

2032. Given the public's concern over tar and lung cancer, the "White Coat" ads of the 1940s and early 1950s gradually disappeared, and a wave of ads featuring claims about filtration and tar reduction became the new basis for competition. See (no bates) (JD 000636 at 5) (1981 Surgeon General's Report) ("In the 1950s, cigarette manufacturers introduced cigarette filters as 'health protection' and advertised them widely."); Harris TT, 10/18/04, 2783:15-18.

2033. Defendants competed through comparative filtration ads in the period following 1953. (no bates) (US 58700 at 199) (NCI Monograph 13) ("Companies initially responded to this health

scare by introducing filtered products that were accompanied by advertisements with explicit health-related statements.”).

2034. In 1954, the FTC issued a letter to all tobacco companies announcing its intention to adopt uniform standards for cigarette advertising “to prevent the use of false or misleading claims.” (no bates) (JD 000332 at 276) (False & Misleading Advertising (Filter-Tip Cigarettes), Hearings before the House Subcomm. of the Comm. on Gov’t Operations, 85th Cong. (1957)) . During the ensuing negotiations with cigarette manufacturers, the FTC advised the industry to conform its advertising with FTC decisions, “including decisions finding that comparisons of tar and nicotine between brands were false and misleading.” Id.

2035. In 1955, the FTC adopted the “Cigarette Advertising Guides,” proscribing any implicit or explicit health claims in cigarette advertising. The Guides did, however, provide a limited exception to this general rule, for what the FTC believed were implicit health claims. This exception allowed comparative ads claiming that a cigarette was “low in nicotine or tars,” provided it has “been established by competent scientific proof applicable at the time of dissemination that the claim is true, and if true, that such difference or differences are significant.” 50202 3956-57 (JD 003616 at 2) (FTC Press Release of 9/22/55 (Cigarette Advertising Guides)); (no bates) (JD 021949) (4 Trade Reg. (CCH) ¶ 39,012 (1995)). At the same time, some members of the public health community urged the development and adoption of cigarettes with reduced tar yields. Harris TT, 10/18/04, 2782:7-13; Burns TT, 2/15/05, 13357:8-16; Townsend WD, 80:22-81:10.

2036. By the mid to late 1950s, the American cigarette manufacturers responded with a heated “tar derby” of competing claims about the effectiveness of various filters: “[C]igarette companies advertised that certain brands were lower in ‘tar’ and nicotine and, by implication, less

dangerous." (no bates) (JD 001032 at 1-49, n.174) (FTC Staff Report on the Cigarette Advertising Investigation (May 1981)); see also (no bates) (JD 004344 at 8343) (Unfair or Deceptive Advertising & Labeling of Cigarettes in Relation to the Health Hazards of Smoking, 29 Fed. Reg. 8324 (June 22, 1964)).

2037. Smokers responded too, switching in droves to filtered cigarettes. Krugman TT, 12/15/04, 8603:8-14; (no bates) (US 58700 Fig. 4-3, at 93).

2038. However, Congress and the FTC perceived that the resulting competition was confusing since different cigarette manufacturers sought to substantiate their "low tar" claims based on different "scientific" testing methods. (no bates) (JD 000332 at 276) (False & Misleading Advertising (Filter-Tip Cigarettes), Hearings Before a Subcomm. of the House Comm. on Gov't Operations, 85th Cong. (1957)) (discussing lack of standardized test method).

2039. Faced with the "tar derby" and perceived consumer confusion, the FTC concluded that, "[i]n the absence of uniform testing procedures, it was impossible to make claims about 'tar' and nicotine levels that could be substantiated. . . ." (no bates) (JD 001032 at 1-49, n.174) (FTC Staff Report on the Cigarette Advertising Investigation (May 1981)). Accordingly, in 1959, the FTC called a halt to the "tar derby" and "reiterated its view that tar and nicotine claims would be regarded as conveying the additional claim that lower levels of tar and nicotine reduced health risks." (no bates) (JD 000435 at 41) (J. Calfee, Cigarette Advertising, Health Information and Regulation Before 1970, Working Paper No. 134 (Dec. 1985)).

2040. "[T]he position taken by the FTC at this time was that the simple fact of listing tar and nicotine deliveries . . . constituted an implied health claim," because the "implication was that these cigarettes would be less hazardous or less harmful." Harris TT, 10/19/04, 2902:19-2903:3.

On December 17, 1959, the FTC informed tobacco manufacturers that it henceforth would bar all health claims in advertising, including "all representations of low or reduced tar or nicotine, whether by filtration or otherwise." 1005150070 (JD 004534). The FTC further "inform[ed] the industry that in its opinion the evidence then available would support a complaint against any marketer who made any reference to tar or nicotine content, charging that such a reference was false and misleading." 670310575-588 (JD 040931 at 3).

2041. A month later, the FTC requested that the cigarette manufacturers agree to make no references to tar and nicotine in their advertising, and the manufacturers agreed. 1005150056-57 (JD 004535); 1005150051-52 (JD 003617).

b. The FTC Method

2042. The FTC thought the 1964 Surgeon General's Report provided "an evidentiary foundation to support a Rule requiring a positive statement [of average 'tar' and nicotine yields] in [cigarette] labeling and advertising." Letter of 4/11/66 from Paul Rand Dixon, FTC Chairman, to Sen. Warren Magnuson (670310575-588), JD 040931 (at 3).

2043. Within a week of the issuance of the 1964 Surgeon General's Report, the FTC proposed a Trade Regulation Rule that, among other things, would permit the advertising of tar and nicotine yields, provided that such advertising was "verified in accordance with a uniform and reliable testing procedure approved by the Federal Trade Commission." 29 Fed. Reg. 530, (no bates) (JD 040184 at 532); 29 Fed. Reg. 8324 (1964), (no bates) (JD 004344 at 8355-56).

2044. According to the FTC, "[c]onfusion can be obviated, and the ability of consumers to make an intelligent choice among competing brands protected, only if the measurement of cigarette-

smoke ingredients accords with a uniform, fully reliable and approved testing procedure." 670310575-588 (JD 040931 at 4).

2045. "[T]here was substantial support for the proposition that an accurate statement of tar and nicotine content would be in the public interest. . . ." 0002905512 (JD 004537 at 5512).

2046. The National Interagency Council on Smoking and Health "hope[d] that [the FTC would] take the steps necessary to make it permissible for cigarette manufacturers to list tar and nicotine content on the labels of cigarette packages." 670310575-588 (JD 040931 at 8); 1002905514 (JD 004537).

2047. The American Cancer Society, the American College Health Association, the Roswell Park Memorial Institute, and others expressed support for the proposed rule. 1002905512-5519 at 5514-5519 (JD-004537).

2048. On March 24, 1966, the FTC notified cigarette manufacturers that they would be permitted to advertise tar and nicotine yields provided they used the Cambridge Filter Method, as published by Dr. C.L. Ogg of the U.S. Department of Agriculture, to substantiate any yield claims, and so long as "no collateral representations" were made as to the "reduction or elimination of health hazards" from lower yield cigarettes. (no bates) (JD 004538); see also 680236589 (JD 004612); (no bates) (JD 001032 at 4-3).

2049. The FTC Cambridge Filter Method uses a machine to "smoke" the cigarette for a designated puff volume at a designated interval for a designated period of time. As the smoke is drawn into the machine, it passes over a filter known as a Cambridge pad, on which the particulate tar matter is collected. That accumulated matter is measured to calculate the tar and nicotine yields for the cigarette. The FTC Method was developed to provide consumers with a relative ranking of

nicotine, tar, and carbon monoxide yields from any cigarettes that were tested. Henningfield WD, 47:11-48:2; Henningfield TT, 11/22/04, 6794:8-6796:6.

2050. When the FTC gave manufacturers permission to make disclosures of tar and nicotine yields, it "recognized that the result would be that consumers would, in fact, believe that lowered delivery cigarettes were less hazardous and less harmful." Harris TT, 10/19/04, 2913:20-24.

2051. The FTC's change in policy to permit these claims was designed to achieve two goals: provide consumers with an incentive to smoke the lower tar/nicotine cigarettes rather than the higher tar/conventional cigarettes and give manufacturers a competitive incentive to produce cigarettes with low levels of tar and nicotine. Harris TT, 10/19/04, 2909:1-25.

2052. The federal government wanted to provide consumers with information that they could use to compare brands. See, e.g., FTCDOCS 0259-1751-1793 (JD 004353 at 1) ("The 'tar' and nicotine testing program was intended to provide smokers seeking to switch to lower 'tar' cigarettes with a single, standardized measurement with which to choose among the then-existing brands.").

2053. In addition, given the premise of a dose-response relationship -- i.e., more tar equals more disease risk -- the FTC wanted to encourage competition among the cigarette manufacturers, thereby increasing the research, development, and production of cigarettes with lower FTC-measured tar yields. See, e.g., (no bates) (JD 043418 at 17) ("Based upon the proposition that lower yield cigarettes present a lessened hazard to the American public," the FTC has acted to "prompt cigarette manufacturers to develop less hazardous cigarettes."); see also (no bates) (JD 004615 at 1) (Sen. Warren G. Magnuson, News Release, Nov. 27, 1967) ("The results of the first government tests ranking cigarette brands by tar and nicotine levels were released today. . . . Hopefully, the wide

dissemination of this information and the growing awareness of its significance among the smoking public will channel competition in the cigarette industry toward the marketing of cigarettes of progressively lower tar and nicotine content.”).

2054. The theory was that the public would shift its consumption away from higher tar products, and toward lower tar products, just as it had done with the advent of filter-tipped cigarettes. In this way, it was anticipated that the national sales-weighted-average tar yields of cigarettes sold in the United States would decline, and the public health would benefit. (no bates) (JD 053570 at 1).

2055. On July 31, 1967, the FTC directed its staff to commence “formal test[ing]” of cigarettes using the Cambridge Filter Test. (no bates) (JD 002477 at 2064360211); (no bates) (JD 004348 at 1).

2056. On August 8, 1970, the FTC proposed a rule to mandate disclosure of tar and nicotine ratings in all cigarette advertising. (no bates) (JD 004350).

2057. The FTC also invited the cigarette manufacturers to submit a voluntary proposal, in lieu of the proposed rule, for such disclosures in cigarette advertising. 2023098316 (JD 040304) (“If the industry can devise a voluntary plan that is feasible and appropriate, the Commission is willing to consider it.”).

2058. The tobacco companies complied, (no bates) (JD 040305), and the FTC solicited public comment on the industry plan. 1005045883-84 (JD 041337); (no bates) (JD 002066).

2059. Ultimately, the FTC agreed to allow tobacco companies make certain disclosures about tar and nicotine content in cigarette advertising instead of issuing a formal rule. On December 22, 1970, the FTC formally adopted a revised version of the cigarette manufacturers’ proposal for

displaying FTC tar and nicotine ratings in all advertising. The agreement was implemented by the FTC on January 13, 1971, as a substitute for its proposed trade regulation rule requiring such disclosure. 1005045883-84 (JD 041337); (no bates) (JD 003634).

2060. The FTC concluded that the voluntary agreement to provide "tar and nicotine disclosure and the voluntary agreement . . . to put the Surgeon General's health warning on the side of the pack in advertisements . . . [were] highly responsible activit[ies] by" the cigarette manufacturers. Public Health Cigarette Amendments of 1971, Hearings on S. 1454 before the Consumer Subcomm. of the Senate Comm. on Commerce, 92nd Cong. (1972) (statement of Robert Pitofsky, Dir., Bureau of Consumer Protection); (no bates) (JD 042276 at 58).

c. The FTC Method Does Not Measure Actual Tar and Nicotine Delivery

2061. Within months after it notified cigarette manufacturers on March 24, 1996 of its decision to allow advertising of tar and nicotine yields so long as the Cambridge Filter Method was used, the FTC invited cigarette manufacturers to comment in detail on the precise method to be used to measure tar and nicotine yields. See, e.g., (no bates) (JD 040780); (no bates) (JD 003620).[24]

2062. Defendants "initially resisted imposition of the Cambridge testing method and claimed it would be inaccurate" because different smokers "smoke differently -- and even smoke differently at different times." Henningfield WD, 48:3-50:12. This is known as smoker variation. Early in the FTC process of developing a standard testing method, Defendants advised the Agency that, because of smoker variation, the Cambridge Filter Method would not measure the tar or nicotine that a human being would ingest from smoking any particular cigarette:

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[24] The FTC held a public hearing on November 30, 1966. Official Transcript of Proceedings, In The Matter Of Methods to Be Employed in Determining Tar and Nicotine Content of Cigarettes (Nov. 30, 1966), JD 004748.

> No two human smokers smoke in the same way. No individual smoker always smokes in the same fashion. The speed at which one smokes varies both among smokers, and usually also varies with the same individual under different circumstances even within the same day. Some take long puffs (or draws); some take short puffs. That variation affects the [tar and nicotine] quantity in the smoke generated.

(no bates) (JD 004362 at 2). See also United States' Obj. and Answers to Joint Defs' Modified Eleventh Set of Req. for Admis. to the Pl. United States, RFA Resp. 5, 49-50, 54 (4/12/02) (The Government admits that in 1966, during the comment period for discussion of the Cambridge method, certain tobacco companies stated that the FTC method would only be an effective measurement for certain conditions of smoking behavior).

2063. The FTC also heard from, among others, Clyde L. Ogg, Ph.D., of USDA, who developed the method initially adopted by the FTC. He admitted that: "Since smokers vary so greatly in their smoking habits, the proposed ... method will not tell a smoker how much tar and nicotine he will get from any given cigarette. It will indicate, however, whether he will get more from one than from another cigarette if there is a significant difference between the two and if he smokes the two in the same manner." (no bates) (JD 004748 at 38).

2064. The FTC's press release announcing its decision clearly described the limitations of the standardized test method it was adopting. (no bates) (JE 061264 at 1-2). The FTC stated:

> No test can precisely duplicate conditions of actual human smoking and, within fairly wide limits, no one method can be said to be either "right" or "wrong." The Commission considers it most important that the test results be based on a reasonable standardized method and that they be capable of being presented to the public in a manner that is readily understandable. . . . [T]he public interest requires that all test results presented to the public be based on a uniform method used by all laboratories. Use of more than one testing method would produce

> different results which would only serve to confuse or mislead the public.
>
> The Cambridge Filter Method does not and cannot measure these many variations in human smoking habits. . . . It does not measure all of the tar and nicotine in any cigarette, but only that in the smoke drawn in the standardized machine smoking according to the prescribed method. Thus, the purpose of testing is not to determine the amount of tar and nicotine inhaled by any human smoker, but rather to determine the amount of tar and nicotine generated when a cigarette is smoked by machine in accordance with the prescribed method.

(no bates) (JE 061264 at 1-2).

2065. On that same day, the Tobacco Institute issued a press release stating that the FTC method was "unsound" and declaring that the "'tar' and nicotine results" produced by the FTC method "may be inaccurate [and] misleading" to consumers. Tobacco Institute Press Release, Tobacco Institute Says FTC Chose Unsound Test Methods: 'Tar' and Nicotine Results May Be Inaccurate, Misleading, Aug. 1, 1967, 500031952-1955 (JD 047658 at 1). Among other things, the press release pointed out that humans smoke cigarettes differently and that "per cigarette" tar and nicotine yields therefore would be "useless and misleading" to smokers who do not smoke within the FTC parameters. (no bates) (JD 047658 at 1).

2066. Defendants did not, however, disclose their knowledge that smokers would ultimately ingest as much if not more nicotine and tar from low-delivery cigarettes as they would from full-flavor products. Defendants knew that the phenomenon of smoker compensation, discussed in greater detail infra, would cause smokers to smoke low-delivery products more intensely and more frequently in order to obtain their desired level of nicotine. To feed their addiction, therefore, these smokers would defeat the stated purpose of the lower-delivery products. Henningfield WD, 48:3-50:12. Nor did Defendants disclose to the FTC that "a major reason that the method could yield

misleading data was that nicotine addiction would drive smokers to achieve relatively stable nicotine intakes" and that smokers' "physiological need to obtain nicotine substantially lessens the accuracy of the FTC ratings." Henningfield WD, 48-14-49:7. According to Dr. Farone, Defendants did not inform the FTC in 1966 "that smokers alter their smoking behavior to get nicotine." Nor did Defendants tell the FTC that people's "smoking behavior was driven by the need to satisfy their nicotine addiction." Farone TT, 10/12/04, 2170:5-23. .

2067. There is a dose-response relationship between smoking and lung cancer. That is, the less smoke to which smokers are exposed, the lower their lung cancer risk. Benowitz TT, 11/1/04, 4521:13-16; Townsend WD, 80:9-18. The predicate for the development and marketing of lower FTC-yield cigarettes was the expectation that, as a group, smokers of lower FTC-yield cigarettes would be exposed to less smoke. Townsend WD, 80:9-18.

2068. Because of compensation and the need of smokers to obtain a desired dose of nicotine, they may offset the decrease in their cigarettes' FTC tar and nicotine yields, in whole or in part, by one of two means. First, smokers may engage in so-called "puff" or "within cigarette compensation." This is done by smoking individual, lower FTC-yield cigarettes more intensively by taking bigger puffs, taking more frequent puffs, smoking the cigarette closer to the butt, blocking ventilation holes placed in the filter that dilute the smoke, or other means. Second, they may simply smoke more cigarettes. Benowitz TT, 11/1/04, 4512:11-4513:1; Dixon WD, 16:13-21.

2069. The issue of compensation has been discussed in the scientific literature since at least the 1940s. Benowitz TT, 11/1/04, 4526:19-4527:3. The early literature on nicotine, including compensation, was summarized in a well respected compendium of articles collected by Larson, P.S. et al., in Tobacco: Experimental and Clinical Studies: A Comprehensive Account of the World

Literature (Baltimore, Williams & Wilkins Co. 1961). (no bates) (JD 000500); Rowell WD, 17:4-17. This useful research tool was cited repeatedly in the 1964 Surgeon General's Report. Rowell WD ,18:1-18. The Larson volume was funded by TIRC. McAllister WD, 102:9-22; Rowell WD , 17:18-20.

2070. It was a "common concern" in the early 1960s that smokers who switched to filtered cigarettes might "compensate" by smoking more cigarettes each day. Burns TT, 2/16/05, 13580:18-13581:7; see also Samet TT, 9/29/04, 1183:5-9.

2071. "Compensatory smoking behavior is a manifestation of nicotine addiction," and "occurs primarily due to nicotine." Dr. Benowitz described "the consensus in the medical and scientific fields" regarding compensation: "The concept of smoking to obtain desired levels of nicotine and the concept of nicotine titration with associated compensation is widely accepted by the scientific and public health communities." Methods of smoker compensation include taking "bigger puffs," taking "more frequent puffs," "block[ing] the ventilation holes in the filter," and smoking more cigarettes. Benowitz WD, 55:11-22, 56:22-23, 57:5-9, 57:23-1; Benowitz TT, 11/2/04, 4762:23-24, 4763:14-16. Even as to ultra low tar cigarettes, where a smoker switching down may not be able to compensate fully "on a per cigarette basis[,] . . . that smoker could always smoke more cigarettes." Farone WD, 103:18-104:1; accord Farone TT, 10/12/04, 2169:18-19 (testifying that "the requirement for nicotine" drives smoker compensation).

2072. Because each smoker smokes to obtain his or her own particular nicotine quota, smokers end up inhaling essentially the same amount of nicotine -- and tar -- from so-called "low tar and nicotine" cigarettes as they would inhale from regular, "full flavor" cigarettes. This is referred to as "complete" compensation. Virtually all smokers, over 95%, compensate for nicotine.

Benowitz WD, 59:6-17; 61:15-62:13; Benowitz TT, 11/2/04, 4769:25-4770:4; (no bates) (US 58700 at 10) (Monograph 13); accord Burns WD, 1:10-15, 12:10-11, 43:19-45:2; Burns TT, 2/15/05, 13311:9-15; Burns TT, 2/16/05, 13537:6-9.

2073. The amount of nicotine that smokers need to sustain their nicotine addiction does not change over time. Therefore, compensation for reduced deliveries is permanent, and occurs for as long as the smoker smokes the low tar product. Benowitz WD, 70:25-71:10; see generally DXA0310399-0650 at 0452-0476 (US 58700) (Monograph 13) (indicating no evidence to warrant conclusion that there is reduction in compensation over time).

2074. Because compensation is essentially complete, low tar cigarette smokers inhale essentially the same amount of tar and nicotine as they would from full flavor cigarettes, thereby eliminating any purported health benefit from low tar cigarettes. In short, "light and ultra-light cigarettes" do not, in actuality, "reduce the risks of smoking":

> Considering the overall exposure data for individuals selecting their own brand, there is little reason to expect that smokers of cigarettes with low machine measured yields will have a lower risk of disease than those who smoke higher yield cigarettes.

Benowitz WD, 72:9-14; (no bates) (US 58700 at 60); see also Benowitz WD, 61:6-13 (explaining the conclusions of Chapter 3 of NCI Monograph 13).

2075. As Dr. Benowitz pointed out,

> Compensation explains why smoking of light cigarettes has not been associated with a reduction of smoking-induced disease risks. One would think, looking at the FTC yield data, that toxic exposures would be substantially reduced if one switches to light cigarettes; however, because of compensation, resulting toxic exposures are similar for light and regular cigarettes.

Benowitz WD, 60:23-61:14.

2076. Despite the fact that tar deliveries, as measured by the FTC Method, decreased by more than two-thirds between 1954 and 1994, lung cancer in smokers actually increased. (no bates) (US 58700) (Monograph 13); (no bates) (US 76212) (1997 CDC MMWR article); see also (no bates) (US 88626) (1995 Thun et al. article).

2077. Compensation behavior is distinct from "individual smoker variation":

> Individual smoker variation refers to the fact that one smoker may smoke cigarettes -- either regular or low tar -- differently than another smoker, and that the same person may smoke the same cigarette differently on different occasions. . . . Individual smoker variability relates to the fact that cigarettes are smoked differently by different individuals. This type of variability is separate and distinct from the issue of compensation, which relates to the phenomenon of smokers smoking purportedly low-delivery cigarettes more intensely in order to achieve their particular desired level of nicotine intake.

Benowitz WD, 56:6-23.

2078. In its August 1, 1967 press release, the FTC set forth the Commission's understanding of smoker variation:

> No two human smokers smoke in the same way. No individual smoker always smokes in the same fashion. The speed at which one smokes varies both among smokers, and usually also varies with the same individual under different circumstances even within the same day. Some take long puffs (or draws); some take short puffs. That variation affects the tar and nicotine quantity in the smoke generated.
>
> Even with the same type of cigarette, individual smokers take a different number of puffs per cigarette depending upon the circumstances. When concentrating, or talking, the number of puffs is usually less. When listening, or required to listen to another person talking, the number of puffs per cigarette, as well as duration of each puff, usually increases. Smoking rates while reading a book may differ from smoking rates while viewing a television program. The number of puffs and puff duration (as well as butt length) will vary

> according to emotional state. Some smokers customarily put their cigarettes down in an ashtray where they burn between puffs; other smokers constantly hold cigarettes in their mouths; others hold them between their fingers.

(no bates) (JD 040254 at 2); 03573029-3030 at 3029 (US 22244).

2079. Significantly, the August 1, 1967 press release does not demonstrate a similar understanding of nicotine or addiction. It does not even mention nicotine and does not discuss the fact that nicotine addiction would lead smokers to obtain essentially the same amount of nicotine from so-called low tar cigarettes as they would from regular cigarettes. (no bates) (JD 040254); Farone TT, 10/12/04, 2170:5-23.

2080. Public service announcements of the Office on Smoking and Health from the early 1980s relating to the potential for compensation reflected a similarly incomplete and ultimately incorrect view of compensation. Rather, they "implie[d] that the individual has within [his/her] ability automatically not to compensate; that is, that the compensation is not driven by the addictive process. That was the understanding we had in the early 1980s . . . . It was only after that [] that we understood with precision and specificity how the nicotine drives that smoking change." Burns TT, 2/16/05, 13565:8-13566:4.

2081. Defendants suggested an analogy between the FTC tar and nicotine yields and automobile gas mileage estimates, intimating that they are both useful, albeit imperfect. As Dr. Henningfield explained, this comparison is not valid:

> [W]e know through that [gas mileage] rating system that if you buy a car with a better gas mileage rating, virtually no matter how you drive it, you're going to get better mileage than a car with a worse rating. But in cigarettes, by just subtle changes in the way you smoke and things that most people don't even know about, the ventilation and the channels and the burn accelerants and all these different

> tricks, makes those two cigarettes look the same. Thus, for example, when humans smoke Marlboro cigarettes . . . Marlboro Lights can yield approximately twice as much nicotine as the Regulars are claimed to deliver by the standard FTC method. Marlboro Ultra Lights can deliver three times their advertised rating and most of the Carlton brands can deliver seven or more times their advertised rating.

Henningfield WD, 83:14-84:10.

2082. Light cigarette descriptors also "are totally different" from the information on food labels and drug labels, because "if you eat the listed serving size of [foods], you will receive the amount of [the constituents] listed on the label. . . . By contrast, . . . the advertised FTC tar and nicotine ratings for cigarettes bear very little relation to the actual dose a smoker can and, in most instances, does receive from smoking that cigarette. The inaccuracy in the FTC ratings is especially pronounced for cigarettes sold as 'light' or 'low tar' by the tobacco companies. This discrepancy is especially serious because it is in the direction of more toxins than advertised." Henningfield WD, 84:11-85:3.

2083. Dr. Whidby, a scientist, former employee, and consultant for Philip Morris USA, agreed that: "[m]easurements of tar and nicotine yields using the FTC method do not offer smokers meaningful information on the amount of tar and nicotine they will receive from a cigarette . . . [or about] the relative amounts of tar and nicotine exposure likely to be received from smoking different brands of cigarettes." Whidby TT, 2/22/05, 13993:14-19; DXA0310399-0650 at 0423, 0452-0476 (US 58700).

2084. Compensation has been documented by various scientific methods. Three different kinds of studies are generally used to conduct research on compensation: (1) spontaneous brand

switching studies, (2) forced brand switching studies, and (3) cross-sectional studies. Benowitz WD, 62:14-20.

2085. First, spontaneous brand switching studies are longitudinal studies that follow the same group of smokers over a specific period of time. At the start, the study measures the smokers' daily smoke exposure and records the FTC-yield of the smokers' usual brand. Later, at follow-up, the same smokers are re-contacted, at which time the study observes any change in the FTC-yield of the smokers' usual cigarette and again measures the smokers' daily smoke exposure. Benowitz WD, 62:21-63:4; Benowitz TT, 11/1/04, 4513:2-4514:3, especially 4513:13-21; (no bates) (US 58700 at 45) (Monograph 13).

2086. Such a study permits estimation of the changes in the daily smoke exposure of those smokers who, over the course of the study, spontaneously and voluntarily switched to cigarette brands with higher or lower FTC yields, as well as any changes in the daily smoke exposure of those smokers who did not change the FTC yield of their cigarette. Benowitz WD, 63:22-64:2; Benowitz TT, 11/1/04, 4513:2-4514:3, especially 4513:13-21.

2087. Spontaneous brand switching studies, like randomized experiments, may be long term or short term. Dixon TT, 3/9/05, 15051:14-15052:5.

2088. Spontaneous brand switching studies "are more informative of smokers' exposure in the real world when switching from higher to lower yield cigarettes," because "the brand of cigarette has been selected by the smoker and not by the researchers." Benowitz WD, 63:22-64:2. "[S]pontaneous brand switching studies generally show that there is no reduction in smoke intake [including nicotine and tar intake] per cigarette. . . . The per cigarette figure [is important because

it] shows what an individual can take in from a particular cigarette. Thus, it provides information on the delivery characteristics of the product." Id. at 64:8-16, 66:3-5.

2089. There is only one complete, peer-reviewed long-term spontaneous brand switching study, Lynch and Benowitz 1987, "Spontaneous Cigarette Brand Switching: Consequences for Nicotine and Carbon Monoxide Exposure," J. Public Health, 78(9): 1191-1194, (no bates) (JD 063010); Benowitz TT, 11/2/04, 4753:11-4755:5. The study found:

> a. per cigarette nicotine intake was about the same, comparing smokers who switched to lower FTC-yield cigarettes during the course of the study to their own baseline per cigarette nicotine intake. (no bates) (JD 063010 at 1192).
>
> b. per cigarette nicotine intake was lower, comparing smokers who switched to lower FTC-yield cigarettes during the course of the study to a similar "control group" of full-flavor smokers who did not switch. Benowitz TT, 11/2/04, 4758:25-4760:13; (no bates) (JD 063010 at 1192).

2090. Only daily nicotine intake was actually measured in the study. The per cigarette nicotine values were calculated by dividing daily nicotine intake by the number of cigarettes the smokers reported they smoked per day. Benowitz TT, 11/2/04, 4758:12-18; Wecker WD, 9:9-10:3.

2091. Dr. Benowitz drew this conclusion from his study:

> For smokers who switched to lower yield cigarettes, the analysis of cotinine concentration or carbon monoxide per cigarette showed no change despite the reduction in nominal machine measured yield. Therefore, these smokers obtained the same dose of nicotine and carbon monoxide from each cigarette even though the machine measured yield was lower.

Benowitz WD, 63:22-64:2. The Benowitz study demonstrated that: "For spontaneous brand switchers, there is complete compensation for each cigarette smoked. As a result, for these smokers, switching from higher to lower yield cigarettes is not likely to reduce the risk of smoking." Id. at

64:14-65:6, 65:14-17. The evidence that there is no reduction per cigarette by switching to lower tar cigarettes is particularly compelling in light of Dr. Benowitz's testimony that "we do know that on average people who are smoking lower-yield cigarettes smoke the same or even slightly more than higher-yield cigarettes." Benowitz WD, 63:22-64:2; 64:14-65:6; 65:14-17; Benowitz TT, 11/2/04, 4762:23-24; 4763:14-16; see also Benowitz WD, 63:5-10 (explaining that "[c]otinine is a major breakdown product of nicotine" that "is metabolized . . . by the liver" in humans, and therefore "has become the accepted marker for looking at nicotine exposure measurement from tobacco products").

2092. Based on this study, Monograph 13 concluded:

> For spontaneous brand switchers, there appears to be complete compensation for nicotine delivery, reflecting more intensive smoking of lower-yield cigarettes.
>
> * * *
>
> Spontaneous brand-switching studies suggest that there is no reduction in smoke intake per cigarette. . . .

(no bates) (US 58700 at 10 and 60); see also Dixon TT, 3/9/05, 15046:7-15047:7.

2093. There are also short-term spontaneous brand switching studies on compensation. Dixon TT, 3/9/05, 15051:14-15052:05; Dixon WD, 40:7-13.

2094. The peer-reviewed literature contains a 1999 meta-analysis of the brand switching studies that employed nicotine biomarker data. The mean estimate of the extent of compensation in that article was about 50-60%. Dixon WD, 40:14-20; see also (no bates) (JD 000547 at 1).

2095. Second, in experimental studies for forced brand switching, smokers are randomly assigned to smoke cigarettes with higher or lower FTC yields. The smokers' daily smoke exposure, as measured by various biologic markers, is compared to see if the smokers assigned to smoke lower

FTC-yield cigarettes have a lower daily smoke exposure than smokers assigned to smoke higher FTC-yield cigarettes. Benowitz WD, 68:6-9.

2096. Daily smoke exposure takes into account both forms of potential compensation -- the tendency of smokers of lower FTC-yield cigarettes to smoke individual cigarettes more intensively, as well as the tendency of smokers of lower FTC-yield cigarettes to smoke more cigarettes. Benowitz TT, 11/2/04, 4739:13-4740:3; Wecker WD, 5:22-6:7.

2097. In these long-term randomized experiments on forced brand switching, smokers randomly assigned to smoke lower tar cigarettes were exposed to less smoke each day than the smokers randomly assigned to smoke higher tar cigarettes. The estimated compensation is about 75-80%, suggesting substantial but incomplete compensation. Benowitz WD, 70:19-21; Benowitz TT, 11/2/04, 4751:1-7; Wecker WD, 5:10-17.

2098. Dr. Benowitz explained that the substantial but incomplete compensation shown in the forced switching compensation studies is likely due to the act of forcing participants to switch brands:

> [S]mokers are switched only for the purpose of the research. Motivation and cigarette acceptability differ from the natural situation of brand switching. . . . The forced brand switching studies show on average about eighty percent compensation. . . . Presumably compensation is not complete because the smokers have been switched to cigarettes that were not of their own choosing.

Benowitz WD, 68:6-21; 70:19-24.

2099. Third, in cross-sectional studies, the daily nicotine intake of smokers smoking their usual, voluntarily-selected brand is measured, typically using biologic markers for exposure to

cigarette smoke, such as cotinine in the blood or saliva, and compared with the FTC-yield of the smokers' cigarettes. Benowitz TT, 11/2/04, 4742:25-4743:11.

2100. Cross-sectional studies also lead to the conclusion that compensation is essentially complete:

> Cross-sectional studies involve sampling smokers in the general population who are smoking their own chosen brand of cigarettes . . . show that there is very little difference in tobacco smoke exposure in people smoking cigarettes with different machine-determined yields. . . . There have been many cross-sectional studies performed, and overall they demonstrate that while there are some differences in nicotine exposure when high- and low-yield cigarette brands are compared, these differences are quite small. . . . Cross-sectional studies show nearly 100 percent compensation.

Benowitz WD, 66:9-68:5.

2101. In cross-sectional studies where the participants themselves choose the tar level of their cigarettes, there is a "very shallow slope" or "very tiny slope across the range of tar and nicotine" comparing the nicotine intake of smokers of various tar levels, demonstrating that smokers who smoke cigarettes of widely varied FTC tar levels are ingesting similar amounts of nicotine. This data indicates that compensation is essentially complete. As Dr. Burns explained, the fact that lower tar smokers may show, on the whole, slightly lower levels of nicotine than higher tar smokers does not mean that the lower levels are the result of the type of cigarette, but rather that the nicotine quota of smokers able to smoke lower tar cigarettes is customarily lower:

> The effect is one that one would expect to be present as a small slope, since one would expect that high yield smokers would be likely to have higher nicotine levels and that the very lowest yield cigarette smokers would be there because they don't need much nicotine. That's independent of the brand of cigarettes they smoke. That's why they chose those brands. It's not an effect of the brand that they smoke. And so you would expect to see a small slope. The fact that

> the slope is as small as it is suggests that . . . there is full compensation on a population level when people in the natural setting move from one brand to another.

Dr. Benowitz's 1983 study, which showed this "very shallow slope," has been "replicated [in]numerable times by other scientists," and "those studies show basically the same picture, that there's a very shallow slope between the machine yield and cotinine levels." Burns TT, 2/16/05, 13541:8-13542:14; Benowitz WD, 67:10-18 (discussing his 1983 cross-sectional study); Benowitz TT, 11/1/04, 4564:13-15; Benowitz TT, 11/2/04, 4826:13-4827:5; see also Burns TT, 2/16/05, 13547:7-11 (indicating that the Gori and Lynch compensation study "was presented and examined in [Monograph 13] by Dr. Benowitz and was part of the data that was examined in that chapter that reached the conclusion that compensation was essentially complete").[25]

2102. The cross-sectional studies as a whole suggested that compensation is not complete but substantial. Benowitz TT, 11/2/04, 4737:22-4738:9, 4738:15-18; Dixon WD, 44:23-45:18; Mulholland WD, 19:18-20:13.

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[25] To rebut the testimony of Drs. Benowitz, Burns, Henningfield, and Farone regarding smoker compensation, Defendants relied upon tobacco industry scientist Michael Dixon, Ph.D., an employee of Defendant BATCo, to testify as an expert in "human smoking behavior." Dr. Dixon testified that compensation is not complete because smokers compensate for tar not nicotine. Dr. Dixon is neither a medical doctor nor an epidemiologist; he holds a Ph.D. in respiratory physiology. Dr. Dixon further admitted that nowhere in his written direct examination did he even mention the subject of nicotine addiction. He has not published any articles on the subject of nicotine addiction, and there is nothing in the record to suggest that he has published a single peer-reviewed publication on any subject. Without any expertise in nicotine addiction, Dr. Dixon's testimony as to whether nicotine addiction drives smokers to compensate is not credible, especially when compared to the totally contrary evidence of government experts Benowitz, Burns, and Henningfield, each of whom has enormous expertise in the fields of nicotine addiction and smoking and health, have written numerous peer reviewed articles on these subjects, and have participated in the rigorous process of writing different Surgeon General's Reports on smoking and health. Dixon WD, 2:1-8, 3:1-9; Dixon TT, 3/9/05, 14917:5-9, 14960:16-14961:7, 14997:6-15001:11.

2103. Evaluating all the types of studies as a whole, the evidence demonstrates, at a minimum, that compensation for daily nicotine is substantial if not complete. Benowitz TT, 11/2/04, 4737:22-4738:9, 4738:15-18 (cross-sectional studies); 4751:1-7 (randomized experiments); 4757:4-8, 4757:19-23, 4766:24-4767:3 (spontaneous brand switching, daily nicotine intake); Wecker WD, 15:19-16:5; Dixon TT, 3/9/05, 14942:5-14943:14; Mulholland WD, 57:12-22; Mulholland TT, 4/25/05, 19943:12-19945:19.

d. The Public Health Community Has Concluded that Low Tar Cigarettes Offer No Clear Health Benefit

2104. Low tar cigarettes have not reduced the risks of smoking relative to full-flavor cigarettes. Burns WD, 1:10-15; 12:10-11; 30:5-12 ("I have concluded that the changes in cigarettes that resulted in a lowering of the FTC tar and nicotine yields over the past 50 years have not resulted in a reduction in the disease risks of smoking cigarettes for the smokers who use these cigarettes."); Burns TT, 2/15/05, 13311:9-15. Dr. Jonathan Samet, a Government expert with extraordinary qualifications, is a physician and epidemiologist with extensive experience treating patients with lung cancer and COPD. He is the Chair of the Department of Epidemiology at the Johns Hopkins University Bloomberg School of Public Health and has served as author and/or editor of several Surgeon Generals' Reports over more than 25 years, contributed to several National Cancer Institute Tobacco Control Monographs, and served as an author of Chapter 4 of Monograph 13. As an expert in the science of tobacco smoking and health, including epidemiology, pulmonary medicine, and internal medicine, he concluded that the use of lower tar and lower nicotine cigarettes "has had no clear benefit on the health risks of active smoking." Samet WD, 1:3-12, 2:20-3:3, 3:7-11, 3:19-23, 10:15-12:16, 14:1-15:13, 18:12-16, 168:17-19; Samet TT, 9/29/04, 10-18. Similarly, Dr. William

Farone, fact and expert witness and former Director of Applied Research at Philip Morris, concluded that, based on his training and experience, "'light' cigarettes -- because they generally permit easy compensation and employ levels of dilution that increase the mutagenicity of the tar – are not any less hazardous than their full flavor versions." Farone WD, 123:21-124:4. The Court credits the testimony of these three experts.

2105. The 1981 Surgeon General's Report concluded, referring to the FTC Method of measuring tar and nicotine:

> [T]he smoking-machine model is limited in accurately reproducing human smoking behavior.... Smokers, however, are able to take larger, more frequent, and higher velocity puffs than the machines do. It appears that such compensatory adjustments often turn nominally lower 'tar' and nicotine cigarettes into higher 'tar' and nicotine cigarettes. . . . Even if the compensations made in smoking a single cigarette are small or nonexistent, smokers can increase their intake of 'tar' and nicotine by smoking more cigarettes.

(no bates) (JD 000636 at 180) (1981 Surgeon General's Report).

2106. The 1981 Report recognized that there are still "smokers who are unwilling or as yet unable to quit." As to them, the Report concluded that they "are well advised to switch to cigarettes yielding less 'tar' and nicotine, provided they do not increase their smoking or change their smoking in other ways." Id. at v.

2107. Dr. Burns, an editor of the 1981 Surgeon General's Report as well as "an author, editor or reviewer for each of the annual Reports of the U.S. Surgeon General on the Health Consequences of Smoking since 1975," concluded that, in his expert opinion,

> had the information available to the tobacco industry been available to the scientists preparing the 1981 Surgeon General's Report, that Report would not have drawn the erroneous conclusion that lower tar cigarettes produced lower risk or have made the recommendation that

> smokers who could not quit were "well advised to switch to cigarettes yielding less 'tar' and nicotine."

Burns WD, 1:10-15, 12:10-11, 36:3-37:12, 55:17-56:13, 56:21-57:17; Burns TT, 2/15/05, 13311:9-15; Burns TT, 2/16/05, 13666:25-13667:24 ("Had that information been available to us, we would not have then offered the recommendation to the population of the United States that it would be a good idea to shift to these products."); see also Burns WD, 56:14-20 ("The Surgeon General clearly expressed a concern [in the 1981 Report] about reduced yield smoking leading to compensatory increases in smoking behaviors; but, at that time, the public health community was not aware of the role of nicotine addiction in altering puffing behavior, the elasticity of delivery designed into cigarettes then on the market which facilitated compensation on the part of the smoker, or the observations made by the industry that showed compensation was essentially complete for some 'light' cigarettes. Had we known that, the recommendation would not have been made."); Burns WD, 38:10-13 (indicating that "some of the same concerns [relating to the lack of a health benefit to lower tar cigarettes] were expressed in the 1989 Surgeon General's Report").

2108. The 1981 Report

> did not fully take into consideration the phenomenon of compensation, and how smokers smoke to get a certain amount of nicotine, and will even adjust their smoking behavior to get the amount of nicotine they seek or are accustomed to . . . we didn't know in 1981 the extent to which smokers would compensate after switching to a 'low tar' and low nicotine yield product.

Samet WD, 164:15-165:5.

2109. Dr. Burns provided the "three principal reasons" that "the traditional epidemiological approaches that were employed at the time of the 1981 Surgeon General's Report" yielded results erroneously suggesting that lower tar cigarettes provided less lung cancer risk:

(1) "[T]hat people who smoked low-tar and nicotine cigarettes" were smoking them largely "based on the understanding that these cigarettes . . . offered less risk." As a result, the people who choose these cigarettes "have different health behaviors" and often "different smoking characteristics" than smokers of higher tar cigarettes, leading to different expectations of health outcomes.

(2) That "very few people in the epidemiologic studies started out smoking low tar and nicotine or even filtered cigarettes." Most smokers who smoke the high-tar cigarettes very intensely are not able to switch down to lower tar cigarettes, whereas people who do not smoke the higher tar cigarettes very intensely, "when they switched to a low-tar cigarette . . . may be successful because they didn't have much nicotine intake that they needed to satisfy, and correspondingly they didn't have much tar intake. So the process of switching to low tar and nicotine starts to separate individuals who have different intensities of smoking, different amounts of tar that they are ingesting and, therefore, will have different risks."

(3) That "a substantial fraction of people who switch from high-tar and nicotine cigarettes to low-tar and nicotine cigarettes use increased numbers of cigarettes . . . as a mechanism of compensation. . . . In order to control for intensity of smoking, the epidemiologic studies used the number of cigarettes smoked per day as a measure of intensity with the mistaken assumption that people wouldn't change the number of cigarettes they smoked per day. That leads us to underestimate the actual number of cigarettes smoked per day as a measure of exposure in low-tar and nicotine cigarette smokers," because the epidemiological analysis compares people who smoke a higher number of cigarettes per day after switching to a lower tar cigarette to people who smoked this higher number of cigarettes per day of the higher tar cigarette. "That produces an erroneous, or incorrect, perception that switching to [the lower tar] cigarette lowered your lung cancer risk as an individual."

Burns TT, 2/15/05, 13327:21-13331:3; 13334:6-13337:5.

2110. Moreover, epidemiological studies may underestimate the risks for lower tar smokers because these smokers may have other characteristics – such as healthier lifestyles – that contribute to a reduction in risk regardless of the type of cigarette smoked:

> Epidemiological studies often assume that smokers who switch to low-yield products are similar to smokers who do not. There is evidence that this may not be true. For example, switchers may smoke their cigarettes differently, they may have started smoking later as teenagers, they may attempt to quit more often. Switchers may have smoked less intensely before they switched, when compared to their high-yield, non-switching counterparts. Switchers may have smoked less at younger ages. When these aspects of smoking behavior are not accounted for, study results may be misleading. In addition, switchers are [a] generally healthier group in terms of diet, exercise, and lifestyle in comparison to smokers who do not switch to a low yield product. The cumulative effect of these group differences is that any reduction in the risks among switchers may be the result of these differences, rather than the fact that they switched to a low yield product. This was also an observation in Monograph 13.

Samet WD, 167:13-168:2.

2111. Recent studies, including the National Cancer Institute's Monograph 13 and the 2004 Surgeon General's Report, have confirmed that low tar and filtered cigarettes are no less harmful than conventional delivery and unfiltered cigarettes. The 2001 NCI Monograph 13, "Risks Associated With Smoking Cigarettes With Low Machine Measured Yields of Tar and Nicotine" ("Monograph 13") concluded:

> Epidemiological and other scientific evidence, including patterns of mortality from smoking-caused diseases, does not indicate a benefit to the public health from changes in cigarette design and manufacturing over the last fifty years. . . . Widespread adoption of lower yield cigarettes in the United States has not prevented the sustained increase in lung cancer among older smokers. . . . Considering the overall exposure data for individuals selecting their own brands, there is little reason to expect that smokers of low yield

> cigarettes will have a lower risk of disease than those who smoked higher yield cigarettes.

DXA0310399-0650 at 0422-0423, 0473 (US 58700).

2112. Dr. Samet testified that: "The evidence is clear. We have tracked the risk of lung cancer closely and not seen a fall in relative risks to smokers." Samet WD, 169:14-16.

2113. The 2004 Surgeon General's Report reached the definitive conclusion: "[C]igarettes with lower machine-measured yields of tar and nicotine (i.e., low-tar/nicotine cigarettes) have not produced a lower risk of smoking-related diseases." In addition, the Report concluded that "[s]moking cigarettes with lower machine-measured yields of tar and nicotine provides no clear benefit to health" and that, "[a]lthough characteristics of cigarettes have changed during the last 50 years and yields of tar and nicotine have declined substantially, as assessed by the Federal Trade Commission's test protocol, the risk of lung cancer in smokers has not declined." TLT0930001-0949 at 0042, 0340, 0911 (US 88621). See also VXA100001-0604 (US 77217) (NCI Monograph 8); MTP0032477-2481 (US 76212) (11/7/97 CDC MMWR article); VXA1611681-1689 (US 77222) (1996 Samet et al. article); VXA1601456-1742 (US 64059) (1984 Surgeon General's Report).

2114. Both the 2004 Surgeon General's Report and the NCI's Monograph 13 were based on evidence "derived from research on human behavior and exposures, cigarette design and yields, smoke chemistry, epidemiological [and other] population-based data on human disease risk." DXA0310399-0650 at 0422-0423 (US 58700).

2115. Extensive research into the relationship between research of biomarkers of nicotine in humans and FTC tar and nicotine yields demonstrates that lower tar cigarettes do not provide a reduction in harm:

> Generally speaking, research using these biomarkers has indicated little, if any, correlation between the FTC-yield of tar or nicotine, and the levels of the biomarkers measured in smokers. . . . These results suggest that there is little difference in the levels of biomarkers comparing smokers of higher yield tar/nicotine cigarettes and lower yield tar/nicotine cigarettes, as measured by the FTC method. This implies that doses of carcinogens or other toxic materials that smokers ingest have little relationship, if any, to the FTC tar yield. This, in turn, suggests that the gradual reduction in tar yield over the past several decades has not resulted in a reduction in smokers' exposure to carcinogens, and that the FTC test method is not informative with respect to lung cancer risk or to the risk of smoking-caused diseases generally. . . . In fact, evidence with respect to smoker compensation and biomarkers shows that those smokers who switch to "Low Tar" cigarettes modify their pattern of smoking to obtain the same or similar amounts of tar and nicotine as from the "High Tar" cigarettes they used to smoke. The bottom line is that a "Low Tar" label-based brand under the FTC protocol does not mean that a smoker is actually ingesting "Lower Tar" than from any other cigarette.

Samet WD, 147:11-148:21; 149:23-150:4.

2116. The conclusions of Monograph 13 and the 2004 Surgeon General's Report -- that lower tar cigarettes do not provide a health benefit -- "represent[] the consensus view of the scientific community on this issue." Burns WD, 1:10-15; 31:6-9; 41:12-18; 58:20-61:13 (discussing Monograph 13 (US 58700); IOM Report (US 20919); WHO Sactob Report (US 86658); and 2004 Surgeon General's Report (US 88621)); Burns TT, 2/15/05, 13311:9-15; 13668:1-8; see also Benowitz WD, 72:21-24 ("Most authorities are now convinced that there is little if any benefit with respect to health risk to smoking low yield versus regular cigarettes"); (no bates) (US 86657) (Canadian Expert Panel, Putting an End to Deception: Proceedings of the International Expert Panel on Cigarette Descriptors. A report to the Canadian Minister of Health from the Ministerial Advisory Council on Tobacco Control 9) (2001) ("There is no convincing evidence of a meaningful health

benefit to either individuals nor to the whole population resulting from cigarettes marketed as 'light' or mild'").

2117. In 2001, the Institute of Medicine published "Clearing the Smoke: Assessing the Science Base for Tobacco Harm Reduction," which concluded that "the public health of PREPs [potential reduced-exposure products] is unknown." The IOM report went on:

> The major concern for public health is that tobacco users who might otherwise quit will use PREPs instead, or others may initiate smoking, feeling that PREPs are safe. That will lead to less harm reduction for a population (as well as less risk reduction for that individual) than would occur without the PREP, and possibly to an adverse effect on the population.

(US 20919).

2118. In 2001, the World Health Organization Scientific Advisory Committee on Tobacco Product Regulation issued a report that concluded:

> 1. Tar, nicotine, and CO numerical ratings based upon current FTC methods and presented on cigarette packages and in advertising . . . are misleading and should not be displayed. . . . 4. Banned terms should include light, ultra-light, mild and low-tar, and may be extended to other misleading terms. The ban should include not only misleading terms and claims but also, names, trademarks, imagery and other means of conveying the impression that the product provides a health benefit.

TLT1010692-0699, 0695 (US 86658).

2119. In 2004, the World Health Organization International Agency for Research on Cancer ("IARC") released its Monograph 83, "Tobacco Smoke and Involuntary Smoking," which concluded that "changes in cigarettes since the 1950s have probably tended to reduce the risk for lung cancer associated with the smoking of particular numbers of cigarettes at particular ages." However, the

IARC Monograph attributed any reduced risk largely to the shift from unfiltered to filtered cigarettes which occurred in the 1950s, not the shift from high yield to low yield cigarettes which occurred in the last few decades. Moreover, the IARC's conclusion did not apply to individuals who increased the number of cigarettes they consumed as they shifted to low yield cigarettes. 1000861953-1953 (US 35484) (Wakeham 3/24/61) ("As we know, all too often the smoker who switches to a hi-fi cigarette winds up smoking more units in order to provide himself with the delivery which he had before."). The IARC Monograph went on: "the introduction of cigarettes that can be misperceived as 'safe' may well have adversely affected smoking uptake rates, cessation rates, and consumption per smoker." TLT0970001-1455, 0180 (US 86746)

2120. All the major scientific bodies that have addressed this question in recent years have clearly concluded that lower tar cigarettes provide "no clear benefit" to health:

> I think there's no evidence of clear benefit. . . . I think the state of the evidence has been well summarized in the reports of the Surgeon General, IARC, the Institute of Medicine, each group that's looked at the question of whether today's lower yield cigarettes are likely to produce -- are likely to produce lower risk of lung cancer, has said, you know, no clear benefit.

Samet TT, 11/29/04, 1168:12-16; 1169:2-18.

2121. Echoing the conclusions of Monograph 13 and the 2004 Surgeon General's Report, a January 2004 article in the British Medical Journal reported on a study intended "to assess the risk of lung cancer in smokers of medium tar filter cigarettes compared with smokers of low tar and very low tar cigarettes":

> There was no difference in risk among men who smoked brands rated as very low tar . . . or low tar . . . compared with those who smoked medium tar brands. The same was seen for women. . . . Men and women who smoked very low tar . . . and low tar . . . brands had risks

> of lung cancer indistinguishable from those who smoked medium tar . . . brands. . . . Our finding that there was no difference in the risk of lung cancer between people who smoked medium tar filter, low tar filter, and very low tar filter cigarettes is consistent with evidence of compensatory smoking.

TLT1020160-0167 at 0160, 0164, 0166 (US 88622).

2122. Two very large American Cancer Society's Cancer Prevention Studies ("CPS"), "conducted approximately 20 years apart," which show that lung cancer death rates have not gone down as a result of the introduction of low-tar cigarettes, provide powerful confirmatory evidence. CPS-I was conducted in the late 1950s and early 1960s, and CPS-II was conducted in the 1980s. Because of this 20 year gap, the smokers in the CPS-I study were smoking mostly high-tar, unfiltered cigarettes, and the "vast majority" of the smokers in the CPS-II study were smoking filtered cigarettes with much lower machine-measured tar and nicotine yields. CPS-I and CPS-II are "the two largest studies of smoking and disease risks;" they included "over a million men and women each," and "followed those individuals for" 12 to 18 years. The results of these studies showed that, "[d]espite the substantive reduction in tar yield of the cigarettes smoked in CPS-II, lung cancer disease risks increased rather than decreased in comparison to CPS-I." Burns WD, 1:10-15, 12:10-11, 33:18-34:6, 35:14-35:9; Burns TT, 2/15/05, 13311:9-15, 13313:9-13314:6, 13316:19-13317:15, 13322:9-10.

2123. Despite the dramatic shift to filtered and "light" cigarettes in the last 50 years, the effect the public health community was expecting to see from a change in the type of cigarettes smoked in the U.S never materialized. To the contrary, health risks increased significantly. With reference to the CPS-I and CPS-II studies, Dr. Burns explained:

> For males, when you look at the risk of smoking, you see that it just about doubled between CPS-I and CPS-II. . . . For females, it went up almost fourfold. . . . [E]ven after adjustment for differences in number of cigarettes smoked and the duration of smoking, the rates increased for males and increased for females between these two studies that were conducted over a period of time when there was approximately a 50 to 60 percent decline in the tar value of the cigarettes being smoked and a dramatic increase in the number of smokers who were smoking filtered cigarettes. So, instead of seeing a reduction in the risk of smoking with the introduction of these products, we have seen the risk of smoking actually increase over that interval. . . . we had watched and waited for the decline in lung cancer to occur. It did not.

Burns TT, 2/15/05, 13322:22-13323:22, 13325:6-13326:22; (no bates) (U.S. 17802) (depicting the "sales-weighted tar and nicotine values for U.S. cigarettes" over time); (no bates) (U.S. 17803) (depicting data from the CPS-I study); (no bates) U.S. 17804 (comparison of lung cancer risk for nonsmokers and smokers based on CPS-I and CPS-II data); (no bates) (U.S. 17806) (graph showing that risk of lung cancer from smoking has not declined, notwithstanding the drastic shift to filtered cigarettes and those with lower machine-measured tar and nicotine deliveries).

2124. As Dr. Samet explained, "[i]f there were substantial benefits of the change in tar yield over the 20 years between [CPS-I in the 1960s and CPS-II in the 1980s], we would expect lower relative risks; instead they increased." Dr. Samet also explained that the British Physician's study, which was conducted over two 20-year periods, also "shows that the relative risk values [for lung cancer] have gone up comparing the first 20 years (1951-1971) to the second 20 years (1972-1991)." Samet WD, 154:21-156:4, 156:5-12, 157:20-158:15; VXA1601833-1843 (US 64058) (published article on British Physician's Study, cited in Samet Written Direct).

2125. Even if it were true that lower tar cigarettes result in some minor incremental reduction in tar, they do not provide any meaningful health benefit relative to higher tar cigarettes

"from the perspective of human exposure . . . or meaningful exposure." Henningfield TT, 11/3/04, 7295:2-7298:2. As Dr. Henningfield explained:

> It would be a little bit like low fat cheese has 100 grams, lets say, of X, and then there is another type that gave you 98 grams, and you could say, yes, that's lower, and the next lower one is 97 grams, but that's a meaningless difference, even though it's accurate and reliable by a machine test and you can say it does go down, it's a meaningless difference. . . . In this case, what Benowitz['s] study, and then many other studies showed, is that if you looked at actual intake of people, there was virtually no difference at all in intake. And it wasn't just that the ranking was off a little bit, it was that, for example, the Marlboro Light, according to the Massachusetts data can get – give you about three times as much nicotine as it was rated, and more than twice as much as the Marlboro regular, so it's off by several orders of magnitude, but most importantly, it is just -- if [a] consumer says, okay, I want to get lower tar and nicotine and they pick a light versus a regular, they're not getting biologically meaningful lower tar and nicotine. . . . There is no meaningful difference in exposure to people. . . . what U.K. realizes now, what U.S. realizes, the World Health Organization realizes is that it is still a meaningless difference. And that's why . . . the resistance to even using the . . . label "light" cigarettes.

Id.; see also Henningfield TT, 12/1/04, 7535:12-7536:23 (explaining that the "light cigarette debacle" centers around the fact that the historical reduction in machine-measured tar "was biologically meaningless," citing NCI Monograph 13).

2126. Dr. Samet echoed these conclusions, stating that "while some earlier studies suggested a modest benefit in terms of lung cancer risk, late, more recent evidence suggests otherwise, namely that there is no benefit." He pointed out that, even excluding the more recent evidence and postulating some reduction in risk, the "overall risk [of smoking these cigarettes] is so high that even a small reduction is of no public health or medical significance." Samet WD, 170:11-23.

2127. Notwithstanding the widespread acceptance and independent validation in the scientific community of Monograph 13 and its conclusions, Defendants tried to challenge its conclusions and methodology, including the selection of its contributors. Defendants criticized the authors of Monograph 13 for not acknowledging the few scientists who expressed skepticism about its results. In addition, Defendants challenged NCI's selection of contributors to the Monograph, namely, that the scientists chosen were biased in favor of concluding that low tar cigarettes yield no clear benefit. However, as Dr. Burns noted, many of the contributors to Monograph 13 "represent some of the more distinguished scientists and experts on this issue in the country" and:

> [T]he consensus statement of the organization, that is the NCI. . . . prevents individual opinion from being presented as the consensus of scientific thought. . . . The way that you know that [collective biases are not influencing the final document] is by taking it through a series of reviews by the governmental organization. . . . The organization that then produces the volume and puts its seal of consensus approval on it, that is the National Cancer Institute, that undergoes a series of reviews that it takes to ensure that the data contained in the volume are scientifically accurate and represent the consensus of scientific thought.

Burns TT, 2/15/05, 13383:1-13389:4.

2128. Defendants' scientists were not involved with the production of Monograph 13 because:

> At the time which this was undertaken, the tobacco industry's position was still that . . . there were no disease risks that were causally associated with cigarette smoking. . . . For that reason, the tobacco industry has not been included in the Surgeon General's Report process and various other processes because they weren't part of the consensus of scientific thought at that point in time. They were perceived as adopting positions that had so little scientific credibility that they could not be meaningfully utilized in the formation of a consensus.

Burns TT, 2/15/05, 13389:11-13391:21 (explaining also that Monograph 7, in which RJR scientists participated, "was not a consensus document, it was simply the results of the proceedings of a meeting. Those proceedings come out under the author's name, are understood to be the individual opinions of the authors. That was not what was being requested with Monograph 13").

2129. The Court finds that the testimony of Dr. Burns is totally credible and persuasive on each of the issues which he discussed, including low tar cigarettes and their relative health effects. Dr. Burns, qualified by the Court without objection as an expert in "[t]he science of tobacco and health, including disease causation," is a medical doctor and professor of family and preventive medicine with 30 years' experience studying the health consequences of smoking. Dr. Burns has extensive experience, including as a teacher, in various medical areas, including smoking and health, and has studied epidemiology, addiction, nicotine, cigarette design and ETS in the context of smoking and health. He has over 200 publications, most of which are peer-reviewed, in the area of smoking and health, including chapters in two of the leading medical textbooks. Furthermore, Dr. Burns has studied and taught extensively in the area of lung diseases, including lung cancer, and has personally participated in the treatment of thousands of patients with lung disease. In addition, he has served as "an author, editor or reviewer for each of the annual Reports of the U.S. Surgeon General on the Health Consequences of Smoking since 1975," and has served as contributing author and Senior Scientific Editor for several of the National Cancer Institute Tobacco Control Monographs. Dr. Burns has also received numerous award and honors for his work in the area of smoking and health, including the Surgeon General's Medallion. Finally, Dr. Burns's demeanor during his testimony, which spanned nearly two full days and consisted mostly of cross-examination, further demonstrated his credibility. He fully answered the questions posed to him by well-prepared

counsel, he was totally versed in the complex scientific areas about which he was questioned, he was neither evasive nor combative, and demonstrated an enormous familiarity with the science of smoking and lung cancer, the history of the issue in this country as scientists learned more and more about the subject, and the manner in which preparation of the Surgeon General's Reports represented the most up-to-date scientific consensus on the topic being studied. Burns WD, 1:3-5; 1:10-15; 12:10-11; (no bates) (US 78526).

2130. For the reasons set forth at length in previous Sections, the Court also finds that the testimony of Drs. Samet, Henningfield, Benowitz, and Farone is also highly credible and persuasive.

2131. To rebut the compelling testimony of Drs. Burns, Samet, Henningfield, Benowitz, and Farone, Defendants called a statistician, William Wecker, who, by his own admission, has "never been qualified by a Court as an expert in the subject of smoking and health."[26] Wecker TT,

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[26] Dr. Jerry Whidby and Dr. Joseph Mulholland also offered testimony criticizing Monograph 13. Their testimony was neither reliable nor persuasive. Called to testify by the United States as an adverse witness, Dr. Whidby admitted that he was a paid consultant for Philip Morris and would earn $2,800 per day (total amount $14,000 for five days) for preparing and delivering his fact testimony; and that his agreement with Philip Morris obligates him to testify on its behalf in litigation, and does not leave him the option of not testifying.

Dr. Whidby was repeatedly impeached with prior inconsistent statements during his live examination. In some instances, portions of Dr. Whidby's Corrected Written Direct Testimony were in conflict with each other. Whidby WD, 2:5-3:15 (addressing consultancy agreement); Whidby TT, 2/22/05, 13942:23-13943:17 (same); Whidby TT, 2/22/05, 13945:23-13947:5 (impeached with prior inconsistent testimony relating to whether increased ventilation has an impact on biological activity); Whidby TT, 2/22/05, 13947:6-13948:10 (impeached with prior inconsistent testimony relating to whether witness had any empirical evidence that Marlboro Reds sold today are any less harmful than those sold in 1960); Whidby TT, 2/22/05, 13948:8-13949:18 (impeached with prior inconsistent testimony on whether witness had any evidence that Philip Morris's general reduction and selective reduction techniques have led to one less case of lung cancer in the United States); Whidby TT, 2/22/05, 13952:23-13954:3 (impeached with prior inconsistent testimony on whether witness had any empirical evidence that Philip Morris's general and selective reduction techniques have in fact made its cigarettes less harmful).

(continued...)

3/15/05, 15650:5-7. Because he is a statistician, and neither an epidemiologist nor a medical doctor, Dr. Wecker is "not able to offer opinions as to causation" relating to the relative health effects of low tar cigarettes. Wecker TT, 3/15/05, 15666:6-15667:2, 15670:20-15671:8. Moreover, Dr. Wecker's statistical analyses are unconvincing because they are flawed in several ways.

2132. First, Dr. Wecker's core opinion -- that smokers who switch to lower delivery cigarettes do not increase the number of cigarettes per day that they smoke -- is flatly contradicted by Defendants' voluminous research reports and other documents, spanning decades, which demonstrate that smokers who switch to lower deliveries do smoke more cigarettes per day. 1000861953-1953 (US 35484) (1961 PM); 2022244449-4450 at 4449-4450 (US 36855) (1970 PM); 1000350158-0188 at 0161-0162 (US 20176) (1971 PM); 1003285403-5416 at 5403 (US 20159) (1972 PM); 1003285403-5416 at 5403 (US 20159) (same); 1003293476-3493 at 3480 (US 85073) (1974 PM); 2040066740-6766 at 6750-6751, 6754-6755 (US 20435) (1979 PM); 2071376833-6834 at 6833 (US 27273) (1992 PM); 501525355-5366 at 5360-5361 (US 29531) (1974-1976 RJR); 679009843-9867 at 9843 (US 85055) (1977 B&W); 775036039-6067 at 6050 (US 21053) (same);

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[26](...continued)

Defendants offered the testimony of Joseph Mulholland as a fact witness, not as an expert. He is a long-time staff economist with the FTC Bureau of Economics, who personally does not agree with the conclusion of Monograph 13 that the introduction of low tar cigarettes has not materially reduced health risks from smoking, even though the FTC has never taken an official position on this issue. Mulholland WD, 12:12-15, 14:3-6, 15:15-23, 16:3-11 (Monograph 13 has not changed the FTC's position, as the FTC has not taken an official position on the issue); Mulholland TT, 4/25/05, 19854:16-19855:3. While recognizing that Dr. Mulholland has acquired extensive knowledge, in his capacity as an FTC staff economist, concerning cigarette-related matters, as the Court observed at the trial, his "testimony is not that overwhelmingly relevant." Mulholland TT, 4/25/05, 19938:16-19939:1.

536000000-0090 at 0050 (US 22338) (1984 B&W); 760008596-8803 at 8760 (US 54588) (Confidential) (1998 BAT); 00044522-4523 at 4522 (US 22012) (1976 Lorillard).

2133. Second, Dr. Wecker testified that, in forming his opinion on this issue: "I don't reach my opinion by weighing all the evidence, but mainly on my own statistical work replicating and correcting figure 4-5" of NCI Monograph 13. Wecker TT, 3/15/05, 15656:22-15657:14. Figure 4-5 illustrates one of the new statistical analyses of CPS-I data that were performed as part of the production of NCI Monograph 13 relating to change in number of cigarettes smoked per day by smokers switching down to obtain lower tar yield. However, the Conclusions of Chapter 4 of Monograph 13 did not rely on the new analyses. Burns WD, 30:13-18, 58:4-19; Burns TT, 2/16/05, 13498:1-9; DXA0310399-0650 at 0509-0510 (US 58700).

2134. Dr. Burns explained that the issue of "increases in number of cigarettes per day smoked by those who switch to lower tar brands of cigarettes" is "not the only [reason and], for that matter, it's not the princip[al] one" for Monograph 13's conclusion that lower tar cigarettes provide no reduction in harm relative to higher tar cigarettes.

2135. The first sentence in the Monograph under the heading for these new analyses of CPS-I data clearly states that the new analyses of cigarettes per day were inconclusive and, as such, were not the basis for Monograph 13's conclusions:

> A reexamination of the CPS-I data set was inconclusive as to whether compensatory changes in the number of cigarettes smoked per day when smokers switched to a lower nicotine cigarette introduce a bias sufficient to explain the observed increased lung cancer risk among smokers of high yield cigarettes.

DXA0310399-0650 at 0509 (US 58700); Wecker TT, 3/15/05, 15683:5-15687:14. Consequently, Dr. Wecker's testimony, which relied on his critique of the new CPS-I analyses, was basically irrelevant since Monograph 13 did not rely on that data in reaching its conclusion.

2136. Third, Dr. Wecker's analysis failed to refute, or even consider, the conclusions reached by several other prominent scientific bodies -- including the 2004 Surgeon General's Report, the 2002 publication of the Scientific Advisory Committee on Tobacco Regulation to the World Health Organization, and the 2001 report to the Canadian Minister of Health from the Ministerial Advisory Counsel on Tobacco Control in Canada -- which all reached the same conclusion as did the NCI in Monograph 13, namely that lower tar cigarettes provide no significant reduction in lung cancer or other health benefit -- in direct contrast to Dr. Wecker's conclusions. Wecker TT, 3/15/05, 15661:11-15664:23. Since Dr. Wecker was only a statistician and not qualified to address the subject of smoking and health, he could not have addressed the substance of NCI's scientific conclusions in Monograph 13.

2137. Fourth, Dr. Wecker made several changes to the analyses in Monograph 13 that reflected his lack of understanding of the relevant subject matter. For instance, he included women in his analysis of Figure 4-5 and was unaware that the contributors to Monograph 13 excluded women because the later increase in smoking prevalence among women resulted in the lack of a valid baseline dose-response relationship. Wecker TT, 3/15/05, 15691:18-15695:11; Burns TT, 2/15/05, 13323:23-13325:4 (explaining the temporal differences in the rise of prevalence of male and female smoking, which led to exclusion of women in graph); 13342:8-20 (explaining the gender differences in prevalence in the United States and France).

2138. Fifth, Dr. Wecker acknowledged that many of his reanalyses of Figure 4-5 showed no statistically significant difference in risk for smokers at the various tar levels, which is entirely consistent with the conclusion of the authors of Monograph 13, quoted above, that the results on this issue were "inconclusive." Burns TT, 2/16/05, 13526:4-6; Wecker TT, 3/15/05, 15687:15-15691:17.

2139. Sixth, Dr. Burns explained that studies done by Garfinkel et al. reported in the 1980 Banbury Product Liability and Health Risks report, which Dr. Wecker claimed were "consistent with [his] conclusions," were not "consistent with Dr. Wecker's findings . . . because it's a different analysis." Dr. Burns also noted: "We cited both of the [Garfinkel] studies that examined cigarettes per day in Monograph 13. We looked at them carefully." Burns TT, 2/16/05, 13517:11-13518:23; Wecker WD, 31:10-14.

2140. Dr. Samet explained that comparing Dr. Garfinkel's calculations, published more than 20 years ago, to those performed for Monograph 13, is a case of comparing apples to oranges, as the analyses sought to answer markedly different questions:

> They're very different. . . . Dr. Garfinkel said: If people changed their brand, did they smoke more, the same or less? Just those three bins [categories], if you will. What [the Monograph 13] analysis says is: Let's look at whether there's a relationship between the reported numbers of cigarettes smoked on the first brand and on the second brand and the difference in nicotine yield on the first brand and the second brand. So [the Monograph 13 analysis] is a more quantitative analysis and Dr. Garfinkel's was more sort of: Did people change from smoking more than they used to [or] to less than they used to?

Samet TT, 9/29/04, 1185:11-1186:19; 1191:12-16; 1193:8-1195:11.

2141. Dr. Wecker maintained that examining lower tar and higher tar smokers' lung cancer rates, without controlling for cigarettes per day, provides "other empirical support" for his claim that epidemiological studies of the relative health effects of low tar cigarettes are not biased by

controlling for cigarettes per day. Wecker WD, 49:5-11. However, Dr. Burns explained that neglecting to control for cigarettes per day fails to resolve "the core issue" necessary to have a reliable analysis, because it "introduce[s] other biases that are equally important":

> The core issue is having comparable groups, that is, having groups [where] you can adjust for those characteristics other than the type of cigarettes that they smoke. If you include numbers of cigarettes for controlling, you over control. If you don't, then you're left with the two populations likely to have differences in intensity of smoking and no method by which you can control for that difference. Then you can't tell whether the difference you're seeing is due to a difference in intensity of smoking, i.e. completely independent of the type of cigarette or is a characteristic of the cigarette that you've chosen to smoke.

Burns TT, 2/16/05, 13661:14-13662:6; see also Burns TT, 2/16/05, 13484:18-13485:10; 13486:8-21 ("If you don't control for cigarettes per day, you have two different groups of individuals who have different intensities of smoking and, therefore, you can't compare their exposures without looking at intensity.").

2142. Finally, Dr. Wecker's analysis of actual versus predicted death rates was not done in the manner utilized in Monograph 13. He admitted on cross-examination that there were several discrepancies between his analysis and that described in Monograph 13. The discrepancies included the fact that Dr. Wecker used mortality data, taken from the National Health Interview Survey, from 1993 to 2000, that was not contained in the calculations in Monograph 13. Again, Dr. Wecker was unaware of a critical fact, namely that the contributors to Monograph 13 specifically excluded data after 1992 because the National Health Interview Survey "changed the definition of smoker in 1992," making the post-1992 data inconsistent with the pre-1992 data. Wecker WD, 51:3-21; Wecker TT, 3/15/05, 15698:14-15701:18.

2143. Dr. Wecker also acknowledged that, while Monograph 13 discussed a chart examining lung cancer death rates at ages under 50, he attempted to create the chart described in the Monograph but only included people aged 40-50, excluding death rates for all ages under 40. Wecker TT, 3/15/05,15702:5-15706:2.

2144. Dr. Burns testified, upon review of a chart based on Dr. Wecker's calculations of actual versus predicted death rates, purportedly based on Monograph 13: "The data presented in this graph have essentially no meaning whatsoever. This is not the analysis that Sir Richard Doll was suggesting be done and it is not an analysis that has any valid, scientific or technical meaning." Burns TT, 2/16/05, 13666:20-23; see also Burns TT, 2/16/05, 13664:10-24 (testifying that, to his knowledge, the chart has never "appeared in published peer reviewed literature").

2145. In sum, there is an overwhelming consensus in the public health and scientific community, both here and abroad, that low tar cigarettes offer no clear health benefit to smokers, have not reduced the risk of lung cancer and heart disease for smokers using them, and have not produced any decrease in the incidence of lung cancer. Moreover, because of the misleading nature of the advertising for low tar cigarettes, smokers who might have quit have refrained from doing so in the belief that such cigarettes reduced their health risks.

2. Based on Their Sophisticated Understanding of Compensation, Defendants Internally Recognized that Low Tar/Light Cigarettes Offer No Clear Health Benefit[27]

a. Defendants Internally Recognized that Low Tar Cigarettes Are Not Less Harmful Than Full-Flavor Cigarettes

(1) Philip Morris

2146. A March 1, 1977 Philip Morris memorandum by industry-funded scientist Stanley Schachter to Thomas Osdene, Director of Research, concluded that low tar/low nicotine cigarettes are not less harmful:

> [I]t would certainly seem that the campaign for low nicotine cigarettes is misguided and rests on a set of fallacious premises. . . . The question is crucial and particularly so in light of . . . Ross's evidence that carbon monoxide, hydrogen cyanide, and nitrogen oxide delivery is considerably greater in most of the popular brands of low nicotine filter, [sic] cigarettes than in high nicotine, non-filter cigarettes. . . . It is . . . clear . . . that the major body of data that has been used to justify the campaign for low nicotine cigarettes does nothing of the sort.

1000046626-6661 at 6655, 6660 (US 20074).

2147. Dr. Farone stated that Philip Morris's Marlboro full-flavor and Marlboro Lights cigarettes are "essentially identical except for dilution" -- i.e., that Marlboro Lights have more dilution, dilution referring to ventilation that dilutes the smoke, particularly when machine-smoked by the FTC method, with ambient air. "[A]s you increase dilution, the toxicity in [the Ames] test increases, which is more likely than not associated with a toxicity increase in smokers." Farone TT, 10/7/04, 1888:2-1889:5; 1891:17-19.

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[27] Many of the Findings in this Section may overlap with or repeat or flow from the Findings set forth in Section ___, supra (Addiction).

2148. In fact, Dr. Farone explained that the very Ames mutagenicity testing that Philip Morris has conducted for the past 25 years, and that "Philip Morris has concluded . . . predicts carcinogenicity" has indicated that Philip Morris's Marlboro Lights cigarettes are, as designed, more mutagenic than Marlboro full-flavor cigarettes:

> [I]n the case of Marlboro Lights, the Philip Morris test data that I have reviewed on that level of dilution for equivalent blends indicated that the product design for their Light cigarettes was more mutagenic than the full flavor Marlboro, Marlboro Reds, and therefore predictive of more potential cancer risk. These studies were repeated multiple times over the past 20 years and continue to be repeated to this day. The Philip Morris data, as was used by Philip Morris, was a strong warning that their product design change between a Marlboro Red and a Marlboro Light -- increased ventilation -- resulted in a potentially more dangerous product.

Farone WD, 119:7-120:15; Farone TT, 10/7/04, 1866:2-17. Philip Morris has not "changed the design of 'Light' cigarettes in response to its studies and knowledge concerning mutagenicity." Farone WD, 121:3-9.

2149. Philip Morris consultant and former employee Dr. Whidby agreed with Dr. Farone's basic analysis and acknowledged that "increased filter dilution," one of the techniques Philip Morris uses to lower the FTC tar yield of its cigarettes, "is associated with increased biological activity." Dr. Whidby explained that biological activity in the context of Philip Morris's biochemical testing reports generally refers to biological reactions such as tumor growth, cell mutations, and toxic reactions, and that it was "a bad thing" that should be reduced. Whidby TT, 2/22/05, 13964:18-25; 13967:22-13968:19. Helmut Wakeham, of Philip Morris, acknowledged the same phenomenon as far back as March 1, 1974. 1003293476-3493 at 3492 (US 85073).

2150. A November 1977 Philip Morris memorandum to Dr. Robert Pages from J. Booker and S. Drew about Ames testing stated: "The take home lesson from this experiment is that dilution of a cigarette appears to increase the activity of the WSC [whole smoke condensate] (more dramatically for some cigarettes than for others)." 1002978361-8363 at 8362 (U.S. 35635).

2151. By 1978, Philip Morris had substantial evidence that "filter dilution [which Philip Morris used to reduce FTC tar and nicotine yields] was somehow acting to increase" the "activity" of the whole smoke condensate ("WSC") collected from its cigarettes. Further experiments confirmed that the tar from ventilated low tar reference cigarettes, i.e., cigarettes used for research purposes and not actually sold in stores, measured higher on mutagenicity tests than non-ventilated products. Additional research conducted in 1979 yielded the same result. 2001243600-3673 at 3610-11 (US 20298); accord 2022180219 (US 21479).

2152. A May 11, 1982 Philip Morris document from INBIFO (Philip Morris's overseas research facility in Switzerland) revealed that Philip Morris learned from its testing of low tar reference laboratory cigarettes in Europe that these cigarettes registered higher in standard biological tests than the full-flavor delivery reference cigarettes -- i.e., were "more active" -- and thus were more likely to cause cancer: "Low tar reference cigarette . . . [m]ay be slightly more active than [the regular delivery reference cigarette] as a complete carcinogen." 1003121638-1643 at 1638 (US 20153).

2153. A January 28, 1994 report from INBIFO to Philip Morris in Richmond, Virginia stated that increased cigarette filtration, porosity, and ventilation (primary methods used by Philip Morris to reduce the FTC Method tar and nicotine yields in its cigarettes) would result in an increase in the degree to which cigarette smoke was toxic to living cells (i.e., cytotoxicity), the irritation it

caused to smokers, and the likelihood that the smoke would generate mutations such as tumors and/or cancer (i.e., mutagenicity). The document stated: "Increased filtration will result in a relative enrichment of gas phase constituents, leading to increased cytotoxicity and irritancy. . . . Increased porosity and ventilation will . . . increase the specific mutagenicity." 2024005509-5512 at 5509-5510 (US 20399); Farone WD, 122:1-14 (citing to, and agreeing with, INBIFO conclusions).

2154. In this case, A. Clifton Lilly, Senior Vice President of Technology, confirmed that data from tests run at Philip Morris's INBIFO facility showed that the Ames test for mutagenicity from Marlboro Lights produces significantly higher results than the tar from Marlboro full flavor products. 2001243600-3673 at 3610-11 (US 20298); 2022180219-0219 (US 21479); 1000135419-5439 (US 20078); Lilly PD, United States v. Philip Morris, 5/14/02, 229:17-231:21.

2155. A 2001 document about Ames mutagenicity testing from Philip Morris's INBIFO laboratory in Germany demonstrated that, in every case, the mutagenicity of Marlboro Lights is higher than the mutagenicity of Marlboro full-flavor. 2505913831-3836 (US 46079).

2156. James Morgan, former President and CEO of Philip Morris, conceded in 2002 that, in his opinion, lower tar cigarettes are not any safer than higher tar cigarettes. Morgan PD, Price v. Philip Morris, Inc., 6/5/02, 75:3-15.

2157. According to Nancy Brennan-Lund, Philip Morris Senior Vice President of Marketing, "what we say on our web site we believe to be true." Philip Morris's position is that low tar cigarettes are no less harmful than full-flavor cigarettes, "based on what the Monograph 13 came out with." Lund later qualified her statement: it has "not been proven" that light cigarettes are less harmful, so one cannot assume they are less harmful. Brennan-Lund PD, Price v. Philip Morris, Inc., 9/20/02, 107:22-108:14; 109:16-110:22; 114:9-114:10.

2158. Ellen Merlo, then Philip Morris USA Senior Vice President of Corporate Affairs, agreed that in 2002 that Philip Morris's policy at the time was that lights or low tar cigarettes are not safe or safer than any other cigarettes. Merlo PD, Price v. Philip Morris, Inc., 10/2/02, 80:3-80:15.

(2) R.J. Reynolds

2159. RJR's internal documents show that it, like the other Defendants, has long known that it has evidence that low tar cigarettes are no safer than regular cigarettes.

2160. In May 1980, RJR scientist C.T. Mansfield performed the Ames test for mutagenicity "on the tars from twenty-four domestic brands of cigarettes with various [FTC] 'tar' deliveries," and found "a trend for low 'tar' cigarettes to show higher numbers per mg [of] 'tar,'" indicating that the low 'tar' cigarettes caused more mutations. 514903578-3610 at 3579 (US 20863).

2161. A September 29, 1992 RJR internal presentation reported that lower tar cigarettes were more likely to cause mutations such as tumors and cancer than higher tar cigarettes. The presentation stated: "Higher tar cigarettes tend to have lower Ames activity . . . than lower tar cigarettes." 509643825-3832 at 3825 (US 20830).

2162. In 2003, Arnold Mosberg, an RJR scientist, and other RJR scientists (Doolittle and Morgan) reviewed "data [they] have had for decades" (some for more than two decades) to conduct a comparison of the relative harmfulness of lights and full flavor cigarettes, using various tests, including animal skin painting tumorgenicity, rodent inhalation, and Ames mutagenicity studies. The results of these studies indicated that low tar cigarettes do not reduce risk relative to full-flavor cigarettes. Mosberg PD, Turner v. R.J. Reynolds, 8/19/03, 2:12-16, 6:7-12:4, 14:21-15:19, 15:24-16:1, 16:13-24, 19:3-5, 21:20-22:10, 22:19-26:8, 55:1-11, 57:15-58:16, 97:15-100:12, 103:23-104:1 (discussing in part Deposition Exhibit 2).

(3) Brown & Williamson

2163. A February 4, 1976 memorandum from Ernest Pepples, B&W Senior Vice President, titled "Industry Response to Cigarette/Health Controversy," reveals Defendants' knowledge that the low tar and filter cigarettes they were marketing as less harmful were not producing less tar and less nicotine to the smoker and were not likely to actually be less harmful:

> The industry has moved strongly toward filtered cigarettes, which have increased from 0.6% in 1950 to 87% in 1975. . . . This became known as the 'tar derby' of the late 1950's. It was characterized by sharply intensified advertising competition. . . . The new filter brands vying for a piece of the growing filter market made extraordinary claims. . . . It was important to have the most filter traps. Some claimed to possess the least tars. In most cases, however, the smoker of a filter cigarette was getting as much or more nicotine and tar as he would have gotten from a regular cigarette. He had abandoned the regular cigarette, however, on the ground of reduced risk to health. . . . The manufacturers' marketing strategy has been to overcome and even to make marketing use of the smoking/health connection. . . . Thus the 'tar derby' in the United States resulted from industry efforts to cater to the public's concern and to attract consumers to the new filtered brands. . . . The current duel between True and Vantage and between Carlton and Now are other examples of competitive efforts to capitalize on the smoking/health controversy.

170042567-2574 at 2568, 2574 (US 20292); Smith WD, 79:5-22.

2164. An August 5, 1980 B&W document signed by J. Kendrick Wells III, B&W Assistant General Counsel, acknowledged that "[t]here was question about the degree of support . . . at the present time" for the "scientific opinion that certain low levels of 'tar' consumption are relatively safe to the smoker," and that "for the longer term the support may be quickly eroding." 680050983-1001 at 0990 (US 20981).

2165. An October 31, 1989 B&W internal memorandum, titled "Objections to Product Innovation Strategy," from Wells to RJ Pritchard, B&W executive and member of the Tobacco Institute's Executive Committee, conceded that "it is not established that the reduction or removal of specific smoke constituents or of smoke constituents across the board, such as in low tar cigarettes, is significant for smoking and health." 680701034-1038 at 1035 (US 21010); Wells WD, 60:3-61:10.

2166. Sharon Blackie Boyse, Director of Scientific Communications and a spokesperson for B&W on scientific issues as late as 1998, acknowledged that, "based on [her] experience as an employee within the cigarette industry, [she has] been aware for some time that some smokers believe that low tar cigarettes are less hazardous to their health [and that] some smokers believe that by switching to low tar cigarettes, they will achieve a health benefit." From at least as early as 1998, B&W acknowledged that the company "did not know whether low tar cigarettes were, in fact, less hazardous," and "was not confident that the science showed any health benefit from low tar cigarettes." Blackie WD, 184:22-185:5.

2167. As of 2005, B&W's website admits that low tar cigarettes are not safer than regular cigarettes. It states that "despite a dramatic lessening of tar yields, the hoped-for reduction of smoking-related illnesses has not been conclusively demonstrated." Furthermore, the website directs the reader to the National Cancer Institute's Monograph 13, citing its conclusions that "[e]pidemiological and other scientific evidence, including patterns of mortality from smoking-caused diseases, does not indicate a benefit to public health from changes in cigarette design and manufacturing over the last fifty years," and that "[w]idespread adoption of lower-yield cigarettes in the United States has not prevented the sustained increase in lung cancer among older

smokers." The website further states: "[W]e continue to believe that smokers should rely on the public health authorities' views on low tar cigarettes and other smoking issues." Ivey WD, 63:9-16; (no bates) (US 86656).

(4) BATCo

2168. A 1976 BATCo document from S.J. Green to P.L. Short and P. Sheehy revealed both that BATCo planned to market low tar cigarettes as safer and that BATCo did not have a sufficient basis to believe that low tar cigarettes were safer, stating: "Before we do work aimed to sell low delivery cigarettes, unless we are already satisfied, we should do some work to establish that in fact they are safer." 110076428-6432 at 6430 (US 34957).

2169. A June 9, 1982 BATCo document, "Technical Exchange Meeting," noted that Ames testing revealed that "[t]he specific activity [a measure of mutagenicity] of a plain cigarette was found to be lower than that of a ventilated filter cigarette." 109883189-3192 at 3191 (US 20265).

2170. A February 18, 1988 BATCo study of cigarette mutagenicity from the B&W Research & Development Library's E.D. Massey found that the "lighter" the purported delivery of the cigarette, the higher the mutagenicity. Using Philip Morris cigarettes as an example, Merit cigarettes had higher mutagenicity than Marlboro Lights, which in turn had more mutagenicity than regular Marlboro cigarettes. 620000021-0032 at 0027, 0030 (US 20944).

(5) Lorillard

2171. Asked whether low tar/low nicotine cigarettes are any safer than conventional, full-flavor cigarettes, Christopher Coggins, Senior Vice President of Science and Technology at Lorillard, stated: "[O]ur policy is that cigarettes can cause cancer and that goes for all cigarettes." Coggins PD, United States v. Philip Morris, 8/16/01, 115:22-116:4.

(6) Liggett

2172. Comments by Liggett scientists on a "Memorandum of June 13, 1966; C.F. Woodward and C.L. Ogg to P.A. Wells" acknowledged that there was no basis to conclude that reductions in tar and nicotine and/or the use of filters reduced the harmfulness of cigarettes:

> Although the public does have a right to know what it is buying, extreme care must be exercised to avoid leading a non-technically oriented public to erroneous conclusions regarding the relative merits of one brand versus another based on minimal differences in "tar" or nicotine -- to neither of which can be attached any quantitative measure of health hazard. . . . We would question if <u>any</u> differences between <u>any</u> filter brands would show correlation with tumorgenicity. We know of <u>no</u> correlation of tar delivery among <u>filter</u> brands with tumor production in mice -- or for that matter, even among non-filter cigarettes. The level of uncertainty in current biological testing is so great that distinction between cigarettes is not possible on this basis.

LWDOJ00068944-8949 at 8944-45 (US 21214) (emphasis in original).

b. Internally, Defendants Had an Extensive and Sophisticated Understanding of Smoker Compensation

2173. Defendants have known since at least the 1950s that the central component that drives the smoking habit is nicotine, an addictive substance. Accordingly, Defendants also have long been aware that the reason people smoke cigarettes is to obtain a sufficient "dose" of nicotine to sustain their addiction. 1003287880-7890 at 7884 (US 20163); <u>accord</u> 500380562-0564 (US 20630); 100515899-5910 (US 20230); 1003285403-5416 (US 20159); 500917468-7476 at 7474-76 (US 20660); 105553905-3914 (US 34799).

2174. Defendants also have known since the 1960s and 1970s that, because smokers smoke to obtain the desired effects of nicotine, smokers of lower-yield cigarettes tend to adjust their smoking behavior to titrate (<u>i.e.</u>, control) their nicotine intake of nicotine to achieve the necessary

levels of nicotine. That adjustment or titration of nicotine levels is called compensation. Defendants' internal understanding of compensation was decades ahead of that of employees and scientists of the Government and the scientific community. See Section V(B)(2)(b), supra. According to Dr. William Farone, Philip Morris employee from 1976 to 1984, who served as Director of Applied Research, and was accepted as an expert in "the chemistry and biochemistry of alkaloids and addictive drugs, the chemistry and physics of cigarette smoke, cigarette design and technology, and the chemistry and biochemistry of toxic substances and how they interact with living systems," during his employment at Philip Morris, the company had "a greater understanding of compensation than the outside scientific community," and, in his expert opinion, "the same is true for the other tobacco company Defendants." In 1966, when the FTC was considering the FTC Method, Defendants knew "that smokers smoked for nicotine" and "that smokers alter their smoking behavior to get nicotine." Farone WD, 2:2-8, 2:15-19, 117:15-118:8; Farone TT, 10/12/04, 2169:18-22, 2170:5-11, 2171:25-2172:8, 2182:11-2190:7; Wigand WD, 8:11-17; 120:5-17.

2175. When Dr. Farone was Director of Applied Research, Philip Morris's own research found that "if we adjusted the design to reduce the nicotine delivery, or if people were given a cigarette of lower nicotine delivery than their usual brand, smokers would 'compensate' -- change how they smoked -- to get the amount of nicotine they need." Farone WD, 102:2-14; see also Farone WD, 104:7-15 (testifying that he knows Philip Morris was aware of compensation for nicotine "[f]rom conversations that I had with many of my colleagues at Philip Morris while I was working there, including people working under Dr. Dunn in his behavioral research group," and that this knowledge "is evident from the company's own documents").

(1) Philip Morris

2176. In a March 24, 1961 Philip Morris memorandum from Wakeham to Hugh Cullman, "Trends of Tar and Nicotine Deliveries over the last 5 Years," Wakeham stated: "As we know, all too often the smoker who switches to a hi-fi cigarette winds up smoking more units in order to provide himself with the delivery which he had before." 1000861953-1953 (US 35484); see also Farone WD, 104:16-105:9 ("[T]his research into and understanding of compensation influence[d] how Philip Morris designed cigarettes").

2177. As Philip Morris marketing researcher Myron E. Johnston noted in a June 1966 Philip Morris report titled "Market Potential for a Health Cigarette":

> [A]ny health cigarette must compromise between health implications on the one hand and flavor and nicotine on the other. It seems clear from the performance of existing health cigarette entries that flavor and nicotine are both necessary to sell a cigarette. A cigarette that does not deliver nicotine cannot satisfy the habituated smoker and cannot lead to habituation, and would therefore almost certainly fail.

1001913853-3878 at 3860 (US 20123).

2178. A July 28, 1967 Philip Morris USA memorandum from W.L. Dunn, Jr., then Associate Principal Scientist, to R.B. Seligman, Director of Development, discussed ventilation holes and compensation:

> An earlier study (Memo of June 27, 1967) established that lip contact with the tipping paper extended to 9.96 mm from the outer end of the tipping paper for the average smokers. Since the air dilution holes are located in a band from 8.0 to 9.7 mm from the outer end of the tipping paper, it follows that some of these holes are likely to be occluded under normal smoking conditions, whereas no occlusion is likely to occur when the cigarettes are machine smoked for analysis.

The memorandum also documents that "[s]mokers adjust puff intake in order to maintain TPM [total particulate matter] and/or nicotine constancy." 1003295500-5502 at 5500, 5502 (US 88627).

2179. An August 11, 1967 Philip Morris USA document from Helmut Wakeham, Vice President of Corporate Research and Development, to Paul D. Smith, Vice President and General Counsel, stated that human smokers increased their smoke intake when switching from non-filter to filter cigarettes:

> Two tests conducted at Product Opinion Laboratories demonstrate that in smoking a dilution filter cigaret [sic], the smoker adjusts his puff to receive about the same amount of "undiluted" smoke in each case. . . . In the smoking machine the puff volume is constant so that with dilution the quantity of "equivalent undiluted smoke" delivered to the Cambridge filter is reduced. Not so with the human smoker who appears to adjust to the diluted smoke by taking a **larger puff** so that he still gets about the same amount of equivalent undiluted smoke. . . . The smoker is, thus, apparently defeating the purpose of dilution to give him less "smoke" per puff. He is certainly not performing like the standard smoking machine; and to this extent the smoking machine data appear to be erroneous and misleading. It has probably always been so for diluted smoke cigarettes, whether dilution is obtained by porous paper or holes in the filter.

1000322554-2555 (US 35224) (emphasis in original); see also Dr. Jerry Whidby WD, 17:16-19:11 (testifying that "Product Opinion Laboratories was a facility established by Philip Morris to evaluate smokers' reaction to the cigarette brands Philip Morris was selling, as well as to Philip Morris's prototype cigarettes," and that he is not "aware of any instance, at any time between when Dr. Wakeham wrote this document in 1967 and when [Dr. Whidby] left the company in 1998, in which Philip Morris informed the American public directly of Wakeham's conclusions that the FTC tar and nicotine yields are apparently 'erroneous and misleading,'" and "dilution filter cigarettes generated

lower FTC yields than non-dilution cigarettes, but delivered about the same amount of smoke to smokers").

2180. Dr. Farone explained the extraordinary significance of Wakeham's statements in this document:

> It shows that Philip Morris understood the puff compensation phenomenon. This document shows that by 1967, Philip Morris recognized that when you have dilution or ventilation, the mechanism for compensation is puff adjustment . . . this document [also] shows that Philip Morris knew in 1967 that human smokers compensated by increasing their smoke intake when switching from non-filter to filter cigarettes, and in doing so, smokers received the same amount of tar and nicotine from their filter cigarettes as from non-filter cigarettes. It also shows Wakeham's understanding that the FTC tar and nicotine yields for low tar cigarettes are erroneous and misleading.

Farone WD, 111:5-112:15.

2181. Since roughly the mid-1970s, the "vast majority of the low tar and ultra-low tar cigarettes sold by Philip Morris in the United States . . . are dilution cigarettes." Whidby WD, 19:16-18.

2182. In an August 25, 1967 Report on Project 1600, William Dunn, Senior Scientist, outlined an additional study performed by Philip Morris on puffing, with findings that provided "further support to the postulate that smokers adjust puff intake in order to maintain constant smoke intake." 1003288337-8338 at 8337 (US 85049).

2183. In a Fall 1969 speech, William Dunn reported to the Board of Philip Morris: "It would appear that smokers do modify their smoking habits in order to obtain a preferred [nicotine] intake level." 1003287880-7890 at 7884 (US 20163).

2184. Helmut Wakeham presented a November 26, 1969 internal industry paper, titled "Smoker Psychology Research," to the Philip Morris Board of Directors stating:

> This great variability among smokers results from the fact that a smoker tends to seek his own level of intake. Even while smoking a single cigaret [sic], he adjusts the volume of his puff as he goes down to the rod, compensating for the change in the density of the available smoke. . . . A smoker's intake level is determined by the smoker himself, not by the manufacturers of the cigarettes.

1000273741-3771 at 3748 (US 26080).

2185. A September 2, 1970 Philip Morris memorandum from Ray Fagan to Wakeham confirmed Philip Morris's understanding that smokers compensated for lower deliveries by smoking more cigarettes:

> In the last 15 years particulates in cigarette smoke have declined by 33%; however, the number of cigarettes per smoker has increased. Furthermore, experimental studies have shown that a smoker will increase the number of cigarets he smokes if the cigaret he is offered contains less particulates and less nicotine.

2022244449-4450 at 4449-4450 (US 36855); Farone WD, 110:6-14; 118:9-23.

2186. A November 1971 Philip Morris Special Research Report written by Tom Schori also addressed compensation by increasing the number of cigarettes smoked. The last sentence of the abstract of this report stated: "These findings support the hypothesis that the smoker does have daily intake quotas for tar and/or nicotine and that he titrates his smoke intake to meet these quotas." 1000350158-0188 at 0161-0162 (US 20176).

2187. A January 1972 document from Philip Morris Research Center, written by Tom Schori and William Dunn, reviewed Philip Morris's evidence indicating that smokers compensated

when smoking brands supplying less nicotine in order to receive their "daily nicotine intake quota," stating:

> Cigarette consumption rate, i.e., number of cigarettes smoked per day, was found to vary as a function of the nicotine delivery of these cigarettes. Specifically, as nicotine increased, cigarette consumption decreased. These findings support the notion that smokers develop a daily nicotine intake quota and that when smoking cigarettes differing in nicotine delivery from that which they are accustomed they tend to modify their consumption rate in order to maintain their normal quota. No support was found for the analogous notion of a daily tar intake quota, however.

1003285403-5416 at 5403 (US 20159); 2062951266-1279 at 1266 (US 39723); Farone WD, 111:1-4 (referring to US 20159); Henningfield WD, 94:14-21 (referring to US 39723 as "significant in terms of Defendants' knowledge and understanding of the addictiveness of nicotine from the 1970s").

2188. A May 14, 1975 Philip Morris memorandum from William Dunn to Robert Seligman, Vice President for Tobacco Science and Research, stated:

> Underlying all of our work in this area is the conviction what the smoker gets in the way of smoke is independent of smoke concentration levels as delivered within the range of commercially available cigarettes. He has a variety of regulatory maneuvers at his disposal for accommodating supply to a fairly constant need [for nicotine]. To monitor all of these maneuvers simultaneously is a major objective of our behavioral research program.

1000024914-4920 at 4915 (US 26072).

2189. An August 19, 1977 Special Report from the Philip Morris USA Research Center written by Barbara Goodman, a Research Scientist, described Philip Morris's "Human Smoker Simulator," a mechanism the company used to replicate human smoking behavior. The Simulator recorded how smokers smoked particular cigarettes by measuring their puffing behavior, then played back the recording into a smoking machine so the machine could replicate -- and then measure -- the

amount of smoke constituents and the chemical composition obtained from a cigarette when smoked the same way the human had smoked it. The document states: "The Smoker Simulator program has the instrumentation to measure those smoker variations that constitute a smoker's puffing profile and a programmable smoking machine to measure the resulting tar, nicotine, and water deliveries." 1003728025-8039 at 8027 (US 20179); Whidby WD, 21:19-28:9; Whidby TT, 2/22/05, 13989:19-13991:6; see also 1003293476-3493 at 3484 (US 85073) ("The cassette tape impulses an electronic smoking machine which duplicates exactly the smoking behavior of a given individual with a given cigarette. Delivery of tar, nicotine, and other smoke components can then be determined at the same conditions.").

2190. A Philip Morris Report dated July 20, 1981, written by Frank Gullotta and J.A. Jones and sent to William Dunn and 40 others, including Dr. Whidby, described Philip Morris's Human Smoker Simulator program as "a system . . . which permits relatively unobtrusive monitoring of a smoker's inhalation patterns outside the laboratory setting," and indicated that "the system's accuracy was highly satisfactory throughout the experiment" and had "a mean accuracy reading of 96% . . . for 70 experimental sessions." The Report also indicated:

> A major barrier to investigations on smoke-laden inhalation patterns has been the lack of instrumentation which would accurately measure inhalation parameters, and yet be unobtrusive to the smoker. The system we have acquired breaks this barrier by permitting accurate and relatively unobtrusive monitoring of inhalation patterns under natural smoking conditions.

2025986350-6401 at 6352-6353, 6382 (US 87080).

2191. The July 20, 1981 Report includes a number of statements reflecting Philip Morris's understanding of smoker compensation:

> That roughly 20% or less of smokers take puffs equal to or smaller to those taken by the FTC Method machine smoking protocol.
>
> "The varying puff sizes in turn also give increased deliveries above those of" the FTC Method.
>
> "Smoker profile characteristics have been found to be affected by the cigarette design parameters to varying degrees."
>
> "A cigarette designed such that it causes the smoker to take larger puffs than the compared model could easily be perceived as having more impact (desirable or undesirable as the case may be)"
>
> Lists low resistance to draw and "high filter dilution" as the top two "physical cigarette designs that have the effect of increasing a smoker's puff volumes."
>
> "In conclusion, when a smoker is presented with a cigarette other than his normal brand, it is possible to estimate the maximum flow rate to a certain degree. The puff duration will increase with increasing RTD [resistance to draw] and/or filter dilution. Since the volume is based on both flow and duration, the puff volume will change accordingly."
>
> Test results showing that smokers of full-flavor, light and ultra light cigarettes all took larger puffs than in the FTC Method, and that the smokers' puffs were increasingly large for lower tar cigarettes, so that, for full-flavor smokers, "average tar deliveries were 45% higher than" the FTC yields, low tar smokers' "showed a higher rate of increase, 81%," and, for ultra light cigarettes, "[t]he average tar delivery" was "more than three times that of" the FTC yield.

1003728025-8039 at 8027, 8028, 8032, 8034, 8036, 8037 (US 20179); Whidby WD, 22:18-23:9, 23:17-21, 24:6-13, 25:14-18, 26:21-27:5, 27:15-28:9; see also 2025986350-6401 at 6353, 6384 (US 87080); Whidby WD, 53:10-55:21 ("Preliminary results suggest that inhalation patterns are modified in response to changes in the available nicotine in the cigarette smoked. . . . The results from studies which analyze blood plasma and urine nicotine concentrations . . . suggest that nicotine compensation is fairly complete.").

2192. A September 17, 1975 Philip Morris document from Goodman to Leo F. Meyer, Philip Morris Director of Research, reflecting results of Philip Morris's studies with its Human Smoker Simulator, reported that, due to compensation, smokers got as much tar and nicotine from Marlboro Lights as from full-flavor Marlboros:

> Marlboro Lights cigarettes were not smoked like regular Marlboros. There were differences in the size and frequency of the puffs, with larger volumes taken on Marlboro Lights by both regular Marlboro Smokers and Marlboro Lights smokers. . . . The panelists smoked the cigarettes according to physical properties; i.e., the dilution and the lower RTD of Marlboro Lights caused the smokers to take larger puffs on that cigarette than on Marlboro 85's. The larger puffs, in turn, increased the delivery of Marlboro lights proportionally. In effect, the Marlboro 85 smokers in this study did not achieve any reduction in smoke intake by smoking a cigarette (Marlboro Lights) normally considered lower in delivery.

The report's "Conclusions" section noted that "[t]he smoker data collected in this study are in agreement with results found in other project studies." 2021544486-4496 at 4486-4488 (US 20348); see also Whidby WD, 45:11-12 (noting, in the context of this exhibit, that "Marlboro 85's" refers to Marlboro Reds, a full-flavor cigarette brand).

2193. As Dr. Burns explained, "there are three things that are powerfully significant in this document":

> (1) It "very clearly demonstrates that, in contrast to what we believed six years later when we wrote the 1981 Surgeon General's Report, smokers who smoked brands of cigarettes on the market in 1975 were not getting different yields when they smoked those products. We [in the public health community] believed they were."
>
> (2) "[T]his is dated 1975, six years prior to the time the [1981] Surgeon General's Report reached its conclusion. And we did not have access to this information or comparable information."

(3) "[T]his study was done on a machine that mimicked actual smoking behaviors, that actually matched the behavior of the individual when the machine smoked the cigarette. In 1981, one of the recommendations that we made . . . was that this type of machine should be developed so that we could develop a better understanding of the relationship between delivery of tar and nicotine of these cigarettes when they were actually smoked. So . . . six years prior to the time we were reviewing that evidence for the Surgeon General, this information was available to Philip Morris."

Burns WD, 52:15-53:12.

2194. One other Philip Morris Human Smoker Simulator report compared the deliveries of the full flavor and light versions of brands Philip Morris was selling. That report, dated September 23, 1976, measured the smoking behavior -- and resulting tar and nicotine deliveries -- of 150 full-flavor cigarette smokers for several years. This Human Smoker study's results revealed that, while Marlboro 100s are both full-flavor cigarettes and longer in length than Marlboro Lights, "the tar and nicotine yields for these two brands are basically identical." Whidby TT, 2/22/05, 14099:12-14106:6, 14106:15-14107:1; 1003727277-7298 at 7280, 7281, 7290 (JD 040539).

2195. Philip Morris stopped all testing with the Human Smoker Simulator in 1981. Whidby TT, 2/22/05,13991:15-13992:13.

2196. A March 1, 1977 Philip Morris memorandum from Stanley Schachter to Thomas Osdene, Director of Research, concluded: "Serious smokers smoke to prevent withdrawal. Smokers regulate nicotine intake . . . . The smoker who fails to regulate suffers withdrawal." 1000046626-6661 at 6654-6655 (US 35105).

2197. An October 16, 1981 memorandum from Jan Jones to William Dunn, titled "Nicotine Retention Research Proposal," stated:

> Research on smoke-laden inhalation patterns, using the ambulatory monitoring instrumentation, has provided preliminary evidence that inhalation behavior is modifiable, and is altered as a function of changes in the nicotine delivery of the cigarette. We are observing changes in inhalation parameters in the direction which would suggest compensation for increases or decreases in nicotine relative to the subject's usual brand.

1000136372-6373 at 6372 (US 35162).

2198. In a November 29, 1982 report, "The Effect of Cigarette Nicotine Content on Smoker Puff Parameters and Deliveries," Philip Morris scientists reported the results of their study of "puff number, puff volumes, puff durations, flow rates and puff intervals," which showed smokers "generally tended to decrease puff duration, puff number and puff volume and increase puff interval as the nicotine level of the cigarette increased." 1000408760-8809 at 8762, 8764, 8771 (US 35272).

2199. Carolyn Levy, a research scientist for Philip Morris in its Behavioral Research Group from 1975-1980, testified that she "worked on the issue of whether individuals regulated the amount of nicotine they obtained from smoke," and as part of that work she "monitored how smokers inhaled smoke from cigarettes with varying tar and nicotine deliveries." Levy further testified that, as a result of this research, she was able to "gather evidence that some people change their smoking behavior in response to cigarettes with differing tar and nicotine deliveries." When Levy requested publication, she "was told not to publish or was not given approval to publish by the manuscript review board." Levy WD, 10:16-11:15.

2200. A November 1999 presentation, titled "PM USA Discount Brands," given to Geoffrey Bible, Chairman of the Board and CEO of Philip Morris Companies, noted in a Product Comparison chart that Ultra Light products have a higher puff count than Full Flavor products. 2070662118-2389 at 2176 (US 87914*).

(2) R.J. Reynolds

2201. In a March 28, 1972 memorandum marked "RJR SECRET" from Claude Teague to E.A. Vassallo and Murray Senkus, titled "A Gap in Present Cigarette Product Lines and an Opportunity to Market a New Type of Product," Teague stated: "I believe that for the typical smoker nicotine satisfaction is the dominant desire, as opposed to flavor and other satisfactions." The document went on to state:

> Given a cigarette that delivers less nicotine than he desires, the smoker will subconsciously adjust his puff volume and frequency, and smoking frequency, so as to obtain and maintain his per hour and per day requirement for nicotine (or, more likely, will change to a brand delivering his desired per cigarette level of nicotine).

Teague further stated:

> [R]egardless of which cigarette the smoker chooses, in obtaining his daily nicotine requirement he will receive about the same daily amount of tar. If, as claimed by some anti-tobacco critics, the alleged health hazard of smoking is directly related to the amount of tar to which the smoker is exposed per day, and the smoker bases his consumption on nicotine, then a present "low tar, low nicotine" cigarette offers zero advantage to the smoker over a regular filter cigarette, but simply costs him more money and exposes him to substantially increased amounts of allegedly harmful gas phase components in obtaining his desired daily amount of nicotine.

The document ends with the statement that "[t]he thoughts and philosophies expressed above come from many sources and certainly are not solely those of the writer." 500790776-0784 at 0778, 0782-0784 (US 29473).

2202. A document titled "Smoking Satisfaction" and labeled as a "[t]alk delivered to RJR Tobacco Company management, June 23, 1974 and RJR Tobacco International management, August 4, 1976" by Murray Senkus, Director of Scientific Affairs for RJR until 1979, stated

> [T]he amount of nicotine that one can get in the lungs from low tar cigarettes is much less. So the smoker then resorts to other means to get the nicotine he needs in the blood from low tar cigarettes by longer puffs, by bigger puffs, by more frequent puffs, and also by smoking more cigarettes each day. It has been observed that as one switches from a non-filter to a filter, one smokes more cigarettes per day. But eventually one can change his style of smoking so one can get enough nicotine in the blood during the inhaling step by changing the smoking style; i.e. longer puffs, bigger puffs, and more frequent puffs. Surveys have shown that in switching to lower tar cigarettes, smokers have not necessarily increased the number of cigarettes per day.

501525355-5366 at 5360-5361 (US 29531).

2203. Senkus, in a speech he gave at RJR in both late 1976 and early 1977, "Some Effects of Smoking," demonstrated RJR's knowledge that smokers compensate for lower delivery cigarettes to obtain their required nicotine level, and confirmed that the other Defendants also knew this:

> [T]here are ways to increase or decrease the amount of nicotine one can obtain by smoking a single cigarette: One can take a deeper puff or shallower puff. . . . One can puff more frequently or less frequently. . . . One can take a deeper puff and hold the smoke in the lungs longer before exhaling to assure complete transfer of nicotine into the body fluids. Without any question, the desire to smoke is based on the effect of nicotine on the body. . . . [T]he amount of nicotine that one can get in the lungs from low tar cigarettes is much less. So the smoker then resorts to other means to get the nicotine he needs in the blood from low tar cigarettes, by longer puffs, by larger puffs, by more frequent puffs, and also by smoking more cigarettes each day. One can get enough nicotine into the blood during the inhaling step by changing the smoking style; i.e., longer puffs, bigger puffs, and more frequent puffs. . . . It is worth noting that our competitors are aware of the significance of the quality and quantity attributes of nicotine. Moreover, they are fully aware of the advisability of maintaining a low tar value and also maintaining the nicotine as high as possible [referring to Philip Morris's Marlboro and Merit, and Lorillard's True brand].

500251711-1722 at 1714,1718, 1720 (US 48076).

2204. In an April 5, 1982 RJR report from J.H. Robinson and J.H. Reynolds to Dr. D. Werner, the authors admitted that the nicotine delivered under human smoking conditions was "more than 200%" of that advertised, stating that "the smoker can adjust his puffing characteristics to obtain the same level of nicotine from different cigarettes. This represents the first concrete evidence that smokers compensate to obtain a consistent amount of nicotine. Relevant to this, it should be noted that all cigarettes experienced a marked reduction in nicotine filter efficiency under human smoking conditions compared to the nicotine filter efficiencies obtained under standard FTC conditions." 508028982-8984 at 8983 (US 85053).

2205. John Robinson, RJR's Principal Scientist in psychopharmacology, wrote a July 25, 1983 memorandum to Alan Rodgman, titled "Critique of Smokers of Low-Yield Cigarettes Do Not Consume Less Nicotine," which essentially agreed with the conclusions in an article written by Dr. Neal Benowitz showing that smokers compensate to obtain a stable nicotine dose in their bloodstream. The article stated:

> The paper itself expresses what we, in behavioral, have "felt" for quite some time. That is, smokers smoke differently than the FTC machine and may very well smoke to obtain a certain level of nicotine in their bloodstream. If a given level of nicotine in the blood is the final goal of a smoker, one would predict that he would smoke an FFT [full-flavor tar] and ULT [ultra low tar] cigarette differently. If the smoker could obtain the same nicotine in his bloodstream from an FFT and ULT cigarette by modifying his puffing/inhaling pattern, it would be expected that the blood cotinine level would be the same after smoking either cigarette on a regular basis . . . the data reported in this paper remind us of the HMSM experiment done with the German Camel and Marlboro cigarettes. While there were certain imperfections in this experiment, you may recall that the smokers apparently obtained almost exactly the same amount of nicotine no matter which of the four cigarettes they smoked. This was one of the first indications that smokers may, in fact, smoke to obtain a certain

> level of nicotine in their bloodstream. Data like these made me feel that the data reported in this current publication are probably correct.

502680871-0871 (US 49198); see also 508978013-8025 at 8014 (US 20819) (acknowledging that smokers who switched to low-tar products typically "compensated," and indicating that a smoker "has his or her own nicotine requirement from each cigarette" and "adjusts [his/her] smoking maneuver" to obtain the desired level of nicotine").

(3) Brown & Williamson

2206. Minutes from a January 12-18, 1974 B&W/BATCo conference stated: "[W]hatever the characteristics of cigarettes as determined by smoking machines, the smoker adjusts his pattern to deliver his own nicotine requirements." 109882674-2679 at 2675 (US 21507).

2207. B&W's scientific research on compensation was confirmed by its consumer research on low tar cigarettes, in which smokers reported compensating for the reduced deliveries. For instance, a February 23, 1977 consumer research report, "Consumer Discussions of Low Delivery Cigarettes," written by R.F. Brotzge and W.H. Deines, demonstrates B&W's awareness that low tar smokers were compensating by smoking more cigarettes, stating:

> Findings, in order of importance, to participants in the five focus groups were: 1. Health -- Participants expressed general fears about cancer, emphysema, other lung diseases, etc. Despite these fears, they stated their determination to continue smoking. . . . 5. Compensation -- Participants noted they smoked more low tar cigarettes and received less satisfaction.

679009843-9867 at 9843 (US 85055).

2208. Similarly, a July 25, 1977 B&W Internal Marketing Study, titled "Low 'Tar' Satisfaction, Step 1 Identification of Perceived and Underperceived Consumer Needs," analyzed smokers' satisfaction with low tar cigarettes with regard to switching behavior, and stated: "It was

noted earlier that new arrivals to the Hi-Fi category realize that they are smoking more cigarettes [quoting a study participant]: 'You can also go down to the lower tar, but increase your smoking. So you're right back where you were.'" The study further noted that "Cigarette consumption, as reported in a 1976 Consumption Study, increases as nicotine (satisfaction per cigarette) decreases." 775036039-6067 at 6050 (US 21053).

2209. A report bearing the stamp "Brown & Williamson June 24, 1980 R&D Library" prepared by BATCo on April 23, 1980, titled "Compensation: A Review [of] the Relationship Between Compensation and Changes in Cigarette Design," stated that studies indicated that compensation was a permanent phenomenon: "On the basis of the German studies, compensation would therefore be seen as a long-term tendency to permanently adjust towards some preferred (or minimum) level [of nicotine]." 650032329-2385 at 2356 (US 53429); Ivey WD, 68:1-10.

2210. A July 1983 B&W report by W. Wiethaup and W. Schneider, "Filter effects on smoke and smoke effects," stated:

> One factor, which may be responsible for a relatively intensive "strength" impression within a given tar segment, is the "smoke elasticity." The smoke elasticity describes the potential of a cigarette, to provide the smoker with more smoke, if he draws harder. This becomes relevant at least for the first few puffs of a low tar cigarette, as all recent investigations show.

512107109-7120 at 7110 (US 85056).

2211. A March 26, 1999 e-mail from Hugh Honeycutt to Mike Dixon and numerous other BATCo employees referenced B&W's "Atlanta Study," which was conducted by scientist Kelly St. Charles, to examine smoking behavior and puffing profiles for low tar cigarettes. Honeycutt's email expressed concern that "B&W had just made a big splash in the US touting Carlton as the '1' for

you," -- a marketing slogan indicating that Carlton delivered only one milligram of tar -- in light of research finding that "smokers of ultra low tar brands like our Carlton 1 mg appeared to actually get 3 mg." of tar. 321155579-5580 at 5579 (US 46683); 2073168412-8414 (US 22024). As of June, 2004, B&W admits that smoker compensation causes Carlton 1 mg smokers, on average, to inhale 5 to 6 times the amount of tar that B&W has advertised. (no bates) (US 88628) (stating "a Carlton 1 mg. smoker will, on average, get 5 to 6 milligrams of tar").

(4) BATCo

2212. A BATCo document from the late 1970s, "Why do People Smoke?," reflects BATCo's understanding of compensation, stating that "[n]icotine sustains smoking behaviour," that "smoking behaviour is highly responsive to cigarette design," and that "[a] key determinant of product preference will be the design 'Effort-Reward Gradient,'" i.e., elasticity of delivery. The document added: "Increase in Cigarette Consumption [is] Related to Change in Nicotine Yields," noting that "[m]ost compensation must occur at the individual cigarette level." 403626692-6802 at 6729, 6731, 6734, 6762, 6768 (US 85018*).

2213. An undated BATCo document by Dr. S.J. Green, a Senior Scientist for BATCo Research and Development, titled "Ranking Cigarette Brands on Smoke Deliveries," discussed compensation to equalize nicotine intake in several contexts, including smokers "increas[ing] puff volume to receive the same nicotine" when smoking a lower tar cigarette and smokers "adjust[ing] their smoking behaviour on the basis of nicotine intake." 110077247-7268, at 7247-7250 (US 88643).

2214. A March 11, 1971 report written by D. Creighton, BATCo R&D Research Scientist, and L.M. McGillivray, titled "The Effect of Changed Deliveries at Constant Pressure Drop on Human Smoking Pattern," stated:

> It was found that there is indeed a degree of compensation for the reduced delivery. The panel as a whole took larger puffs from the lower delivery cigarette, inhaled the smoke more deeply and held the smoke in the lungs for a longer time. The six individual panel members compensated for changed delivery in different ways, some by increased volumes, and others by increased number of puffs on the lower delivery cigarette.

The report also stated: "An increase in puff volume, but not puff duration, means that subjects must have drawn harder on the lower delivery cigarettes, and that the flow rate was greater during puffing. This implies that smokers are willing to work harder to achieve an optimum delivery from a lower delivery cigarette." The report further stated:

> The fact that the panel compensated for the lower delivery by increasing the depth of inhalation, the depth of exhalation and the total time for which the smoke was held within the body is of particular interest in the light of the finding that more is retained from a puff of smoke that is inhaled deeper, and held within the lungs longer.

757001173-1185 at 1174, 1180 (US 85058); see also 102793967-3980 at 3969 (US 34698).

2215. A June 17, 1975 BATCo document, "Compensation for Changed Delivery," sent to several BATCo employees, including David Geoff Felton, Senior Scientist for BATCo Ltd.'s Research and Development Department, acknowledged that smokers compensate to achieve a stable dose of nicotine:

> A number of experiments . . . have been interpreted as showing that compensation for changed delivery does occur. . . . Our own results showed that when the [tar] to nicotine ratio was changed more smoke was taken from the lower delivery cigarette. . . . My own view is that

> compensation for changed delivery of nicotine does occur. . . . The weight of evidence at present available is for nicotine compensation [referring to several studies].

105658168-8179, 8168, 8178 (US 85418).

2216. A June 1, 1976 BATCo report, also titled "Compensation for Changed Delivery," written by D. Creighton, R&D Research Scientist, concluded that

> the evidence is strongly in support of the hypothesis that many smokers do change the way they smoke in response to cigarette design changes that affect nicotine delivery. . . . The tendency amongst the majority of established smokers is to attempt to equalise nicotine delivery if the cigarette design allows them to do so.

The study further concluded that "[d]ue to the differences in the delivery of individual cigarettes from the same brand . . . and the differences between subjects and within a subject" "[e]qualisation [of nicotine levels] within the range + 20%" was expected. The report stated that "there are eight suggested methods by which a subject may regulate his nicotine intake; any number of which may be used simultaneously or at different times," namely by varying puff volume, puff number, puff distribution, cigarette butt length, puff interval, puff profile, inhalation pattern, and number of cigarettes smoked. 650008449-8480 at 8470, 8460-8462, 8469, 8464 (US 76192).

2217. A June 27, 1978 BATCo memorandum, also titled "Compensation for Changed Delivery," written by Creighton, confirmed BATCo's knowledge that compensation is not temporary, and occurs as a result of a need for nicotine, and contradicted "the advice of Health Authorities" that smokers who would not or could not quit should switch to a lower delivery cigarette:

> It is difficult to ignore the advice of Health Authorities who advise smokers to give up smoking or change to a lower delivery brand but there is now sufficient evidence to challenge the advice to change to a lower delivery brand, at least in the short-term. Numerous experiments have been carried out in Hamburg, Montreal, and

> Southampton within the company as well as many other experiments by research workers in independent organizations, that show that generally smokers do change their smoking patterns in response to changes in the machine smoked deliveries of cigarettes. . . . Further findings from these results were that the modified smoking patterns used to smoke the changed delivery brands were maintained for the month during which they were smoked. This shows that there was no adaptation during that time. . . . In general, a majority of habitual smokers compensate for changed delivery, if they change to a lower delivery brand than their usual brand. . . . If they choose lower delivery brand which has a higher tar to nicotine ratio than their usual brand (which is often the case with lower delivery products) the smokers will in fact increase the amounts of tar and gas phase that they take in, in order to take the same amount of nicotine.

105553905-3914 at 3905, 3907, 3913 (US 34799); Ivey WD, 69:14-70:1.

2218. A June 29, 1979 study written by Creighton, "A Comparison of Smoking Surveys Separated by Four Years," compared the smoking behavior of a group of smokers in 1974 of a cigarette with 1.7 mg nicotine and 27 mg TPM to their behavior in 1978 when smoking a cigarette with a slight reduction in nicotine (by 17% to 1.4 mg) and virtually identical TPM delivery (26 mg). The study found that the group smoked the reduced nicotine cigarette "more intensely" (i.e., increased their puff volume), which likely "equalised" the nicotine delivery of the two cigarettes. The study concluded that "it is probable that as a result of the changes in smoking behaviour observed in this study, subjects took about the same amount of nicotine from the two different cigarettes but, because of changes in TPM to nicotine ratios, received more TPM from the [reduced nicotine cigarette]." The study further found that

> [t]he fact that smokers have changed their smoking patterns to take more smoke from a cigarette with lower nicotine delivery but similar TPM delivery adds support to the contention that nicotine is a major determinant of smoking behavior, and that TPM, as long as it is delivered in sufficient quantity, plays a lesser role.

650008946-8960 at 8948, 8953-8955 (US 85059).

2219. An April 27, 1981 memorandum by Martin Oldman, an employee in BATCo's Research & Development department, to L.C.F. Blackman, Director of BATCo, stated that "[s]ome people appear to smoke for nicotine, others don't . . . nicotine dependent smokers. . . are more likely to compensate for nicotine than others." 105399692-9693 at 9693 (US 85060).

2220. A July 9, 1984 document by Imperial Tobacco Limited, sister company to B&W, was distributed to various B&W and BATCo employees, including: Blackman; A.M. Heath, BATCo Executive Director of Marketing; Erhard Koehn, BATCo Manager of Product Development; Rainier Wernitz, BATCo Manager, Market Research; Tilford Riehl, B&W Division Head of Product Development; A. Mellman, B&W Director of Marketing Research; T. Wilson; Brennan; C.I. Ayers; and G.O. Brooks, BATCo scientist. It acknowledged that smokers who switch to low tar brands increase the number and intensity of puffs taken and number of cigarettes smoked to achieve a higher dose of nicotine: "BRANDS SWITCHING DOWN DELIVERY: increase in puffing parameters -- increase in numbers of cigs. smoked -- more puffs taken means to achieve a higher dose." 536000000-0090 at 0050 (US 22338).

2221. A January 24, 1985 BATCo letter from Charles H. Keith to Lance Reynolds stated:

> [H]uman smokers, even though they ingest much more Nicotine and Tar than is indicated by the FTC values, get about the same amount of Tar and one and a half times the Nicotine from Barclay, Carlton and Cambridge. . . . [I]t is clearly apparent that the human smokers are ingesting much more nicotine and tar than the nominal values obtained by FTC tests. The human levels are six to eight times higher than the normal values.

621096298-6300 at 6298, 6300 (US 76191).

2222. A BATCo document dated October 12, 1987 sent by M.L. Reynolds to H.F. Dymond (researcher) and H. Ibig, under the heading "Easily Achieved Tar Deliveries from Low Tar Cigarettes," displays a chart depicting the increased tar deliveries of RJR's Now cigarette, and Philip Morris's Merit and Merit Ultra cigarettes, caused by the compensatory behaviors of vent hole blocking, taking more puffs, and taking bigger puffs. This chart shows that these behaviors in combination caused a thirteen-fold increase of tar inhaled for Now cigarettes, a nearly three-fold increase for Merit, and a four-fold increase for Merit Ultima. 400015695-5696 at 5696 (US 85063).

2223. A December 21, 1987 BATCo document with subject heading "Notes on Meeting With Dr. Eicher" written by "HFD" (H.F. Dymond, researcher) and sent to Nick Cannar and several B&W and BATCo personnel, stated: "BAT acknowledged the discussion on compensation and described how channel ventilation was an alternative form of ventilation, both systems could be manipulated by a consumer. Other companies were also beginning to acknowledge compensation, but they were reluctant to debate the issue in public." 400015634-5635 at 5634 (US 85064).

2224. A May 6, 1992 BATCo report, titled "Topics In Smoking and Health 'Bible'" stated:

> [T]he expression of product smoke deliveries in the form of a league table, while understandable, can be misleading. There can be no guarantee that a smoker who switches from one product to another delivering a lower "tar" value will thereby reduce his intake of "tar." He may well alter the way he smokes the second product in some subtle fashion and so adjust his intake of smoke to fit his needs. In this way, he may inadvertently increase his intake of other substances in the smoke. League tables and delivery data on products may, therefore, be misleading to the consumer, who will be unaware of the sub-conscious ways in which he manipulates his own behaviour . . . smokers of higher delivery cigarettes may find that they need to smoke more low delivery cigarettes to achieve the same satisfaction. . . . Increasingly smokers will accept the alleged harmfulness of smoking, and while wishing to continue will look for health reassurance brands. . . . Smoking behaviour is also of

> importance. For example research into the effects of low tar and nicotine cigarettes on ease of quitting smoking will be undertaken.

500887584-7709 at 7606-7607, 7614, 7679, 7704 (US 20656).

(5) American Tobacco

2225. A November 11, 1976 report prepared by Fay Ennis Creative Research Services for F. William Free & Company, an advertising agency used by American, demonstrates American's awareness that smokers of low tar cigarettes employed several different methods of smoker compensation. The report summarized focus group sessions relating to low tar cigarettes. When asked about Now and Carlton cigarettes, the panelists "concluded that you would smoke twice as much of this type of cigarette in order to get any satisfaction. One man said that he didn't like the draw on these cigarettes because he had to puff so hard, his throat tickled." When asked to define a low tar cigarette, some panelists stated: "You have to drag on the cigarette 'real' hard to get any satisfaction out of it." ATC0137310-7324 at 7319-7320 (US 87916).

(6) Lorillard

2226. A July 16, 1976 Lorillard memorandum from M.S. Ireland to H.J. Minnemeyer on the subject of "Research Proposal -- Development of Assay for Free Nicotine" revealed Lorillard's awareness of smoker compensation:

> Cigarette sales are made for one reason. The customer is satisfied with the product either from the taste or the physiological satisfaction derived from the smoke. The consensus of opinion derived from a review of the literature on the subject indicates the most probable reason for the addictive properties of the smoke is the nicotine. Indications are that the smoker adjusts his smoking habits to satisfy the desire for nicotine either by frequent or large puffs on the cigarette, or smoking a large number of cigarettes.

00044522-4523 at 4522 (US 22012); 94937037-7038 at 7037 (US 56775).

2227. A December 10, 1976 document by H.S. Tong, which included a review of the scientific literature, reached several conclusions confirming Lorillard's understanding that smokers compensate to receive their desired level of nicotine:

> It seems that, within limits, smokers can and do control their nicotine intake from smoke by varying their smoking techniques. . . . Smokers were known to smoke more when offered low nicotine cigarettes. . . . It would seem desirable to have a low tar cigarette with a nicotine content between the threshold and optimum doses level.

00045061-5071 at 5061-5063, 5068 (US 34210).

2228. A July 30, 1980 Lorillard memorandum, "A Review of Behavioral and Psychopharmacological Factors in Smoking," from S.T. Jones (Product Design), included conclusions by Lorillard personnel based on review of scientific articles in the literature, including the following: "The evidence to date clearly indicates that smokers titrate or regulate their intake of nicotine, e.g. smokers of cigarettes which deliver large amounts of nicotine will adjust -- when given low nicotine cigarettes -- their smoking to get a larger nicotine dose than the machine determined values indicate." Lorillard also independently acknowledged that, in the 1980s, it knew that smokers of low tar/low nicotine cigarettes would compensate by altering their smoking habits in order to obtain a higher level of nicotine. 01105000-5021 at 5010 (US 20030); Spears PD, State of Minnesota v. Philip Morris Inc., 9/23/97, 62:29-65:11.

2229. An August 21, 1984 Lorillard memorandum from E-Chung Wu to W.R. Deaton, reporting on a "puff profile study of 15 brands of cigarettes . . . with 5 smoking panel members" acknowledged smoker compensation: "The general trend shows that puff volume increases with the decrease of both TPM or nicotine. . . . Obviously, the higher dilution of smoke needs larger volume to compensate for the decrease of the flavor or nicotine." 89213491-3501 at 3491 (US 56466).

3. Defendants Internally Recognized that Smokers Switch to Low Tar/Light Cigarettes, Rather than Quit Smoking, Because They Believe They Are Less Harmful

2230. The evidence shows that even though low tar smokers may have a greater desire to quit, the misperception of increased safety associated with low tar cigarettes persuades them to avoid quitting. Research shows that most low tar cigarette smokers have made a greater number of quit attempts than smokers of full flavor cigarettes, or were more likely to have considered quitting. (Weinstein WD, 56:21-57:8 (citing Giovino, et al., 1996)).

2231. Many smokers who were concerned about the risks of smoking responded by switching to low tar cigarettes instead of quitting. Burns WD, 46:21-47:9.

2232. "There is profound harm" for people who smoke low tar cigarettes. As Dr. Burns explained:

> The vast majority of people who smoke are addicted. They're interested in quitting but are unable to do so. . . . To provide smokers an alternative that says you don't have to quit, you can use this other type of cigarette, to intercept them on the way to quitting smoking is a profound harm because they continue to smoke longer than they might have otherwise. Some of those people who switched might have . . . been successful in quitting, and when they did that, they would have in actuality reduced their disease risks. And those individuals have been profoundly harmed.

Burns WD, 1:10-15; 12:10-11; 61:14-62:4; Burns TT, 2/15/05, 13311:9-15.

2233. The 2004 Report of the Surgeon General noted that "[r]esearch has demonstrated that with the expectation of reducing risk, many smokers switched to low machine-measured tar/nicotine cigarettes, and may thus have been deterred from quitting". TLT0930001-0949 at 0911 (US 88621). NCI Monograph 13 noted that "substantial numbers of smokers" switched to cigarettes with lower machine-measured tar yields "in an effort to reduce their disease risks," and that "[t]he switch to low

machine-measured-yield cigarettes with the illusion of risk reduction was, therefore, substituted for a real risk reduction that would have occurred had the smoker quit smoking altogether." DXA0310399-0650 at 0418 (US 58700).

2234. As demonstrated below, Defendants conducted extensive research on quitting to help them identify and understand potential quitters (i.e., smokers who were "concerned" and "uncomfortable" with the fact that they smoke) and design marketing that would dissuade them from quitting. Defendants' internal documents demonstrate their recognition that smokers interested in quitting smoking were instead switching to low tar cigarettes under the mistaken belief that doing so would either help them quit or be better for their health.

2235. For example, a 1987 National Health Interview Survey showed that 44% of current smokers had, at some point, switched to low tar cigarettes to reduce their health risk. Weinstein WD, 53:19-22 (citing, Giovino, et al., 1996). Correspondingly, another national survey showed that 58% of ultra light smokers and 39% of light smokers chose those cigarettes to reduce their health risks without having to quit. Furthermore, 49% of ultra light smokers and 30% of light smokers did so as a step toward quitting. Weinstein WD, 53:23-54:7 (citing, Kozlowski, Goldberg, et al., 1998). Finally, the 1993 Teenage Attitudes and Practices Survey showed that 21% of light or ultra light cigarette smokers chose those brands because they perceived them to be healthier. Weinstein WD, 54:13-15 (citing Giovino, et al., 1996).

2236. According to Dr. William Farone, former Director of Applied Research at Philip Morris, one reason that low tar cigarettes "are more dangerous" than full-flavor cigarettes is that "they lead people to believe they are [safer] so that they smoke them in manners that cause them to

get just as much toxins." Farone WD, 2:2-8; 2:15-19; Farone TT, 10/7/04, 1878:16-22; Farone TT, 10/12/04, 2171:25-2172:8; 2182:11-2190:7.

2237. Dr. Farone explained that:

> The problem is that when people see that word "light," it is my opinion that they believe it's safer and, in fact, it isn't, so that's what this is all about . . . they are more dangerous because people are smoking them thinking they are doing themselves some good, they think they are safer . . . there is no benefit to a smoker from Marlboro Lights compared to Marlboro. That's the main point. So that makes it more dangerous.

Farone TT, 10/7/04, 1865:9-23.

2238. Smokers of light and ultra light cigarettes are more concerned about the risks of smoking than smokers of full flavor cigarettes. A 1986 CDC control study showed that 85% of those who switched from full flavored cigarettes to light or ultra light cigarettes were concerned about the health risks of smoking, as compared to 70% of full flavor smokers. Weinstein WD, 56:13-20 (citing Giovino, et al., 1996). Ultra light smokers are also more likely to use tar numbers in judging the relative risk of cigarettes. A study showed that 56% of ultra light smokers rely on tar numbers to determine cigarette safety, as compared to 14% of the overall sample. Moreover, 83% of the ultra light smokers believed that switching from a 20 mg to a 5 mg cigarette would significantly reduce health risks, whereas 50% of other smokers shared that same belief. Weinstein WD, 56:3-12 (citing Cohen, J.B., Ch. 9 of Monograph 7, "Consumer/smoker Perceptions of Federal Trade Commission Tar Ratings").

a. Defendants Recognized that Smokers Choose Light/Low Tar Cigarettes for a Perceived Health Benefit

2239. Defendants have stated publicly that they produce low tar cigarettes only to accommodate consumer taste preferences for "lighter," "milder" tasting cigarettes, and that they do not intend their use of brand descriptors or their marketing of low tar cigarettes to imply a less harmful product. See Section V(E)(5), infra (discussing Defendants' false statements regarding their low tar cigarette marketing). Contrary to their public statements, however, Defendants' internal marketing documents establish that Defendants have known for decades that even though consumers prefer the taste of regular cigarettes to low tar cigarettes, they are willing to forgo them and smoke low tar cigarettes, which are less enjoyable and have a less appealing taste, because they believe low tar cigarettes are better for their health.

(1) Philip Morris

2240. According to Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, in her experience, "there is a general perception among consumers that as you go down in tar, cigarettes have less taste." For this reason, Philip Morris planned to produce a low tar Merit cigarette that tasted like a cigarette with higher tar. A June 30, 1993 document from a Philip Morris USA New Products Meeting, titled "Marlboro New Product Development," stated that the "Project" was to "[b]uild the Merit business by introducing a 3 mg product that tastes like a 5 mg." Philip Morris also planned to "[d]evelop a 6 mg Tar Cigarette with the Sensory Attributes of an 8-9 mg Tar Cigarette." Bonhomme WD, 56:13-57:6; 2041453659-3754 at 3681, 3743 (US 23906); see also 2021323470-3540 at 3478 (US 85034*) (Philip Morris's 1992 R&D Operational Plans for the Product Development Department issued to Cliff Lilly of Philip Morris USA included the following

objectives: "Design and develop an 3 mg [Merit] product with the subjective attributes of a 6 mg cigarette. . . . Design and develop a 6 mg [Merit] product with the subjective attributes of a [sic] 8 mg cigarette. . . . Develop 6 mg [Marlboro Ultra Lights] line extension . . . providing enhanced subjective quality and Marlboro character. . . . LOW TAR HIGH FLAVOR Objective: Develop new technologies which will allow us, within the next two to four years, to produce 'Ultra Low' tar, 2 to 4 mg, cigarettes with the sensorial experience of 'Lights' or 'Full Flavored' cigarettes").

2241. Bonhomme added that "Philip Morris's own marketing research shows that there are consumers who switch to low tar cigarettes even though they do not prefer the taste or flavor, because they believe it is better for them," and that "for those people the reason for switching to a low tar brand is not taste or flavor, but perceived health benefits." Bonhomme admitted that these smokers are willing to sacrifice taste for perceived health benefits. Bonhomme WD, 56:6-12; 60:21-61:1; 63:13-18.

2242. Bonhomme explained that Philip Morris's Merit brand of cigarettes utilized a marketing strategy, titled "Merit Solutions," that was intended to communicate to consumers that "Merit was a solution to the problem of finding a low tar brand with good taste." Bonhomme WD, 59:10-17.

2243. Defendants' own expert, A. Clifton Lilly, Vice President of Technology and Research for Philip Morris, demonstrated that Philip Morris did not intend to market Merit as a "lighter tasting" cigarette, but rather as one that tasted just like a full flavor cigarette, yet with a health benefit. Lilly testified that:

> The Merit brand, as I remember, came out in 1976. . . . R&D did a lot of basic research on taking tobacco and actually getting compounds for a flavor system that were the most flavorful ones in

> smoke, so that the cigarette would be lower tar but taste like it was more like the popular cigarettes, and they were all at that time full flavor.

Lilly PD, Engle v. R.J. Reynolds Tobacco Co., 5/7/98, 34:3-39:2.

2244. An undated Philip Morris document, titled "Background Information on Philip Morris Brands," included "Benefit Statements" for Philip Morris's various "light" brands that revealed Philip Morris's intent was not to market these cigarettes as "lighter" tasting, but rather as cigarettes that taste like full-flavor cigarettes with the extra purported benefit of low tar and nicotine:

- Marlboro Medium: "gives you a flavorful smoke in a low tar cigarette" and "bridges the flavor gap between low tar and full flavor cigarettes."

- Benson & Hedges 100's Lights: "premium tobacco flavor in a satisfying low tar smoke."

- Benson & Hedges 100's Deluxe Ultralights: "only 5 mg tar, yet is rich enough to be called Deluxe . . . is an ultra low tar cigarette that gives you satisfying taste . . . delivers cool, rich taste with only 5 mg tar."

- Merit: "You'll enjoy low tar and good flavor. . . . At only 7 mg tar, Merit delivers the rich flavor of leading cigarettes with twice the tar . . . get rich menthol flavor at only 8 mg tar."

- Merit 100's: "flavor that makes low tar and good taste a reality for 100's smokers."

- Merit Ultra Lights: "cool, flavorful smoke with only 5mg tar."

- Merit Ultra Lights 100's: "an ultra light with flavor."

- Virginia Slims Ultra Lights: "gives flavor and taste -- and is an ultra low tar smoke."

- Parliament Lights: "enjoyable taste in a low tar cigarette."

2070143183-4433 at 3209, 3211-3212, 3214-3215, 3219, 3222 (US 40253).

2245. A November 15, 1971 document to James Morgan, former CEO of Philip Morris, from the Marketing Research Department, bearing the letterhead "Philip Morris U.S.A. Inter-Office Correspondence," set forth results of a Philip Morris consumer research study on Marlboro Lights. Under the heading "Likes and Dislikes," the report stated: "Complaints continued to center around taste mentions (23%) and too mild (22%)." 1000292744-2762 at 2745 (US 35205).

2246. According to Morgan, Philip Morris did not intend for the name Marlboro Lights to communicate that it had light or lighter taste:

> I have trouble in describing what light taste really means. . . . Light taste, first of all, is not a positive attribute if it does mean anything . . . in my judgment, light taste is really a meaningless and nebulous claim . . . the bigger proposition is the lower tar and nicotine. . . . We are not talking, in my judgment, talking about light . . . as a taste. It's not a term that means anything in terms of taste, and the name Marlboro Lights as I said before, a word which we feel has appeal in a different sense than suggesting what the cigarette even tastes like.

Morgan PD, Philip Morris Inc., 10/15/74, 82:25-83:13; 85:9-15; 85:17-86:4.

2247. Around the time of the launch of Marlboro Lights in 1974, a marketing dilemma existed for Philip Morris: on the one hand, the fact that a cigarette had a "lighter taste" was a negative limitation in the minds of consumers that made the cigarettes more difficult to sell, but, on the other hand, the term "light" also conveyed the beneficial message of low tar. Morgan PD, Price, 6/5/02, 39:19-25, 40:2-25, 41:2.

2248. Philip Morris's Marketing and Research and Development departments held regularly scheduled meetings where they discussed, among other things, how to increase the market for low

tar cigarettes through research and development. Many discussions focused on the poor taste of low tar cigarettes:

> marketing . . . kept saying people don't like the taste of a low tar cigarette. They are finding it unsatisfactory. . . . What can we do to develop a low tar cigarette that really tastes good. That to me looks like the great market opportunity. I remember lots of discussions about that.

Morgan PD, Price, 6/5/02, 95:13-25, 96:2-25, 97:2-25, 98:2-25, 99:2-25.

2249. According to Ellen Merlo, then Senior Vice President of Corporate Affairs at Philip Morris USA, "there was a general perception that low tar cigarettes did not taste as good as full flavor cigarettes." Merlo added that Philip Morris's Merit cigarette "was the first free standing cigarette entry in the light category that was positioned as tasting good." Merlo PD, Price v. Philip Morris, 10/2/02, 152:12-153:10.

2250. An October 1975 Philip Morris USA Special Report distributed widely throughout the Research Center, titled "Low Delivery Cigarettes and Increased Nicotine/Tar Ratios, a Replication," urged development of a "low delivery cigarette that will both look and taste like a regular filter cigarette and thus will appeal to current regular filter smokers." The document further stated:

> If a low delivery cigarette with impact and flavor were developed, it may cause the segment of current regular filter smokers who are concerned about their health but demand a flavorful cigarette to voluntarily switch to the low delivery cigarette. . . . Furthermore, some portion of current low delivery smokers may desire to switch to a more flavorful cigarette and others may follow as consumer experience results in changing the image of low delivery cigarettes so that smokers believe a flavorful cigarette can really be 'healthy'.

1003288950-8967 at 8951, 8954, 8952 (US 20166).

2251. Draft remarks of the Philip Morris Merit cigarette team, dated January 7, 1976, acknowledged explicitly that low tar cigarettes appealed to smokers because of their purported reduced harmfulness:

> Undoubtedly because of the health allegations against cigarettes, many smokers have clearly wanted cigarettes that deliver less and less tar. . . . [D]espite the intense promotion efforts and the strong interest among smokers, . . . [t]hey have been tried and rejected by the overwhelming majority of smokers. Obviously, there has been a conflict between the desire for low tar and the desire for the rich, satisfying taste that until now has been associated with higher tar delivery.

PM3000136418-6422 at 6420-6421 (US 61504).

2252. A 1979 Philip Morris Merit advertisement, titled "Merit Taste Eases Low Tar Decision," appeared in national magazines, stating:

> "Enriched Flavor" tobacco proving real alternative to high tar smoking. . . . Confirmed: Majority of high tar smokers rate MERIT taste equal to -- or better than -- leading high tar cigarettes tested! Cigarettes having up to twice the tar. [Merit's] ability to satisfy over long periods of time could be the most important evidence to date that MERIT science has produced what it claims: The first real alternative for high tar smokers.

1002325022-5022 (US 21510) (emphasis in original).

2253. A January 1979 study prepared for Philip Morris by Goldstein/Krall Marketing Resources, Inc., discusses consumers' perception of light cigarettes: "There appears to be a concept involved that might be called 'limiting.' They have moved to limit their tar and nicotine intake. At the same time they have accepted a limit on taste." 2040066740-6766 at 6755 (US 20435).

2254. According to Nancy Lund, Senior Vice President of Marketing for Philip Morris, when light cigarettes were first introduced, their largest drawback was that consumers disliked their

taste. In fact, nine out of ten consumers reported dissatisfaction with the taste of light/low tar cigarettes. She acknowledged that smokers were buying them, nonetheless, because they were perceived to be less harmful. An April 20, 1987 memorandum on Leo Burnett letterhead from Elinor Bowen of Leo Burnett and Carolyn Levy of Philip Morris addressed to Nancy Brennan (later Nancy Brennan-Lund) of Philip Morris, among others, commented on light cigarettes generally: "Thus far in the cigarette category, lightness has been associated with low tar or ultra low tar products which represent, for many smokers, an absence of taste and an avoidance of problems associated with smoking." Brennan-Lund PD, Price, 9/20/02, 140:14-144:11, 186:12-189:19; 2040904809-4811 at 4809 (US 85035).

2255. A Philip Morris document circa 1979 prepared by Judy John and Helmut Wakeham, titled "Breakthrough of the High Taste, Low Tar Cigarette: A Case History of Innovation," stated that although consumer demand for low tar cigarettes was spurred by indications that cigarette smoking caused disease in humans, "market research analysis ha[d] shown that nine out of ten smokers had tried low-tar brands, but had failed to accept them as their choice of cigarette." The document also stated: "Apparently not enough smokers could adapt to the diminished 'flavor' of the highly filtered low-tar cigarettes available at that time." 1000208603-8625 at 8605 (US 85010) (internal citation omitted).

2256. A September 1991 Philip Morris document, titled "Background Information on PM Brands," stated that, notwithstanding the introduction of Marlboro Lights in 1972 and the introduction of several variations on Marlboro Lights in 1978, 1980 and 1984, when Marlboro Medium was introduced in 1991, "consumers [were] still looking for a satisfying low tar cigarette

with flavor." Marlboro Medium apparently "was successful in bridging the flavor gap between full flavor Marlboro and Marlboro Lights." 2070143183-4433 at 3206 (US 40253).

2257. A June 1, 1994 document prepared for Philip Morris by Kane, Bortree & Associates, Inc., in its "Conclusions Product/Positionings" section, reported that Merit's "We Lowered The Tar . . . But Kept The Taste" slogan "generated interest among male Low Tar Seekers because of the fact that they are committed to lowering their tar consumption." The concept of lowering the tar, but keeping the taste, was referred to as a "product improvement." 2045629674-9712 at 9696 (US 88630).

2258. A March 26, 1996 memorandum from Shari Teitelbaum, to Jodi Sansone, then Brand Manager for Merit cigarettes, accompanying a consumer research report commissioned by Philip Morris, explained that once consumers made the decision to switch down to the category of low tar cigarettes based on health concerns, they then select their low tar brand within that category based on taste preference. Under the heading "Reasons for and Perceived Benefits of Smoking Lowest Brands," the document stated: "Although many of these smokers made the decision to go lighter based on perceived health concerns, taste seemed the major reason to choose or stay within a particular brand." 2045628312-8328 at 8312, 8321 (US 22217).

2259. A February 9, 1998 draft research report prepared for Philip Morris by the research firm Kane, Bortree & Associates, titled "Merit Strategic Revitalization Plan, Stage I Learnings," analyzed ways to "build Merit's share of the low tar segment." The report labeled as “Taste Compromisers” low tar smokers who find the taste of light cigarettes unsatisfying but feel comfortable smoking them because of perceived health benefits. An example of their thought process is the following:

> I feel that I can really taste the difference between cigarettes. I try to smoke the best tasting light since I know that smoking a light is better for me. I feel that smoking a light is a huge tradeoff but I know that it's worth it. I much prefer full flavor taste and do not think it's too strong. I choose my brand on taste. I feel like I am on a permanent "diet" because I smoke a light.

The report listed Winston Lights, Marlboro Lights, and Camel Lights as brands for taste compromisers. 2063687348-7527 at 7362, 7357 (US 39820*); Bonhomme WD, 45:1-22; see also, 2063686921-6942 at 6924 (US 88629) (indicating that a goal of Kane Bortree was to "[i]dentify marketable positioning opportunity(ies) for revitalizing Merit via low tar technology (3 mg tar cigarette that smokes like a 5 mg tar or possibly higher levels)").

2260. Under the heading "Consumer Learnings," the February 1998 draft report noted that "Merit can secondarily target Taste Compromisers by promoting taste," and under the heading "Preliminary Recommendations," the report recommended that Merit "[p]romote the benefits of light flavor rather than 'apologizing' for the fact that it is less than full flavor." Under the heading "Positioning Learnings" and the subheading "Exploratory Positionings," the report stated: "'Low tar' should not be highlighted, but may be needed as reassurance to more health conscious smokers." 2063687348-7527 at 7352, 7354, 7376 (US 39820*).

2261. An October 5, 1998 internal Philip Morris presentation regarding Philip Morris's premium cigarette brands discussed the Merit brand's positioning. Under the heading "Merit -- Brand Essence," the document stated that "[s]ince the brand's introduction twenty-two years ago, the core Merit proposition has been low tar with satisfying good taste. Merit is the brand that understands the desire to seek a lower tar alternative." Under the heading "Merit -- Brand Strategy," the document said that Merit's strategy was to "Convince: Smokers who want to switch to a low tar

alternative, but won't sacrifice taste completely, That: With Merit, you can switch down to lower tar and still enjoy smoking Because: Merit delivers satisfying taste at every level of low tar." 2063690668-0687 at 0675-76 (US 39825).

(2) R.J. Reynolds

2262. An April 1974 Qualitative Consumer Evaluation for four Winston Lights Positionings noted that those who liked Winston Lights believed that a low tar cigarette was a "'safe' cigarette." Consumers were excited by the possibility of having full flavor and low tar simultaneously because it offered "a 'safe' cigarette with a taste if not exactly the same at least similar to their current brand." The report stated that "[t]hey were generally skeptical that a less harmful cigarette could give them what they want in a cigarette -- taste -- or would the taste be sacrificed in some way." Communications with smokers indicated that the target audience was "concerned about the harmful effects of smoking and would be glad to switch to a brand which could deliver good taste with low tar and nicotine." 502041366-1415 at 1373, 1383, 1385-1386 (US 22147).

2263. A 1975 report, titled "An Evaluation of the 120MM Market and Its Potential for RJR," recognized that "smokers of High Filtration brands . . . feel the low tar and nicotine brands are much safer and much less of a health hazard. They are readily willing to sacrifice taste for a 'longer life.'" 500671364-1454 at 1436-1437 (US 22158).

2264. A circa 1976 Doral Brand Performance report noted, in a section titled "Other Brand Measurements Psychographics," that with respect to lifestyle, Doral smokers (relative to smokers overall) were "more conscious and anxious about health" and, with respect to attitudes and needs, would "sacrifice taste to get lowest 'tar' and nicotine." 501229581-9590 at 9589 (US 22118).

2265. A 1979 study related to Camel Lights indicates that the marketing campaign stressed that Camel Lights provided a product to individuals who wanted to smoke a low tar cigarette, but did not want to compromise on "rich taste and smoking satisfaction." The message itself was "a specific low tar message." 500731672-1707 (US 22168).

2266. A June 21, 1982 Product Research Report on Non-Menthol Ultra Low Tar Consumer Probes, published by the RJR Marketing Development Department, classified ultra low tar non-menthol smokers into two groups: (1) smokers who are extremely concerned about tar levels and (2) smokers who are moderately concerned about tar levels. The report went on to explain that "extremely concerned" smokers "primarily seek products that are lowest in tar. These smokers are willing to trade-off such smoking benefits as strength, taste/flavor and ease of draw for brands which may not deliver these benefits but which are lowest in tar." The report also explained that as compared to smokers of higher tar brands, "respondents generally characterized ULT cigarettes as having a harder draw, reduced smoke density -- which they expressed as 'smoking air,' less taste/strength/flavor, and less smoking sensation." 503394459-4485 at 4460-4461, 4463, 4467 (US 85036); Schindler WD, 75:14-76:16.

2267. A 1984 Vantage Family "Moderation" Situation Analysis explained that "relative to other segments, 'Moderator' smokers realize there are both positive and negative aspects of smoking, resulting in a desire to resolve the conflict by compromising/moderating on their brand choice." This process was depicted as adding the positives of smoking (personal ritual, anxiety reduction, social confidence) to the negatives of smoking (alleged health hazards and smoker image), compromising on the idea of taste and satisfaction with low tar products, and the image that they are "doing something positive." 502118237-8267 at 8241 (US 22119).

2268. A December 16, 1988 RJR marketing presentation stated that: "For a successful product the perceived health benefit must balance any sacrifice that must be made in terms of taste, satisfaction and traditional smoking pleasures." 650900829-0849 at 0831 (US 20951).

2269. In 1990, RJR undertook a marketing campaign promoting the fact that Now cigarettes had the lowest tar and nicotine levels of any product in the industry. The campaign focused solely on the fact of Now's "lowest" tar and nicotine levels not on taste. Some of the advertisements implicitly admitted that good "flavor" or "taste" was intuitively less likely in a low tar cigarette. For example, one advertisement asked, "Merit Ultra Lights Smokers: Is there a way to get 60% less tar and nicotine and still get flavor in a cigarette? NOW is the way." Similarly, another advertisement asked, "Benson & Hedges Deluxe Ultra Lights Smokers: Can you get 50% less tar and nicotine and still get taste in a cigarette? NOW you can." Still another advertisement asked, "True Smokers: How can you get 67% less tar and nicotine and still get real cigarette taste? NOW is how." Finally, an advertisement in this campaign asked, "Carlton Smokers: Can a cigarette have just 2 mgs. of tar and still be satisfying to smoke? NOW can." Along those same lines, one of the advertisements indicated, "THE LOWEST IN TAR & NICOTINE. Try Now. Surprisingly good taste." 2070717114-7436 at 7334, 7336, 7408, 7410, 7432 (US 22172*).

2270. A May 1991 consumer research report prepared for RJR, titled "R.J. Reynolds Project XB," stated: "Most respondents are interested in a new cigarette that could deliver the great taste and easy draw of current brands, with low tar equivalent to Carlton or NOW. They recognize Carlton and NOW are very low tar, but they perceive the taste and draw to be disappointing." The document further stated that "[r]espondents suspect there is a correlation between reducing the amount of tar and weakening the taste." As a "positive" of a proposed marketing concept, the

document stated: "There is interest in an extra low tar cigarette that tastes great and has an easy draw. There is a consensus a lower tar product would be better for them." As a "positive" of a different proposed marketing concept, the document stated: "Respondents, especially women, feel this cigarette could alleviate their concerns about tar levels. They expect the cigarette to be better for them." 514343517-3566 at 3559 (US 51848).

(3) Brown & Williamson

2271. According to Sharon Smith, former B&W Director of Marketing Services and Operations, internal B&W research documents "indicate that some smokers are willing to smoke low tar cigarettes, even though these smokers feel they don't taste as good." Smith WD, 52:7-16, 55:16-22.

2272. A January 1977 report prepared for B&W by Post Keyes Gardner, Inc., stated that "health" was the most important driver of consumer trends, compared to mildness, which would not, of itself, cause smokers to switch brands:

> "Health": In our opinion, this is by far the most important factor and trend in the market. All major shifts in smoking habits seem to be a function of "health" concerns, as they pose a deep psychological question that every smoker must somehow answer. The manifestation of "health" concerns can be seen in the filter revolution of the 1950's, the emergence of menthol, as well as new hifi's in the 1960's and today. . . . Mildness: This is more or less a taste experience. It is best characterized by the acceptance of filter cigarettes -- not the reason for them. In our view, mildness is not a dominant trend, and thus does not cause major shifts in smoking habits. . . . It, therefore, is unlikely that smokers would switch to milder cigarettes primarily because they are milder. We suspect that the deeper concern of "health" is the dominant motivator to mildness. . . . Some smokers will seek justification (rationalization) for staying with a full taste brand, others will move on to the continuing compromise of less satisfaction while continuing to smoke

> [by switching to low tar cigarettes] . . . the latest compromise between taste and tar.

Sharon Smith admitted that this document shows that some smokers "were choosing their cigarette not due to a preference for a "milder" tasting cigarette, but out of health concerns." 776158413-8426 at 8418, 8419, 8425 (US 22339); Smith WD, 54:21-56:15.

2273. A July 25, 1977 B&W internal marketing study stated: "It must be assumed that Full Taste smokers come down to 'low tar' expecting less taste . . . [t]hey are willing to compromise taste expectations for health reassurance." 775036039-6067 at 6052 (US 21053); Ivey WD, 57:11-58:11.

2274. An October 1979 B&W "History and Key Trends in the U.S. Cigarette Market" compiled by E.T. Parrack, Vice President of Brand Management, stated that some of the then "new products" such as Merit and Real "seem to be capable of attracting some smokers from the Full Taste segment, thus drastically changing the terms of the basic tradeoff between taste and low tar in effect for 25 years." The paper added:

> Viceroy [is] perceived as smooth and perhaps mellow, but it is not significantly weak, mild, bland or light as are the Hi-Fi brands. . . . STRATEGIC ALTERNATIVE Increase Viceroy share of market by positioning Viceroy between full-filter flavor and Hi-Fi as the ideal compromise between the need for full taste and the need for low tar.

The document added that some smokers "have struck a compromise between taste/satisfaction and personal concerns. They smoke low 'tar' line extensions hoping for the full taste of high 'tar' brands and the relative benefits of lower 'tar.'" 670624932-5364 at 4942, 5102, 5157, 5240 (US 53869). Again, Sharon Smith admitted that "this document indicates that Brown & Williamson was aware that some smokers smoke lower tar cigarettes even though they prefer the taste of higher tar cigarettes because they wish to lower their tar intake." Smith WD, 52:17-53:21.

2275. A March 12, 1981 B&W memorandum from Sue Finley to B.L. McCafferty, titled "Apollo Strategy Recommendation," revealed that consumers were smoking ultra low tar cigarettes because they wanted to lower their tar intake, despite the fact that they disliked the taste:

> In 1980 the number of ultra low "tar" (1-6 mg 'tar') cigarette brand styles on the market went from 24 to 38 and the segment's share grew from 6.28% in 1979 to 8.73% in the 4th Quarter of 1980. . . . The segment's growth has been generated primarily by smokers' "tar" concerns, as most of the ULT products have no other perceivable consumer benefits. The products are considered extremely hard to draw and weak tasting. In qualitative research, smokers have said that drawing on ultra low products could "cause hernias" and that they taste like "sucking straws" and "there's nothing to them. . . ." While cigarette marketing has historically been image oriented, initial ultra low "tar" cigarette advertising was very clinical. All ULT brands advertised extremely low "tar" with little, if any, taste support or smoker imagery.

Discussing the marketing for the proposed new ultra low tar cigarette, APOLLO, the Memorandum stated:

> Smokers are subjected to relentless pressures to quit smoking or reduce "tar." They continue to smoke because they derive pleasure from the experience and, while they may trade down in "tar," they view "tar" reductions as pleasure reductions. To make the switch to low "tar" a more satisfying experience, APOLLO should be presented in a positive, warm and enjoyable manner.

Sharon Smith explained that "this document states that people were smoking ultra lights because they wanted to lower their tar intake, despite the fact that they viewed it as a pleasure reduction." 670635571-5593 at 5571, 5576 (US 85037).

2276. An April 1985 consumer research report prepared for B&W by ADI Research, Inc., titled "Brown & Williamson Tobacco Corporation Light and Ultra Light Smokers Concept Reaction Study" stated: "The light and ultra light categories are problematic to consumers because of

problems with taste and inhaling and drawing. There is overwhelming agreement by all groups." The report discussed how Barclay's position was succeeding at getting consumers to believe that Barclay provided a solution to taste and draw problems. The report also noted, however, that "[t]hose in the minority that did not perceive a solution thought there would be drawbacks. If Barclay is better tasting and drawing, then it would have to be higher in tar and nicotine, hence, less safe and more harmful." 465626645-6722 at 6647, 6656-6657 (US 87911).

2277. A B&W document circa 1996-1997, titled "Carlton Creative Plans," stated that "CARLTON is the trademark of choice for smokers who have made an intellectual decision to seek the 'lowest' in tar and nicotine without unduly compromising taste." Carlton's "TARGET AUDIENCE" was described as: "Smokers who want to cut down in tar and nicotine as much as possible and are willing to sacrifice some product performance." The first "Primary" trait of the target audience was "Health conscious." The then-current brand positioning of Carlton as "The Lowest" was said to "satisf[y] the brand positioning." 176020783-0800 at 0783-0786 (US 23351).

2278. A B&W document, titled "B&W 1997-1999 Plan," indicated that consumers "switch down" in tar primarily for health reasons, and that this switch down in tar represents a sacrifice in terms of cigarette taste. "Carlton Target Markets" were identified as

> Smokers Who Want To Cut Down In Tar And Nicotine As Much As Possible And Are Willing To Sacrifice Some Product Performance -- Primary -- health conscious. . . . CARLTON Is The Trademark Of Choice For Smokers Who Have Made An Intellectual Decision To Seek The 'Lowest' In Tar And Nicotine Without Unduly Compromising Taste.

The document even discussed plans to reduce the emphasis on taste indicated by Carlton packaging to ensure that the message that Carlton had lowest tar and nicotine was conveyed: "CARLTON's

Packaging May Contribute To The Low Awareness Of The 'Lowest' Tar Positioning By Communicating A Higher Level Of Tar And Taste Than The Product Actually Delivers." 462224560-4766 at 4706, 4709-4711 (US 22085) (emphasis in original).

2279. A B&W document faxed from "Marketing Operations" on January 20, 1999, titled "Current Trends in Lights and Ultra Lights," stated under the heading "Learnings": "Consumers were ready for low tar before Marlboro Lights. Health concerns. . . . First low tar cigarettes failed due to: Lack of flavor and smoking satisfaction. . . . Smokability is critical for success." 430403186-3194 at 3193-3194 (US 22084); Ivey WD, 58:11-22.

(4) BATCo

2280. A September 1992 BATCo Business Review prepared by Norma Simamane, BATCo Lights Project Manager, stated, regarding low tar cigarettes, that consumers felt that "'[t]he lower the [tar and nicotine] numbers, the higher the sacrifice on smoking pleasure.'" Lights represented "a total compromise," and negative aspects included: "'It's like smoking hot air'" and "'Deprive you of a true smoking experience.'" Lights were perceived as "for people who . . . want to quit but can not." The aspects of the "Inadequate product performance" of low tar cigarettes were: "lack of satisfaction/not satisfying"; "lack of smoking quality"; "poor quality of flavor"; "not strong enough"; and "need to smoke more." 321683062-3099 at 3087, 3090 (US 28586).

2281. A BATCo document circa 1996 titled "Lights Segment Project Consumer Insight Into Smoking Lights" stated, under the heading "Benefits of Smoking," that "[l]ight smokers criticized Ultra's as bad tasting . . . but accept this lost taste characteristic." The document further stated "light cigarettes (especially ultra) = pleasure sacrifice." The document further stated that "Ultra smokers find it necessary to explain to others and themselves why they consume a product that provides

hardly any pleasure (taste)" which led to the "negative cliche" of a ‘weak willed addict.'" The document stated that to counter this, "we need to reassure light/ultra smokers that it is okay to smoke lights through communication." 321546706-6724 at 6707, 6708, 6709 (US 22052).

2282. A BATCo document, titled "Barclay Business Review 1996," discussed low tar smoker motivation:

> The results of the 1MG smokers motivations study in Belgium show that the key drivers to the [ultra light] segment are health concern and peer/family pressure. Consumers expect a reduction of negative aspects. . . . As amount of taste is the main consumer indicator for strength, 1mg. products are expected to have the least taste among all cigarettes.

700767443-7457 at 7448 (US 22123).

2283. A BATCo document, titled "Firefish Kent in Dublin Qualitative Research Debrief July 2000," concluded that, with respect to Kent's charcoal filter, consumers found communications providing health reassurance "more appealing" than communications about taste: "‘Kent Taste System’ The Charcoal Filter communication was appreciated. . . . However, they felt the emphasis should be on Filter -- rather than taste -- help filtering out the ‘crap’ was more appealing than advantages in taste." 321626872-6906 at 6901 (US 22059).

2284. In a document, titled "What is a Light Cigarette," dated September 29, 1998, BATCo scientist David Creighton described two "main types of Lights smokers[:] Those who start smoking Lights . . . and those who have been smoking a full flavour product and wish to switch down to a Lights." Creighton explicitly acknowledged that Lights smokers who "switch down" do so because they believe it is a "conscious . . . exchange" of taste for "the reassurance of the lower tar delivery":

> [T]he down switcher, who has been used to a higher taste level[,] would prefer to maintain as much taste as possible with the

> reassurance of the lower tar delivery of a Lights. . . . The down switcher makes a conscious decision to give up some taste satisfaction in exchange for the lower delivery potential.

770009958-9964 at 9962 (US 78253).

2285. A January 15, 2001 BATCo document written by Steven Coburn, titled "Project Balcony," which referenced Santa Monica, California marketing studies related to proposed campaigns, reported that smokers prefer the taste of higher tar cigarettes, but smoke lower tar cigarettes because they believe lower tar cigarettes are less harmful: "[L]ights don't satisfy as much as a heavier cig when trading down . . . less tar less nic -- less harmful." 325239017-9018 at 9017 (US 22082). A January 17, 2001 document with the same author and title that also referenced Santa Monica smokers, stated under the heading "Benefit": "Has carcinogens of a lights but taste of full flavor[.] May be not as harmful -- which is why some people smoke lights." 325239023-9024 at 9023 (US 22082). An additional document with the same date, title, and author, referencing Santa Monica smokers stated: "Benefit . . . Lights that smoke like a full flavor -- not sacrificing anything[.] Lights with a full flavour -- important -- lights better for you but still taste like a cig." 325239025-9026 at 9026 (US 22082).

(5) American Tobacco

2286. A 1967 Annual Report prepared by American, describing American's Carlton cigarettes, defined a "light cigarette" as "one that is low in 'tar' and nicotine yield," and made no mention of any particular taste characteristics. MNAT00029170-9201 at 9176 (US 21222).

2287. A March 2, 1976 American document, titled "Background and Product Positioning Recommendation Project LOTC," predicted that:

> [T]he most significant growth will take place in the "middle ground" where taste claims prevail, yet where the perception of a "health benefit" is still strong. In other words a compromise between low-tar and taste (which is unmistakable to consumers) may not represent as traumatic a change for full flavor smokers as a change to "super" low tar.

ATC0494235-4235 (US 87912).

2288. A January 1984 document from American Tobacco's files prepared by Andrew Thurm Associates titled "'NO ADDITIVES' CONCEPT TEST" concludes that low tar cigarettes are associated with weak taste and that Carlton cigarettes have a weak, negative taste perception with consumers:

> "Carlton . . . shows traces of an additional impediment -- weak taste perceptions. . . . Carlton's weak taste image acts as a secondary impediment. . . . In a certain sense, being low in tar peripherally suggests a flavor identity because of its connotations to mildness at the expense of taste strength.

970384072-4111 at 4076-4078 (US 85121).

2289. A February 29, 1988 American Tobacco memorandum from Richard E. Smith, Director of Brand Management, to K.P. Noone, Product Manager, stated:

> If the switching motivation is better taste, [smokers] . . . will certainly not switch to Carlton, a brand which their experience has often taught them is lower taste. . . . [M]ost smokers will continue to seek lower tar. . . . They have demonstrated a disciplined willingness to sacrifice taste. . . . Carlton brings less than nothing to the better/stronger tasting party.

991216857-6858 (US 85115).

2290. A February 29, 1988 American Tobacco memorandum from J.M. Murray, Assistant Product Manager, to T.M. Keane, Senior Product Manager, stated:

> The Carlton and Now Groups almost unanimously cited "Lowest in Tar" as the single most important motivating factor in brand selection. . . . Importantly, the 0-3 mg. groups identify "Lowest" as the driving force -- they seem to have been prepared to make a taste compromise. There is nothing to indicate that [ultra light smokers] won't become available to Carlton. At present, they aren't ready to make a taste compromise. . . . As these people become prepared to step down, they will be ready to give up some level of taste and seek the "Lowest in Tar" (e.g. Carlton or Now) . . . present Carlton smokers . . . have already made the taste compromise and focus primarily on "Lowest. . . ." In conclusion, I believe we should focus our efforts on developing suitable advertisements which single mindedly communicate our "Lowest" positioning.

980355176-5177 (US 85122).

(6) Lorillard

2291. A December 1976 report prepared for Lorillard by the Nowland Organization, Inc., stated: "Those who do not now smoke SHF [super-high filtration] cigarettes perceive low tar and nicotine cigarettes in very much the same way as do current smokers -- i.e., as 'better for you' but not as enjoyable." 84053616-3706 at 3638 (US 55997).

2292. A June 1978 Report prepared for Lorillard by Foote, Cone & Belding Advertising, Inc., "to assist Lorillard in understanding the . . . attitudes of reduced-tar smokers and their motivations in selecting brands" relayed smokers' beliefs that lower tar cigarettes had an unsatisfying lack of taste, and indicated that a low tar cigarette "with good taste" had not yet been developed, stating:

> The major problem with [ultra low tar] brands was decided lack of taste/smoking impact. "Sucking on a straw in an empty glass -- nothing" was a typical reference to such brands. In point of fact, this was probably very close to the truth. . . . There is every reason to believe that ultimate technological breakthroughs will yield a tobacco product that is low in tar, with good taste. In that event, ultra low-tar

> products will serve as a viable net for all smokers who desire reduced tar plus the satisfaction of good taste.

03297227-7249 at 7229, 7233, 7246 (US 88631).

2293. This document, discussing one of Lorillard's competitors' brands, added:

> Carlton's success was all the more surprising in light of the fact that it was totally unable to offer any taste benefits to the consumers. Apparently, there existed a strong need among a sub-section of reduced-tar smokers for a cigarette that was 'as low as you can go' in its tar and nicotine levels.

03297227-7249 at 7240 (US 88631).

b. Defendants Internally Recognized that Smokers Rely on the Claims Made for Low Tar/Light Cigarettes as an Excuse/ Rationale for Not Quitting Smoking

(1) Tobacco Institute

2294. A May 1978 Tobacco Institute document, titled "A Study of Public Attitudes Toward Cigarette Smoking and the Tobacco Industry in 1978 Volume I," prepared for the Tobacco Institute by the Roper Organization stated that

> low tar cigarette smokers . . . are potential cigarette quitters. . . . And more of them than the average have tried to quit smoking. Since low tar smokers are an expanding share of the market, their greater desire to quit smoking poses a special problem for the cigarette industry.

501565967-6019 at 6008 (US 21866).

(2) Philip Morris

2295. Philip Morris conducted research on former smokers to assist it in marketing purportedly less harmful cigarettes to draw them back into the market and to dissuade potential quitters from actually quitting. According to Carolyn Levy, who worked as a research scientist for Philip Morris in its Behavioral Research Group from 1975-1980 and as the Assistant Director and

later Director of Consumer Research from 1986-1991, when she was in the Consumer Research Department, she "performed research on quitting on behalf of Philip Morris," and when she was in the Behavioral Research Department in the late 1970s, "[q]uitting was also a subject of interest and research to Philip Morris."

2296. A report titled "Exit-Brand Cigarettes: A Study of Ex-Smokers," written by F.J. Ryan and approved by Dr. William Dunn, dated March 1978 and distributed to certain Philip Morris employees, including Levy, stated: "If the industry's introduction of acceptable low-nicotine products does make it easier for dedicated smokers to quit, then the wisdom of the introduction is open to debate." The report further stated that "experience in dealing with 'quitters' suggests that most people who quit smoking will resume after a while. Hunt and Matarazzo show data suggesting that 50% of quitters resume smoking within 3 months and 70% resume within a year." Levy said that she was "aware when [she was] studying quitters that most quitters resume smoking." Levy WD, 26:1-5, 26:20-28:10; 1000368057-8081 at 8060, 8066 (US 20098*) (emphasis in original).

2297. Levy stated that Philip Morris was "studying the factors that influence quitting," including whether "people quit because of health concerns," so that Philip Morris could "design products or line extensions of existing brands that addressed those factors." Levy testified that "[t]o the extent we determined that people quit because of health concerns, that would be very important in reaffirming Philip Morris' commitment to develop cigarettes with lower harm or risk." Asked if the purpose was "[s]o that people would keep smoking Philip Morris cigarettes rather than quitting," Levy answered: "Yes, if Philip Morris could design new products to address those concerns." Levy WD, 31:9-22.

2298. An August 14, 1978 consumer research report prepared for Philip Morris by Wells, Rich, Greene, Inc. regarding Benson & Hedges stated:

> Those who are currently smoking "Lights" do so because ". . . they are better for you. . ." than full flavor cigarettes. Although some experience that they actually smoke more Lights, they perceive that they are cutting down and it is an alternative to quitting -- which most cannot accomplish.

1004888470-8484 at 8480 (US 85009).

2299. A January 1979 study prepared for Philip Morris stated:

> [W]ith respect to ultra low tar brands there appear to be particular additional motivations for smoking this type of cigarette . . . [h]ealth problem forcing a change to a safer cigarette (as an alternative to not being able to quit) . . . [p]eer and family pressure to smoke a safer cigarette (as an alternative to not being able to stop smoking). . . . Characteristics of ultra low tar smokers were: people who want to quit. . . . In point of fact, smoking an ultra low tar cigarette seems to relieve some of the guilt of smoking and provide an excuse not to quit. All of these smokers expressed an awareness of a health hazard from smoking, but felt that they had alleviated some of this hazard by smoking an ultra low tar brand. They described these cigarettes as 'safer'. . . . With these justifications, there may be less of a compulsion to quit smoking . . . .

2040066740-6766 at 6747, 6751-52, 6754, 6755 (US 20435).

2300. A March 1979 report prepared for Philip Morris, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar and Menthol Cigarettes," stated:

> The percentage of adults who smoke has stabilized for the first time since 1965 -- at 34%. This could well be due to the greater perceived safety of low tar cigarettes and their resultant neutralization of the health threat. . . . The number of cigarettes smoked per day per smoker continues to climb, in part at least because low tar cigarettes seem to cause people to increase the number of cigarettes they smoke.

2049455309-5318 at 5313 (US 22218); Bonhomme WD, 25:15-26:1, 46:19-47:7.

2301. In a September 28, 1987 inter-office memorandum written by Levy and sent to David Dangoor, Executive Vice President at Philip Morris, titled "Critical Consumer Research Issues," Levy outlined what she called "the most important consumer-related questions which should be addressed in 1988." This document contained "information about some of the types of research that Philip Morris planned to conduct in the upcoming year." Among the questions Levy posed in the memorandum were: "Can we determine the relative importance of various factors which influence quitting?"; "What are the factors which influence brand choice of smokers reentering the market? Can we capitalize on these?"; and "Which new product options will . . . appeal to former smokers?" 2080009516-9522 at 9517, 9520 (US 88155) (emphasis in original); Levy WD, 28:20-30:8, 31:5-22.

2302. Philip Morris conducted a "major study" on quitting in 1988, titled "Critical Issues -- 1988 Progress Report," which Levy described in a September 26, 1988 memorandum she sent to John Zoler, then Director of Market Research. Under the heading "Smoker Dynamics," Levy wrote: "Conducted a major study on quitting showing: demographics of quitters, quitting by brand, reasons for quitting, methods used to quit, substitutes used for cigarettes." There were 506 people surveyed in the Philip Morris study, and "[t]he research results indicated that the number one reason for people quitting smoking was health concerns." Levy WD, 32:2-33:8; 2080009523-9529 at 9524 (US 88156).

2303. A June 20, 1988 memorandum on Philip Morris USA letterhead from consumer researcher Jan Jones to Dr. Ed Gee, titled "Statement of Position on the Social Pressures Construct," discussed Philip Morris's goal of introducing a "socially acceptable cigarette" that "could capture the trend-setters who might find such a product preferred over current cigarettes, be a welcomed

alternative to quitting, and might attract new smokers who would not otherwise choose to become product users." The memorandum further stated:

> With the recent attrition rate of smokers, attaining "new" smokers is no longer synonymous with capturing young smokers. We already have Marlboro as the brand of choice for young smokers entering the market. We do not have a product that meets the needs [sic] of the growing population of ex-smokers. Many of these ex-smokers will resume smoking, and the product that they choose could cause a swing in market share. These quitters (and those who are soon to become quitters) are dissatisfied with certain aspects of a product that previously met their needs. . . . These consumers have not yet as a group found a satisfactory replacement for their previous product – a textbook example of a market opportunity.

2050801835-1853 at 1845 (US 38763); Bonhomme TT, 2/10/05, 12936:6-12939:7.

2304. A March 1993 Philip Morris document, titled "Quitting Dynamics," showed statistics from "Smoker Tracking" that indicated that more Low Tar smokers did not try to quit (53.5%) compared to Full Flavor smokers (43.2%). 2062362453-2474 at 2473 (US 39555).

2305. In a July 1993 Philip Morris presentation, titled "Merit Franchise," prepared by Norma Suter Drew, Brand Manager and Marketing Director for Merit cigarettes from 1992-1994, she reported that the "Intended Audience" of Merit advertising was "self-conscious low tar smokers who want to cut down on tar and nicotine but who won't sacrifice taste completely." 2070661683-1727 at 1714 (US 40337); accord 2041453659-3754 at 3678 (US 23906) ("Merit's consumers are self-described 'Uncomfortable Smokers' who tell us they are self-conscious about the fact that they smoke"); 2063690017-0018 (US 85002); LeVan PD, United States v. Philip Morris, 6/25/02, 178:13-181:2.

2306. In November 1994, Philip Morris commissioned a study from the research firm Guiles & Associates, titled "B & H Qualitative Research Exploring Out-Switching," to "understand

more about how Benson & Hedges smokers exit the franchise." One of the conclusions reported in the study was:

> For many smokers, the ultimate ramification of all the anti-smoking rhetoric has been their heightened commitment to quit (or at least reduce) their smoking. For these, the greatest evidence of this commitment has been in shifting tar levels (even to different brands, as necessary). . . . For many, lowering tar levels is the next best thing to quitting.

2072622442-2451 at 2444, 2445, 2449 (US 41562); see also 2063688212-8284 at 8226 (US 39823) (Jan. 18, 1994 document prepared for Philip Morris USA indicating that Merit is perceived as a "quitters brand"); Bonhomme WD, 41:4-44:5.

2307. Philip Morris's 1994-1998 Plan Overview stated:

> If ultra low tar segment growth accelerates, we will launch Marlboro Ultra Lights to prevent Marlboro from losing smokers. Marlboro Ultra Lights will reinforce Marlboro's appeal among tar 'conscious' Lights smokers and improve Marlboro's ability to retain smokers as they age.

2071032180-2206 at 2188 (US 21964); Bible PD, United States v. Philip Morris, 8/22/02, 163:8-165:2.

2308. An internal July 1995 draft presentation, titled "Marlboro Women," bearing the handwritten notation "Approved as Revised, VMM [Virginia Murphy, a Philip Morris attorney] 8/9/95," includes a section titled "The Marlboro Lights Female." The presentation stated that "[p]opularity and low tar are why they initially smoke the brand." The presentation further noted that for female Marlboro Lights smokers, 27% of 18-24 year olds, 29% of 25-29 year olds, and 34% of 30-39 year olds were "Under Pressure To Not Smoke," and that 21%, 16%, and 30% of each age group, respectively, "Intends to Quit." 2071373667-3751 at 3709, 3750 (US 27272).

2309. In a March 26, 1996 cover memorandum, Shari Teitelbaum delivered to Jodi Sansone, then Brand Manager for Merit cigarettes, a consumer research report commissioned by Philip Morris to "gain an understanding of consumers perceptions of the lowest category, as well as the motivations and wants of smokers of Carlton, Now, and Merit Ultima, and potential down-switchers to this category." Under the heading "The Decision to Enter the Lowest Category," the attached consumer research report found:

> At some point in their smoking histories, these smokers decided or became more receptive to the idea of a lighter or lower brand than the one they were currently smoking. Some cited perceived health concerns. Others had been "bugged" by family members at home to cut down, or stop smoking.

2045628312-8328 at 8320, 8326 (US 22217).

2310. In August 1996, Natalie Ellis, Senior Manager at Philip Morris, and Urvashi Kohli distributed a June 1996 consumer research study, titled "Marlboro Ultra Lights: A History," to a long list of Philip Morris employees, including Norma Suter Drew, then Director of New Products for Marlboro, gauging consumer reactions to the contemplated launch of Marlboro Ultra Lights. The study found that Marlboro Red smokers see Marlboro Ultra Lights as "a brand for quitters and people who are trying to cut down." 2071535027-5090 at 5090 (US 22020).

2311. In an October 4, 1999 letter, titled "Schedule for Merit Competitive Lights and Ultra Lights Study," Beth Hooper of Leo Burnett discussed an upcoming Philip Morris study being conducted to "[e]xplore adult smoker attitudes toward the Lights/Ultra Lights category" and to "[b]etter understand the impact of Marlboro Ultra Lights on the category overall." Under the heading "Background," Hooper noted:

> The dynamics of the Lights/Ultra Lights category have changed significantly over the past several years, particularly with the entry of Marlboro Ultra Lights. In the past, Lights and Ultra Lights were stops on the way to leaving the tobacco category. However, today, we are seeing that both segments are the destination of choice for many adult smokers.

2080929561-9562 at 9561 (US 27786).

2312. According to Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, the company was aware that some "consumers who wanted to quit were switching to several of its light cigarette brands instead of quitting." Bonhomme WD, 45:17-19.

(3) R.J. Reynolds

2313. A 1969 RJR Survey of Cigarette Smoking Behavior and Attitudes recognized that "[a]s a group filter cigarette smokers were more conscious of a possible relationship between smoking and health," and recognized the "willingness of an increasing number of smokers to compromise -- to smoke what they considered to be a less harmful cigarette rather than give up smoking entirely." 650340129-0193 at 0180, 0183 (US 20948).

2314. RJR's advertisements for Vantage cigarettes employed signed testimonials by smokers who claimed to have considered the risks of smoking and decided not to quit smoking, but rather to switch to Vantage. The Vantage advertisements included the following:

> 1971: "You don't cop out. Why should your cigarette? Vantage doesn't cop out. It's the only full-flavor cigarette with low 'tar' and nicotine." (no bates) (US 3545).
>
> 1974: "Instead of telling us not to smoke, maybe they should tell us what to smoke. For years, a lot of people have been telling the smoking public not to smoke cigarettes, especially cigarettes with high 'tar' and nicotine. But the simple fact is that now more Americans are smoking than ever before. Evidently many people like to smoke and will keep on . . . no

matter what anyone says or how many times they say it. Since the cigarette critics are concerned about high 'tar' and nicotine, we would like to offer a constructive proposal. Perhaps instead of telling us not to smoke cigarettes, they can tell us what to smoke. For instance, perhaps they ought to recommend that the American public smoke Vantage cigarettes." (no bates) (US 4403); Schindler WD, 79:9-23.

1976: "To smoke or not to smoke. That is the question. With all the slings and arrows that have been aimed at smoking, you may well be wondering why you smoke at all." (no bates) (US 5198); Schindler WD, 78:18-79:8.

1975: "Out of the last 6 years of smoking, I've only enjoyed the last 5 months. I started to pay attention to all the fuss about smoking about 6 years ago. That's when the uproar about 'tar' and nicotine started to get in the way of my pleasure. For me, it made the real difference between just liking smoking and really enjoying it. I thought of quitting, but I really didn't want to. So I decided to switch to a low 'tar' and nicotine cigarette." (no bates) (US 4954); Schindler WD, 79:24-80:9.

1976: "How many times have you decided to give up smoking? If you're like a lot of smokers these days, it probably isn't smoking that you want to give up. It's some of that 'tar' and nicotine that you've been hearing about." (no bates) (US 4998); Biglan WD, 377:12-379:22.

2315. A June 1975 RJR marketing plan stated that the introduction of a Salem high filtration line extension was, in part, to "[p]rotect the current Salem franchise from quitting and switching losses." The introduction was to "[t]erminate the trend toward reduced consumption currently in evidence among the Salem Brand franchise." RJR recognized that Salem King smokers were reducing their daily cigarette consumption "at least partly due to concerns about the alleged health hazards of smoking." 502313230-3308 at 3235, 3240 (US 22151).

2316. In discussing RJR's Limit, a new low tar cigarette, a 1976 memorandum noted that "LIMIT will satisfy the needs of smokers who wish for the ultimate in low 'tar' assurance --

providing the strongest health reassurances available in cigarettes today." Under the heading "Target Audience," the memorandum stated:

> The extreme worriers. That large group of smokers on the fringe of quitting who are on the verge of that final step: quitting smoking all together. This enormous group of smokers of various ages who have unsuccessfully tried to quit. Our target group will also include smokers whose concern with the health implications of smoking surpass their needs for full flavor in a cigarette.

502784092-4100 at 4097 (US 22153); Schindler WD, 77:11-78:11.

2317. An August 19, 1976 RJR document, titled "New Product/Merchandising Directions," stated that the

> "worrier" segment of the market (17% of smokers are so classified) . . . seek products with tangible/visible features to assuage their "concern" about smoking. "Numbers" products have a growing appeal to these smokers. Products in the 1-6 mg. "tar" range will continue to build successful long-term franchises (e.g., Carlton's growth rate, NOW's immediate acceptance).

500672011-2172 at 2069 (US 20645).

2318. An August 5, 1980 RJR memorandum marked "RJR SECRET" from M. D. Shannon to Dr. W. M. Henly and Dr. R. A. Lloyd (all three were RJR researchers), titled "Project HR," stated:

> ULT ["Ultra Low Tar"] smokers. . . . Very health conscious -- These smokers are well aware of the smoking and health controversy and have switched to ULT products in an effort to decrease "tar" intake. Many of these smokers are victims of pressure from peers and loved ones to quit or reduce smoking. Therefore, they smoke ULT brands to "get people off their backs. . . ." Feelings of guilt about smoking are very strong . . . . Many would like to quit smoking but cannot. This tends to fuel their low self-esteem. . . . These smokers do not feel good about themselves. [S]everal concepts were developed to appeal to these smokers: 1. To convince the HR target that the new brand represents a payoff or reward for his forced decision to sacrifice by going down in "tar" level. . . . 2. To convince the HR target that the new brand is a reflection of his rational, sensible decision to

> switch to a low "tar. . . ." Again an attempt is made to make him feel better about smoking . . . . Advertisements were developed . . . to address these concepts and present them in a manner that would be positively received by the target audience.

500251567-1570 at 1567-1569 (US 21563).

2319. An August 1981 report prepared for RJR by the Beaumont Organization advised that ultra low tar brands, such as Now, Carlton, Cambridge and Barclay, can cause smokers who seek to eliminate the "danger" of smoking to keep smoking, because these smokers believe the ultra low tar brands "reduce the alleged health risks" of smoking "to an acceptable -- minimal -- level":

> Some smokers have been strongly alarmed by the extensive publicity concerning alleged health hazards of smoking, to the extent that they seek not merely to moderate their smoking but to eliminate entirely the "danger" that it may present. Such a smoker has two options. Firstly, he may simply cease smoking altogether. However, in some cases, the smoker does not wish totally to elimate [sic] the benefits of smoking. His second option is to seek a cigarette which he perceives to reduce the alleged health risks to an acceptable -- minimal -- level. Within this second option, the smoker essentially seeks a brand that will protect him from the dangers that are alleged to attend smoking. He is often prepared to sacrifice most of the benefits he previously derived from smoking to achieve this. Such a brand provides the consoling sense that the smoker has eliminated the risks of smoking by "quitting," while continuing to engage in ritualized behaviors associated with cigarettes. An increasing number of brands addressed this benefit, including Now, Carlton, Cambridge and, perhaps, Barclay.

503972013-2063 at 2038 (US 66448); Orlowsky WD, 86:4-7.

2320. A 1983 NOW Brand Image report prepared for RJR recognized that

> [a] major motivation in brand switching has been concern over health. . . . Most people chastise themselves for continuing with what they refer to as a "bad habit." They are aware of mounting pressures and criticism from non-smoking groups. They speculate about planning to quit, but they are not sure if they will be able to do so. . . .

> The typical solution to this dilemma is the two pronged approach of trying to cut down and/or moving to a lower tar brand.

The report further stated:

> Respondents were asked what the words “low” and “lowest” in the ads meant to them. At the literal level they say this means that the two brands are very low or lowest in the amount of tar and nicotine they contain. They interpret this to mean that the two brands are “safer” and pose less of a health hazard. Consequently, they reason, this would make the brands more appealing to younger people who are very health conscious or to older, long-time smokers who are concerned about the long-range effects of tobacco.

506671319-1418 at 1326, 1379 (US 22160); Orlowsky WD, 85:8-19.

2321. A November 3, 1998 e-mail from Mario Possamai to Randy Tompson, then Director of Issues and Information Management for RJR, discussed the results of an October 20, 1998 Gallup Survey regarding quitting behaviors and motivations. The survey found that "the number of smokers who are very interested in quitting has increased dramatically in the last five years," specifically noting that 36% of all current smokers are "very interested" in quitting. Health concerns were cited as the primary reason smokers want to quit, with 43% of smokers reporting that they were more concerned about health than they were five years earlier. Although 77% of smokers had tried to quit an average number of seven times each, more than half (54%) of smokers reported resuming smoking within one month. Over half of all smokers (53%) smoked light, low-tar or ultra-light cigarettes. According to the survey, "many of these smokers believe that they will get some health benefit from smoking non-regular cigarettes, including: ‘to be healthier/improve health' (11 percent), ‘reduce exposure to toxins/tar' (10 percent), and ‘reduce exposure to nicotine' (9 percent)." 700173214-3217 at 3214-3217 (US 22121).

(4) Brown & Williamson

2322. A January 19, 1978 memorandum from Dr. E.F. Litzinger to E.T. Parrack, with copies to Dr. R.A. Sanford and M.L. Reynolds, titled "Social Smoking Studies," stated:

> We search for answers to the questions "Why do people smoke?" and "Why do people stop smoking?" to provide us with direction in developing new products. Perhaps answers to another question "How do people stop smoking?" could lend insight into the creation of new products. Having answers to this latter question we might then design products to "intercept" people who are trying to give up smoking.

650510607-0607 (US 87138); Smith WD, 63:10-64:7.

2323. A February 7, 1979 letter from Stephen D. Schwartz of Grey Advertising Inc., stated that ultra low tar smokers of brands like B&W's Carlton and RJR's Now, have "consciously decided to sacrifice taste for low tar," and that these smokers "want a way to quit smoking." 774138538-8545 at 8539 (US 54613).

2324. A "confidential" March 5, 1980 report prepared for B&W by Hawkins, McCain & Blumenthal discussed marketing strategies for a proposed new B&W brand pursuant to its "Project Omega." The report stated: "The objective of all advertising and promotion will be to convince low 'tar' smokers that this new brand is the only one that combines the two most important qualities a contemporary cigarette should have -- a satisfying taste and the lowest 'tar.'" The report further stated, under the heading "Conclusions":

> 2) Low tar and ultra low tar smokers share personal "concern." The difference between them lies in the depth of the concern. . . . 3) Most of these smokers would quit if they could. The pressure to quit is omnipresent from all sources. . . . 5) To reach these smokers we must acknowledge their concerns. 6) This acknowledgment must make them more comfortable (at ease) about smoking the Omega cigarette.

The report further stated: "These executions are built on an expanded strategy which includes an understanding of the target audience and the need to create a maximum ease or comfort level that addresses the concept of 'cognitive dissonance.'" 660026713-6718 at 6714, 6717-6718 (US 85030); Smith WD, 64:19-65:14.

2325. A May 7, 1982 report prepared by a consultant for Imperial Tobacco Ltd. (the Canadian sister company of B&W) stated that youth believed the "truly light brands" were

> false safety brands for the older worried smoker who cannot quit. . . . Of course, they knew this because some . . . had tried to go very low for exactly the same reasons as smokers two or three times their age do so. All they found was increased consumption and frustration.

Statements from young smokers included: "I think all the stuff coming out the past couple of years about how bad smoking is for you made a lot of people go down to a light cigarette to sort of ease their own conscience." 566627751-7824 at 7817-7818 (US 20938).

2326. A 1984 B&W internal marketing research document, titled "Why People Smoke, Brand Imagery and New Product Opportunities," stated that both smokers of B&W's Barclay cigarettes and smokers of other brands "perceive BARCLAY to be for one who wishes not to smoke." 670132512-2597 at 2566 (US 20964).

2327. A 1986 B&W document stated: "Quitters may be discouraged from quitting, or at least kept in the market longer. . . . A less irritating cigarette is one route. . . . (Indeed, the practice of switching to lower tar cigarettes and sometimes menthol in the quitting process tacitly recognize this). The safe cigarette would have wide appeal." 566628004-8083 at 8015 (US 20940).

2328. A December 16, 1999 "Presentation of Findings" for "STAR Tobacco Focus Groups" prepared for B&W by "Rabid Research" identified "4 segments of light/ultra smokers (segmented

based on motivation for smoking light/ultra variant)." One of the four segments was identified as "those who switched to lights/ultras because they were attempting to quit." It also noted that some consumers "started smoking lights after making an attempt to quit." The document also shows that Defendants intended that their claims of reduced harm regarding low tar cigarettes lessen the social pressure on smokers to quit:

> The benefits of switching to this new cigarette are not just health related[.] Would reduce the pressure on them from friends and family members to quit[.] Would allow them to feel better about themselves[.] At least I'm smoking a cigarette that isn't as bad for me[.] Maybe people wouldn't be as worried about me smoking around them cause it's a better cigarette.

190200047-0116 at 0061, 0071, 0106 (US 22162); Ivey WD, 59:1-10.

2329. A July 27, 2000 document prepared for B&W by Kay Harwood Marketing Analysts, Inc., titled "Topline Report of Findings for Carlton Advertising Research," reported that smokers view Carlton cigarettes as a less harmful alternative to quitting smoking:

> As participants described their transition from heavier to lighter (i.e., higher tar to lower tar) cigarettes, they frequently used phrases like "working my way down" and being "that much closer to quitting." Ultra light cigarettes were frequently associated with trying to quit smoking. . . . [M]any participants intimated that ultra lights already represent a sacrifice (i.e., less taste for a cigarette lower in tar and nicotine).

A "summary of the most common perceptions/images associated with" Carlton and Merit Ultra Light included descriptions of Carlton as for "[s]omeone trying to quit/cut back/smoke lighter" and descriptions of Merit Ultra Light as a "[c]igarette used to quit smoking/almost ready to quit/cutting back." Among the Report's "Key Findings" were the statements from the focus groups describing their perceptions of several Carlton campaigns. The statements included:

> Trying to quit/cut down . . . to change/cut down. . . . If you can't stop smoking, smoke Carlton -- it's better for you if you can't quit. . . . Cut down on smoking -- better for you. . . . Diet restrictions/ quitting/cutting back. . . . The least you could do . . . if you have to smoke. . . smoke the less harmful cigarette. . . . If you've got to smoke, smoke this one. . . . Cut down on your smoking. . . . Directed to someone who wants to cut down is better for you if you cannot quit. -- Quit smoking, or smoke less nicotine cigarettes. . . . Don't feel bad if you can't stop smoking; if you smoke Carltons, you have accomplished something. . . . Use these in case of emergency nicotine fit while quitting. . . . Smoke when trying to quit – emergency cigarette. -- Switch to Carlton when quitting.

250255336-5347 at 5339, 5343-47 (US 22031). These statements were repeated in an August 8, 2000 document prepared for B&W by Kay Harwood, Marketing Analysts, Inc., titled "Carlton Advertising Research: Report of Key Findings." 250255060-5075 (US 22170); Ivey WD, 60:13-62:22; Smith WD, 62:9-63:6.

(5) BATCo

2330. A March 22, 1979 internal BATCo document written by Terry Hanby, who researched "Smoking & Health reassurance" for BATCo, concluded that the sale of low tar cigarettes as "health reassurance" products would stem the decline in cigarette sales:

> It is quite clear that the emergence of Hi-Fi products has been welcomed by much of the smoking community and their use is emerging as an important health reassurance mechanism for many smokers. . . . [T]he growth of Hi-Fi brands will increasingly ensure that up-market smokers will turn to them as a health reassurance mechanism. . . . [W]e feel that in the markets of 'developed nations' the incidence of smoking may continue to decline but that the various reassurance mechanisms listed above will ensure that this decline will eventually plateau at a level not too far removed from current incidence levels.

109883112-3117 at 3115, 3117 (US 20264); 105657908-7909 (US 20248).

2331. A BATCo memorandum dated April 4, 1979, titled "Year 2000," contained predictions for the future of the tobacco industry:

> Low tar products will eventually and substantially define the tobacco business. This will serve as an important mechanism for reassuring smokers. . . . Quitting rates will also not increase as existing smokers become increasingly reassured by the growth of Low Tar brands. . . . the ready availability of Low Tar brands will supply high reassurance.

109883101-3103 at 3101, 3102 (US 21518).

2332. An April 23, 1979 BATCo Research Report concluded that "most smokers wish to quit smoking." 105562110-2189 at 2114 (US 21516).

2333. An April 28, 1981 memorandum by Dr. Martin Oldman, titled "Low Delivery Cigarettes and Quitting" and delivered to Dr. L.C.F. Blackman, Director of Millbank, stated:

> The role of low delivery cigarettes in a health-conscious market, and for the health concerned individual, can probably be best explained in terms of a simple balance model. This would suggest that the individual smoker seeks to reduce the tension arising from the perceived incompatibility between his health concern and continuing to smoke by making various psychological and behavioural adjustments. For some the tension will only be sufficiently reduced by quitting. For others, an adequate discharge will be achieved by reducing the number of cigarettes smoked and, for yet others, a switch to lower delivery cigarettes is the appropriate modification. In all cases, the model would suggest, the individual makes only that change in his smoking behaviour which is sufficient to offset to a tolerable level the tension arising from the perceived conflict between smoking and his health concern.

105399687-9689 at 9688-9689 (US 85032).

2334. Notes of a July 12, 1983 meeting of BATCo's newly established "Sidestream Working Party" stated: "Smokers who are concerned about the smoking and health aspect but who have not

given up, have done all they can (by moving to lower tar brands) to avoid the pressure to quit." The notes continue, recognizing that

> [m]arket research undertaken in the US and the UK indicates that smokers would welcome a reduction in the visible smoke they are creating as it would ease the social pressures being increasingly placed upon them and provide a degree of solace, in that they themselves can do no more -- short of quitting -- having already moved down the tar scale.

109881462-1467 at 1462-1463 (US 26230).

2335. A circa 1984 BATCo "R&D/Marketing Conference" report stated: "It is useful to consider lights more as a third alternative to quitting and cutting down -- a branded hybrid of smokers' unsuccessful attempts to modify their habit on their own." This document also stated that lights "offered <u>one</u> solution to the smokers dilemma" regarding the adverse health effects of smoking. 100501581-1657 at 1593 (US 20187) (emphasis in original).

2336. An internal document from Imperial Tobacco Ltd., the Canadian sister company of B&W, and a subsidiary of BATCo, stated that the company viewed the promotion of light cigarettes as the "ability to reassure smokers, to keep them in the franchise for as long as possible." 689466032-6789 at 6351 (US 31053).

2337. A BATCo document bearing the heading "Barclay Business Review 1996" reported that ultra light cigarettes are particularly attractive to people who may start smoking again after quitting. The document stated that, due to its packaging, the Barclay cigarette (in the Netherlands) was "not clearly perceived as an ultra light and consequently lost attractiveness particularly amongst re-starters who look for an ultra light offer." This appeared under the heading "<u>The core positioning</u>

of the brand needs to be clarified in the minds of the consumer." 700767443-7457 at 7446 (US 22123) (emphasis in original); Ivey WD, 79:5-22.

2338. A January 2001 BATCo file, titled "Consumer Concept Trial Notes Jan 2001 Project Baltec II," contained a section dated January 10-12, 2001, titled "Philadelphia -- General Impressions and Summary," that detailed the results of consumer research on low tar cigarette smokers, stating: "General feeling that lights are healthier. . . . Who the consumers of the product might be -- . . . Smokers who don't want to quit but are concerned about their health[;] Step toward quitting[;] Trading down to lights." 325238922-8994 at 8992-8993 (US 22079) (Confidential).

2339. A January 15, 2001 BATCo document written by Steven Coburn, titled "Project Balcony," that referenced California marketing studies related to proposed advertising campaigns, acknowledged that low tar cigarettes are smoked by people who want to quit: "3rd board highlights low nic/tar aspect -- quitters cig." 325239014-9022 at 9015 (US 22082). A document with the same author, title and date that also referenced California smokers stated "less tar less nic -- less harmful. . . . 2nd board implies a cigarette to be used as a substitute for quitting." 325239014-9027 at 9017 (US 22082).

(6) American Tobacco

2340. A November 11, 1976 report prepared by Fay Ennis Creative Research Services for F. William Free & Company, an advertising agency used by American Tobacco, summarized focus group sessions relating to low tar cigarettes. The report stated: "By changing to a lower tar cigarette, [the panelists] felt less guilty about continuing to smoke and eventually hoped to stop smoking completely." The report stated that "[s]ome of the panelists actually tried smoking brands of low tar

in a downward progression of milligrams in order to quit smoking entirely." ATC037310-7324 at 7318, 7320 (US 87890).

2341. A May 25, 1977 report, titled "Tareyton Lights Field Trip Report," prepared for American by SSC&B Advertising, reported results of focus group research conducted on Tareyton Lights, stating:

> In general, most people who smoke would like to quit. Primary reasons for smoking low tars are: It is a means of cutting down on the amount of tar ingested. It is a first step in quitting; people step down in stages to a lower tar cigarette until finally they are smoking the lowest tar. Even among those who enjoy smoking low tars help alleviate their concern.

ATC0136995-7017 at 7005, 7006 (US 87906).

(7) Lorillard

2342. Lorillard's internal marketing documents demonstrate that Lorillard commissioned extensive consumer research on its cigarettes. For instance, an August 4, 1975 presentation given to Lorillard by a marketing research consultant, titled "Cigarette Advertising 1974-1975," showed that several of the respondents concluded that Lorillard's "Quit or smoke True" advertisements communicated that True cigarettes are "LESS HARMFUL/BETTER FOR YOU." 03496228-6630 at 6277, 6280 (US 20057).

2343. A December 1976 report prepared for Lorillard by the Nowland Organization, Inc. "to develop market information useful to Lorillard in strengthening its position in the SHF [super high filtration]/low T&N [tar & nicotine] cigarette market," titled "SHF Cigarette Marketplace Opportunities Search and Situation Analysis Volume I," stated: "As would be expected, the

advantages of low tar and nicotine cigarettes are seen as health related." The document further stated:

> On the more positive side, many SHF [super-high filtration] smokers note that the existence of low tar and nicotine cigarettes, and their switch to such cigarettes, has alleviated some of their health concerns. . . . A number of SHF smokers note that they turned to this "compromise" smoke because, while they felt they should quit smoking (a few on doctors' advice), they were unwilling or unable to do so . . . yet. They see smoking low tar and nicotine cigarettes both as a way to cut back on the intake of harmful substances without cutting back on the number of cigarettes habitually smoked; and (in some cases) . . . so that they will be able to quit more easily at some future time. The fact that many SHF smokers (women especially) now find themselves smoking more than when they smoked regular cigarettes works to defeat their purpose in switching, and is a source of considerable annoyance to them.

Under the heading "Reasons for Prior Brand Switching The Switch to SHF," the document stated:

> As discussed, most SHF smokers deliberately chose to switch to low tar and nicotine cigarettes because of health concerns -- to get less tar and nicotine, for a milder/gentler smoke, and/or to relieve specific smoking-related symptoms. Often, the actual switch was precipitated by. . . .
>
> - experiencing or becoming more aware of, or more concerned about personal ill-effects from smoking (e.g., cough, throat irritation, difficulty breathing)
>
> * * *
>
> - a failed attempt to quit, or a (perceived) inability to quit, coupled with the heightened perception that one 'should' quit
>
> The main advantages which they feel they experienced in this switch are . . . they have less (or no) smoking irritation . . . they like knowing they are getting less tar and nicotine.

84053616-3706 at 3618, 3628, 3632, 3637, 3678-3679 (US 55997).

2344. Volume II of this Report contained the following "Key Highlights":

> Health concerns are the usual reason for switching to a low T&N brand. Such cigarettes are "better for you" -- milder and less irritating (now) as well as less likely to cause serious problems (later). . . . To many SHF smokers, a low T&N cigarette represents a compromise smoke between a more satisfying smoke and not smoking at all.

The report also stated: "Those who smoke low tar and nicotine cigarettes generally do so because they believe such cigarettes are 'better for you' . . . there is less tar and nicotine to do long-term damage . . . reduces smoking anxiety, guilt." 84053709-3744 at 3712-3713, 3716-3719 (US 21073).

(8) Liggett

2345. In a December 2, 1968 letter from Max Samfield, Senior Assistant Director of the Liggett Research Department, to Copeland Robinson, New Products Manager at Liggett, Samfield discussed the importance of releasing Dorset brand cigarettes, citing: "The obvious void in the 4-6 mgm range for a low tar cigarette with acceptable taste. I firmly believe that those who switch to Marvels, Carltons, or Life cigarettes are in the last stages of quitting smoking. The Dorset, however, is a low tar cigarette one can 'live' with." LWDOJ8006760-6760 (US 87909).

4. Despite Their Internal Knowledge, Defendants Publicly Denied that Compensation Is Nearly Complete and that the FTC Method is Flawed

2346. Despite evidence spanning multiple decades showing Defendants' extensive knowledge of compensation, Defendants concealed that knowledge and disseminated false and misleading statements to downplay its existence and prevalence. As part of their attempt to portray low tar cigarettes as less harmful, Defendants publicly endorsed retaining the FTC Method well into the 1990s because of its usefulness to consumers. Henningfield WD, 48:14-49:7; 54:7-15; 55:6-12; 2041186475-6517 at 6475, 6486-95, 6498-04 (US 22181*) (1994 -- B&W, American Tobacco, Lorillard and Liggett defending the validity and usefulness of the FTC Method to consumers);

2048381972-2310 at 1975 (US 22190); 521321297-1301 at 1297 (US 22137); 520011445-1480 at 1445, 1457-58 (US 22101) (1994 -- various public statements by RJR employees defending the validity of the FTC Method); 2505597781-7998B at 7968-87 (US 23028*) (1996 -- Defendants' statements defending the utility to consumers of the FTC Method).

2347. As Defendants knew, the smoking regimen used in the FTC Method was designed to approximate smoking behavior in the 1930s, when cigarettes were relatively simple devices: few had filters, and perforated filter ventilation cigarettes were not in production. Henningfield WD, 47:11-21.

2348. When the FTC Method was adopted, it was understood that, while it was intended to provide a useful measure of the amount of tar and nicotine that particular brands generate when smoked in a uniform fashion, so that smokers could compare brands, the standardized FTC Method -- or any standardized testing procedure for that matter -- would not totally accurately represent the amount of tar and nicotine that any particular smoker would ingest. 03531981-1986 (US 22243); (no bates) (JD 040254); (no bates) (JD 048746).

2349. As noted in Section V(E)(1)(c), supra, while the FTC contemplated at the time it adopted its Method that numerous potential variations among individuals in everyday smoking behavior could have some effect on tar and nicotine yields, it did not have a full understanding of smoker compensation -- that smokers' addiction to nicotine would cause them to smoke low tar cigarettes more intensely to satisfy their nicotine addiction, and thereby inhale amounts of tar and nicotine comparable to those inhaled by smokers of full flavor cigarettes. Defendants withheld their long-held knowledge that the primary reason the FTC Method could yield misleading data was that

nicotine addiction would drive smokers to obtain relatively stable nicotine intakes through smoker compensation. Henningfield WD, 48:3-49:7.

2350. When the FTC Method was adopted, the Tobacco Institute offered several criticisms in an August 1, 1967 press release, but none of those criticisms related to smoker compensation. Instead, the Tobacco Institute criticized the number of cigarettes tested, the length of the cigarette smoked, and the lack of dissemination of tar yields per cigarette puff. The Tobacco Institute stated that "there is no valid scientific evidence to show that . . . 'tar' and nicotine [] are responsible for any human illness" and then proposed several changes to the FTC Method, most of which were based on claims that FTC tar and nicotine yields were inaccurately high. The Tobacco Institute argued that twice as many sample cigarettes should be tested to arrive at FTC yields, that the FTC Method should use a longer butt-length (which would have lowered FTC tar and nicotine yields by smoking less of the cigarette), and that tar and nicotine yields should be disclosed on a per-puff, as well as a per-cigarette, basis. For these reasons, the Tobacco Institute claimed that the FTC Method "may be deceptive because a smoker may assume his cigarette is delivering the amount of 'tar' and nicotine reported by the FTC when in fact it will be delivering much less, the way he smokes." TIMN0120846-0849 at 0847-0848 (US 87967).

2351. Even at the time it was developed, scientists understood that the FTC method, like any standardized method, would provide an imperfect measure of the exact amount of tar and nicotine that a particular smoker would ingest from a particular cigarette. Instead, the method was intended to give representative approximations of the amounts of tar and nicotine generated by different brand cigarettes when smoked under identical conditions. Those approximations could then provide a useful comparison of the tar and nicotine a human smoker would receive from smoking

different brands. For example, the FTC stated in 1983: "If consumers avoid blocking ventilation holes, cigarettes smoked in the same fashion will yield ‘tar', nicotine, and carbon monoxide in general accordance with their relative FTC rankings." 03573029-3030 at 3029 (US 22244); 48 Fed. Reg. 15,953 at 15,954 (Commission Determination Re Barclay Cigarettes; Amendment of Report of "Tar," Nicotine, and Carbon Monoxide Content of 208 Varieties of Cigarettes; Request for Comment on Possible Testing Modifications). While the FTC Method does provide a means by which to compare brands, the comparison does not meaningfully relate to the reality of smoking.

2352. In a November 29, 1994 written statement submitted for the December 5-6, 1994 NCI Conference on the FTC Cigarette Test Method, B&W, American Tobacco, Lorillard, and Liggett defended the FTC Method, stating that “The FTC’s Test Method Provides Useful and Reliable Information About the Relative ‘Tar' and Nicotine Yields of Cigarettes," and contending that FTC yields are a "useful predictor" of the amount of tar and nicotine smokers will inhale. 2041186475-6517 at 6475, 6486-95, 6498-6504 (US 22181*).

2353. RJR employees, David Townsend and Donald de Bethizy, maintained at the same Conference, in both their written and oral statements, that the FTC Method was a valid and accurate test method that approximates human smoking. 2048381972-2310 at 1975 (US 22190).

2354. In his written statement, Townsend asserted that the FTC Method "provides accurate and reliable information" that "is a key factor for consumers to make objective choices in the marketplace" and stated that "implementation of the FTC testing for ‘tar' and nicotine . . . was an important step in providing data for the consumer to use to make an informed decision in the marketplace." 521321297-1301 at 1297 (US 22137). Townsend further stated that

> it is clear from the information, I believe, that the FTC test method does provide accurate and reliable information for the consumer to use in the marketplace; that is, to compare yields of various brands and make objective choices. The consumer makes choices based on the FTC information, or the rankings derived from that information. . . . The FTC method was established to provide accurate and reliable comparative smoke yield information, and has been very successful in doing that.

2048381972-2310 at 2252, 2256 (US 22190).

2355. De Bethizy stated: "The FTC method provides an accurate and meaningful ranking of cigarettes. . . . On average, smokers absorb approximately the yield of nicotine predicted by the FTC method, and smokers of lower yielding products absorb less nicotine . . . ." 520011445-1480 at 1445, 1457-58 (US 22101). He also stated: "The FTC method provides an accurate and meaningful ranking of cigarettes. . . . [T]he compensation phenomenon does not undermine the FTC method." 2048381972-2310 at 2264, 2267 (US 22190).

2356. In their 1996 comments on the FDA's proposed tobacco Rule, Defendants continued to maintain that there is a meaningful relationship between the FTC ratings and smoker tar and nicotine exposure. 2505597781-7998B at 7968-87 (US 23028*).

2357. While defending the FTC Method and resisting proposed changes to it, Defendants have made repeated public assertions that they have substantially reduced the tar and nicotine deliveries of cigarettes, citing the FTC ratings as their primary support for this assertion. 2505597781-7998B at 7987-88 (US 23028*) (1996 Comments of B&W, Liggett, Lorillard, Philip Morris, Inc., RJR & Tobacco Institute before the U.S. FDA, Vol. III) (claiming that "over the years, the average yield of cigarettes generally has declined markedly. . . . The fact is that from 1950 to the present, U.S. cigarette manufacturers have reduced ‘tar' and nicotine yields by more than 60

percent"); 2046932308-2363 at 2314-2315 (US 85067) (Philip Morris 1994 submission to NCI regarding the FTC Method, asserting "an overall decrease in the 'tar' and nicotine intake of smokers" as a result of reduced FTC yields); 521321297-1301 at 1299 (US 22137) (1994 RJR employee's statement that "all cigarettes are substantially lower in 'tar' yields than they were in past years" and his claim that "[c]igarette design changes have resulted in an overall major reduction in smoke yields.").

2358. A February 7, 1996 Covington & Burling memorandum, from Tobacco Institute attorney David H. Remes to attorneys and senior employees from Philip Morris and B&W and attorneys from the law firms of Arnold & Porter and Collier Shannon, summarized a meeting held earlier that day between Remes and C. Lee Peeler, Director of Advertising Practices in the Bureau of Consumer Protection at the FTC. At this meeting, Remes relayed to Peeler the industry's claim that low tar cigarettes actually do deliver less tar and nicotine to smokers, and that consumers need not be informed about changes in smoking behavior related to smoker compensation. Remes communicated his "observation that in many cases low-yield brands contain so much less tobacco than higher-yield brands that any compensation could not begin to erase the difference." Remes also said that he had made a "suggestion that smokers do not need to have it explained to them that smoking a lot of low-yield cigarettes will result in greater T&N deliveries, just as people do not need to be told that eating a lot of low-fat cookies can make them fat." Remes noted that Mr. Peeler "responded that the analogy does not hold because we know how much fat is 'delivered' in each cookie but not how much T&N is delivered by each cigarette." 92613896-3899 (US 87919); Wells WD, 63:1-64:16.

2359. Over the years, there has been discussion in the scientific community about revising the FTC Method to make it a more accurate measure of the tar and nicotine that human smokers actually ingest. Defendants have opposed changing the FTC Method, arguing that it provides a way for consumers to choose cigarettes and meaningfully compare them in terms of the tar and nicotine exposure from smoking. Henningfield WD, 55:6-12.

2360. For instance, in September 1997, the FTC solicited public comment on a proposal to replace the existing FTC test method with a methodology that would "provide information on the tar, nicotine, and carbon monoxide yields obtained under two different smoking conditions" to provide "a range of yields for individual cigarettes smoked under less intensive and more intensive smoking conditions," and to convey to smokers that "a cigarette's yield depends on how it is smoked." FTC Cigarette Testing; Request for Public Comment, 62 Fed. Reg. 48,158, 48,159 (Sept. 12, 1997) (US 88618). In response, Philip Morris, RJR, B&W, and Lorillard submitted joint comments to the agency defending the current FTC Method and opposing the proposed change, stating: "The manufacturers believe that the current test method should continue to be used. They are not convinced that it should be supplemented with a second test method." Comments of Philip Morris Inc., R.J. Reynolds Tobacco Co., Brown & Williamson Tobacco Corp., and Lorillard Tobacco Co. on the Proposal Titled FTC Cigarette Testing Methodology Request for Public Comment (62 Fed. Reg. 48,158) at 2-3, (no bates) (US 88618) ("Joint Comments") .

2361. The comments further stated that: "Smokers are familiar with the ratings produced by the current test method, and continued use of the current test method assures historical continuity of the data. For these reasons, testing under the current FTC test method should continue." Id. at 4. The comments referred to compensation as a "hypothesized" and "weakly documented

phenomenon" and stated: "The testing protocol should not be modified to reflect 'compensatory' smoking, in part because "current knowledge about these behaviors is too sparse to be usable for modeling purposes." Id. at 43.

2362. Defendants' comments urged that "[t]he protocol should not be modified to incorporate a vent-blocking condition." In response to the FTC's question: "What kinds of consumer education messages should be created to inform smokers of the presence of filter vents and the importance of not blocking them with their fingers or lips?" Defendants' 1998 comments stated: "The manufacturers are not convinced that vent-blocking is a sufficiently common or documented phenomenon that smokers should be alerted to the presence of filter vents and instructed not to block the vents." Id. at 60, 82.

2363. In response to the FTC's question: "If the effect of compensatory smoking behavior is not incorporated in the tar and nicotine ratings, should a disclosure warning smokers about compensatory smoking behavior be required in all advertisements?" Defendants' 1998 comments stated: "The manufacturers are not convinced that compensatory smoking behavior is a sufficiently common or documented phenomenon that consumers should be alerted to its existence. . . ." Id. at 89.

a. Tobacco Institute

2364. In anticipation of the 1981 Surgeon General's Report, the Scientific Affairs Division of the Tobacco Institute drafted a December 15, 1980 memorandum to Horace Kornegay, President of the Tobacco Institute, warning that, among other issues, the Report was expected to include a discussion of smoker compensation. Rather than recommending disclosure of full and complete information on the subject to the public, the "Response" section of the memorandum stated:

> [I]t is suggested that the TI take the following position on the report and that on receipt of any queries from the press, staff be instructed to respond as follows: "The results of research in the past are so mixed that it is impossible to reach and support a firm conclusion at the present time. All one has to do is be aware of and appreciate the call for more research to realize that the Surgeon General's Office cannot objectively have a strong position supported by research. The office is looking for more money in order to support the current campaign against the tobacco industry."

TIMN0073798-3799 at 3799 (US 85127).

b. Philip Morris

2365. In a June 29, 1988 "Statement of Philip Morris, U.S.A." to Congress, Philip Morris made statements equating machine measured tar and nicotine deliveries with actual smoker intake:

> From the 1940s to today, Philip Morris has similarly spent millions on its own research program to modify its cigarettes. As a result, the "tar" and nicotine yields of today's cigarettes -- the principal concern of the scientists who believe cigarettes pose health risks -- have been reduced as much as 95% from the 1957 averages. . . . [I]t was Philip Morris scientists who perfected the instrument that was used for many years by the Federal Trade Commission and other groups around the world for the measurement of "tar" and nicotine yielded by cigarettes . . . [filter] ventilation techniques also contributed to an overall reduction in 'tar' and nicotine levels. . . . As a result of these advances in filtration and ventilation, Philip Morris and the other cigarette companies were able to reduce "tar" and nicotine levels substantially in the late 1950s. . . . As a result of these dramatic reductions in the "tar" and nicotine levels of the leading brands, as well as the introduction of entirely new low-delivery cigarettes, the overall intake of "tar" and nicotine by American smokers decreased dramatically even before the Surgeon General's Report against smoking in 1964. . . . As a result of all this research, Philip Morris succeeded in reducing "tar" and nicotine levels even more in the years following the 1964 Surgeon General's Report.

TI01770431-0458 at 0433, 0439, 0441-0443, 0451 (US 85065).

2366. In his April 14, 1994 written Statement before the House of Representatives Subcommittee on Health and the Environment of the House of Representatives Energy and Commerce Committee, William Campbell, President and CEO of Philip Morris USA, stated, contrary to extensive information developed by and known to Philip Morris USA, that "consumers are not misled by the published nicotine deliveries as measured by the FTC method." Campbell also claimed that "tar and nicotine levels have decreased dramatically over the past 40 years. Today, the market is populated with a number of 'ultra low' brands which deliver less than 5% of the tar and nicotine of popular brands 20 years ago." In a statement carefully worded to refer only to the number of cigarettes smoked, ignoring all other methods of smoker compensation, Campbell both misrepresented the evidence about whether downswitchers smoke more cigarettes per day and denied that smoker compensation rendered the FTC tar and nicotine yields misleading:

> Commissioner [David] Kessler suggested that the FTC figures were misleading because smokers might "compensate" for lower tar and lower nicotine brands by smoking those cigarettes differently. In fact, the data indicates that, despite the dramatic reductions in tar and nicotine levels over the past decades, the number of cigarettes smoked by an individual has remained constant, and even declined slightly. More importantly, the data shows no difference in the number of cigarettes smoked by those who favor higher and lower yield brands.

ATC2746877-6887 at 6877, 6878, 6887 (US 59009); compare with 1000861953-1953 (US 35484) (Wakeham 3/24/61) ("As we know, all too often the smoker who switches to a hi-fi cigarette winds up smoking more units in order to provide himself with the delivery which he had before.").

2367. An October 1994 document that Philip Morris submitted to the United States National Cancer Institute, titled "Submission of Philip Morris Incorporated to the National Cancer Institute Consensus Conference on the FTC Cigarette Testing Methodology and Rating System," stated:

> A number of the FTC's questions . . . relate to "compensation," a term used to suggest that some smokers of lower yield cigarettes may sometimes alter their smoking behavior in ways that may tend to reduce the differences in yields among brands and styles implied by their relative FTC method ratings. While there is a fair amount of recent literature on compensation, few studies have been performed that provide reliable data to establish the occurrence of this suggested phenomenon. We appreciate the interest people have in possible compensation. But there can be no real dispute that, to date, the scientific literature on compensation is limited and inconclusive. . . . [W]hatever conclusions may be reached about compensation, the FTC method remains an appropriate standard for measuring cigarette properties. The reporting of FTC method yields . . . remains a useful source of information to consumers choosing among cigarette brands and styles.

2046932308-2363 at 2312, 2362-2363 (US 85067).

2368. A document, titled "Philip Morris Management Corp., Worldwide Regulatory Affairs Department, 1996 Core Issues Plan," discussed under the topic of "Core Issue #2 Federal Trade Commission," Philip Morris's response to an NCI Conference recommendation to change the FTC Method and to provide more information to consumers: "Preserv[ing] our ability to . . . advertise low tar/light and ultra low tar/ultra light cigarettes as such; avoid changes in the FTC method for as long as possible; [and] minimize changes in the FTC method to the extent possible. . . ." 2046266224-6268 at 6234 (US 23936).

c. R.J. Reynolds

2369. In a July 2, 1984 letter to the FTC from Samuel B. Witt III, RJR Vice President, General Counsel, and Secretary, Witt stated:

> [T]he Commission has also asked for comment on broad questions concerning "smoker compensation. . . ." In their submissions [in response,] health organizations take the position (which is not correct) that the average smoker will get the same amount of "tar" and nicotine from higher and lower "tar" cigarettes, therefore making

> the Commission's numbers irrelevant to the consumer. RJRT, on the other hand, maintains that the average smoker will get less "tar" from smoking a low "tar" cigarette than he or she will receive from smoking a higher "tar" product, and that the average smoker of low "tar" cigarettes does not smoke more cigarettes than the average smoker of higher "tar" cigarettes.

2025045756-5761 at 5760 (US 22247).

2370. In an April 14, 1994 statement to the House of Representatives Subcommittee on Health and the Environment of the House Energy and Commerce Committee regarding the potential regulation of cigarettes by the FDA, RJR stated:

> Since the 1950s, Reynolds tobacco has pursued . . . development of new technologies to reduce yields of "tar" and nicotine generally . . . [this] line of research has been remarkably successful. . . . The important point is that in spite of broad variations in how individual smokers may smoke any given cigarette, the fact remains that the lower the yield by FTC numbers, the lower the yield will be to any given smoker. The yield for any given smoker will probably be different from the FTC yield; for some smokers it will be higher, for some it will be lower, but overall, the FTC yields are generally predictive of the yield to smokers as a group. The statement, however, that "in reality" low yield cigarettes do not yield low "tar" and nicotine, is not true.

516962199-2227 at 2203-2204 (US 85128).

d. Brown & Williamson

2371. In the mid-1990s, Tommy Sandefur, B&W CEO, submitted a written statement to Congress defending the FTC Method: "We also vigorously dispute the suggestion of [David] Kessler and [John] Slade that the 'tar' and nicotine ratings produced using the FTC test method are meaningless or misleading." More than ten years earlier, on March 19, 1984, Ernest Pepples, B&W Senior Vice President and General Counsel, wrote a letter to Howard Liebengood of the Tobacco Institute acknowledging that FTC tar and nicotine ratings "may be misleading to consumers" and

bear no relation to actual consumer intake. Compare 682637627-7629 at 7629 (US 22946) with 521060910-0912 (US 20892).

2372. Susan Ivey, President and CEO of B&W, admitted at trial that B&W "has been aware for many years" that some smokers compensate when smoking low tar cigarettes. B&W takes a different position on its website, which states that "[t]he question of why compensation occurs is still the subject of scientific research, and the relative importance of tar versus nicotine in determining compensation is unclear." The website also states that "how much smokers alter their behavior when they switch to lower tar products, and for how long, is still unclear." The website also states that "our studies show that, as actually smoked by consumers, lower tar cigarettes will generally deliver less tar and nicotine than higher tar cigarettes, and cigarette deliveries generally align with the ranges associated with the descriptors: ultra lights, lights, and full flavor." Ivey WD, 67:19-21; TLT1040050-0055 at 0052-0054 (US 88620); Ivey WD, 64:1-67:11.

e. BATCo

2373. In an October 1999 Memorandum by British American Tobacco to the U.K. House of Commons Health Committee, titled "The Tobacco Industry and the Health Risks of Smoking," BATCo discussed compensation:

> It is clear that compensation does occur, but that . . . despite compensation, smokers receive less tar on average when switching to a lower tar cigarette. . . . The evidence suggests that increasing the number of cigarettes consumed, blocking of ventilation holes and increasing inhalation depth, are not common compensation mechanisms. . . . The limited evidence of which we are aware, suggests that switched smokers either revert gradually to their former, non-compensatory behaviour (which results in lower overall intake of smoke), or change again to a brand which they prefer and which does not require the extra "effort" of taking larger puffs (which may or may not result in lower intake).

322017057-7142 at 7108-09 (US 22068); Ivey WD, 69:4-13.

f. American Tobacco

2374. Eric Gesell stated, on behalf of American Tobacco, that the company did not believe that smokers smoke for a certain level of nicotine and adjust their level of smoking when switching between different types of cigarettes to ensure that they get the same amount of nicotine. Gesell PD, Minnesota, 9/18/97, 5:8-25; 6:10-17; 98:21-100:6.

2375. Gesell also said on behalf of American that the FTC Method tar and nicotine yield data "is meaningful, and it was meaningful, and probably still is today." Gesell PD, Minnesota, 9/18/97, 5:8-25; 6:10-17; 107:7-108:6.

g. Lorillard

2376. In 1999, Alexander Spears, CEO of Lorillard, stated publicly that the FTC tar and nicotine numbers did not need to be explained to smokers because it was "very obvious" that they were meaningless due to smoker compensation. Spears PD, Minnesota, 9/23/97, 70:2-72:2.

5. Despite Their Internal Knowledge, Defendants' Marketing and Public Statements About Low Tar Cigarettes Continue to Suggest that They Are Less Harmful than Full-Flavor Cigarettes

2377. As detailed below, Defendants made, and continue to make, false and misleading statements regarding low tar cigarettes in order to reassure smokers and dissuade them from quitting. These actions include: assertions that low tar cigarettes deliver "low," "lower," or "less" tar and nicotine than full-flavor cigarettes; claims that low tar cigarettes are "mild" or deliver "clean" taste; and use of brand names with descriptors such as "light" and "ultra light," with full knowledge that consumers interpret these claims and descriptors to convey reduced risk of harm.

2378. Low tar cigarettes have captured an enormous share of the total cigarette market. The percentage of low tar cigarettes (i.e., cigarettes with an FTC-reported tar yield of 15 mg. or less) has increased from 2% in 1967 to 81.9% of total cigarette sales in 1998. (no bates) (US 86655) (FTC, 1994 Report at Table 6A, Table 7); 92382035-2095 at 2057 (US 57179); (no bates) (US 87925 at 8) (FTC, 1979 Report); (no bates) (US 60434 at 22-26) (FTC, 1998 Report).

2379. From the 1960s to the present, Defendants' marketing of their health reassurance brands has featured claims of lowered tar and nicotine accompanied by written statements that implied a health benefit as a result of the lowered tar levels. Defendants have also used marketing imagery, such as lighter color cigarette packaging and white tipping paper, to communicate to smokers that Defendants' health reassurance brands were "lighter" and lower in tar.

2380. Over the last five decades, Defendants have not only introduced numerous stand-alone cigarette brands that purport to be low in tar (e.g., Merit, Vantage, and Carlton), but have also introduced low tar "brand extensions" of existing full flavor cigarette brands (e.g., Marlboro Lights and Ultra Lights as extensions of the full flavor Marlboro brand). Defendants have used so-called brand descriptors such as "light," "medium," "mild," and "ultra light" to market both their new brands, as well as their brand extensions as low in tar. Virtually every major brand undertook line extensions and by 1980 over 50% of cigarettes sold were “low tar” (with an FTC Method tar yield of 15 mg or less). Dolan WD, 123:21-124:7. Defendants acknowledge that, today, every major manufacturer continues to manufacture and sell low tar brands and brand extensions in both the 'light' and ‘ultra light' categories. Ivey WD, 54:6-17; Bonhomme WD, 8:13-9:18.

2381. Although the FTC does not formally classify cigarettes according to tar or nicotine yield, industry practice, according to Denise Keane, Philip Morris General Counsel, has long been

to apply the 'light' descriptor to cigarettes with 7 to 14 milligrams of tar, and the 'ultra light' descriptor to cigarettes with fewer than 7 milligrams of tar." These brand descriptors "have been developed by cigarette manufacturers through their advertising." Keane WD, 56:14-23; Mulholland WD, 26:4-27:9; accord Henningfield WD, 56:8-11 (testifying that the FTC has no "control over which cigarettes Defendants advertise as 'light' or 'ultra light'").

2382. The terms "Light" and "Low Tar," as they are used by Defendants, are essentially "meaningless" and "arbitrary." As Dr. Farone explained:

> [T]here are lights of certain brands with higher tar levels than regulars of other brands from the same company, and there are also lights and regulars of the same brand that have the same FTC tar rating. So therefore the term "light" is not related to tar or taste. For example, according to the most recent FTC report of tar and nicotine yields, Philip Morris sells versions of Virginia Slims and Virginia Slims Lights that both deliver 15 mg of tar by the FTC method.

Farone WD, 116:3-14; 525311179-1223 at 1185, 1207-1208, 1222 (US 52977).

2383. The FTC's 1967 report to Congress concluded that Defendants were using the word "mild" in advertising "as a euphemism for cloaking the dangers of increased cigarette smoking." The Report noted, in particular, the following ads:

> Carlton filters have "Good mild taste . . . created for those who are interested in the amount of tar and nicotine in the smoke of their cigarette. . . ." "Montclair (menthol filter) cigarettes are made especially for smokers who seek exceptional mildness. . . ." "You get Pall Mall's famous extra length of fine tobaccos . . . and a filter tip. Result? A new longer length, a full 100 millimeters long and a new milder taste . . ." and "(Chesterfield kings) made to taste even milder through longer length."

92382035-2095 at 2058-2059 (US 57179).

2384. In its 1968 report, the FTC concluded that Defendants' use of the phrase "mild taste" in advertising is just another way to communicate the term "less harmful" to smokers:

> Advertising in 1966 featured the phrase “mild taste” to describe the satisfactions obtained from smoking and also as a euphemism to cloak the dangers of cigarette smoking. The euphemistic effect derives from the possibility that the public assumes “mild” tasting cigarettes to be less strong, i.e. lower in tar and nicotine than many cigarettes, and hence less hazardous.

TIMN288040-8122 at 8055-8056 (JD 043418).

2385. The 1971 FTC report noted that "[r]elieving anxieties about the risks to health posed by cigarette smoking" was among Defendants' three main advertising themes and that "[c]laims of low tar and nicotine content present yet another appeal to relieve concern about the dangers to health associated with cigarette smoking." In 1975 and 1976 reports, the FTC reported that this theme, used separately or with themes regarding taste or desirable personality characteristics, "continued to predominate in 1975," and "continued to dominate in 1976, with little variation in format and copy except in the greatly increased promotional emphasis given to the lower and lowered ‘tar' varieties." 680043553-3595 at 3564, 3567 (US 87922);1005121108-1119 at 1114 (US 87921); (no bates) (JD 003563 at 4-5) (FTC, 1976 Report).

2386. The 1981 FTC report on cigarette advertising noted, many of Defendants' advertising campaigns had, over the course of the preceding four decades, "impl[ied] that smoking a particular brand solves the health problem or at least minimizes the risk." The report noted that Philip Morris's Parliament and American Tobacco's (subsequently B&W's) Tareyton cigarettes "imply that their special filters minimize the risks of smoking." The report also cited the advertisements for RJR's Vantage, B&W's Viceroy, and Lorillard's True cigarettes as examples of advertising campaigns

implying that the brands marketed are either not harmful or less harmful. (no bates) (JD 004744 at 2-12) (FTC, 1981 Report).

2387. Similarly, the 2001 Institute of Medicine report cited the advertisements of Defendants Philip Morris, RJR, B&W, American Tobacco, Lorillard, and Liggett as examples of advertisements that relate health benefits to particular low tar cigarette brands. (no bates) (US 20919) (Institute of Medicine, Clearing the Smoke: Assessing the Science Base for Tobacco Harm Reduction) (K. Stratton, et al., eds., National Academy Press 2001); 99053048-3558 at 3124-27 (US 57494).

2388. The FTC noted in a 1976 report that "[t]he lower and lowered 'tar' and nicotine cigarettes have in the last year been the subject of an intensive promotional effort by cigarette manufacturers." Defendants' spending on the advertising and marketing of low tar cigarettes (i.e., cigarettes yielding 15 mg. or less tar per the FTC Method) has been disproportionately high compared to their domestic market share. The FTC's report for 1997 revealed that for every single year from 1967 to 1992. Defendants' advertising and promotional spending for low tar cigarettes exceeded their domestic market share. According to one marketing expert, low tar cigarettes came to "substantially reshape and define the cigarette market," explaining that:

> [T]he real "boom: time for these cigarettes is the late 1970s. In 1974, manufacturers devoted about 15% of their advertising and promotion dollars to these products. By 1979, this spending grew to 67%. At the time, the percent of sales represented by low tar was only 30%, so spending was disproportionately high on these "health reassurance" brands. These products, which accounted for less than 15% of cigarette sales in 1975 came to hold the majority of the market by 1981.

It was not until the mid-1990s that the percentage of sales made by low tar brands finally equaled the amount that Defendants were spending to promote them, which was about 70% of the industry total. HHS1311770-1805 at 1799 (US 76080); Dolan WD, 125:6-126:7.

2389. According to Dr. Henningfield, who among his many other credentials headed the National Institute of Drug Abuse from 1994 to 1996, smokers are not always familiar with the FTC rating of their cigarette, but are aware of whether their cigarettes are "light" cigarettes or "regular." There is little, if any, dispute that consumers believe that "light" cigarettes deliver less tar and nicotine than regular cigarettes, and that consumers believe that regular cigarettes are more hazardous than "light" cigarettes. Henningfield WD, 56:12-57:10.

2390. Relatively few people understand that smoking low tar or light cigarettes can be -- and often is -- just as dangerous as smoking full flavor cigarettes. Weinstein WD, 54:21-55:20. A peer-reviewed, published study showed that 70% of low tar cigarette smokers believe that such cigarettes decrease one's daily intake of tar. Weinstein WD, 55:5-8 (citing Kozlowski et al., Smoker reactions to a "radio message" that Light cigarettes are as dangerous as regular cigarettes. Nicotine & Tobacco Research, 1(1);67-76(1999)). Similarly, another study showed that approximately half of all respondents did not know how many light cigarettes would have to be smoked to get the same level of tar intake as from one full flavor cigarette. Fewer than 10% believed that it would be one light cigarette. Weinstein WD, 55:12-15 (citing Kozlowski, L.T., Goldberg, M.E., Yost, B.A., White, E.L., Sweeney, C.T., Pillitteri, J.L. Smokers' misperceptions of light and ultra-light cigarettes may keep them smoking. American Journal of Preventive Medicine, 15, 9-16 (1998) ("Kozlowski, Goldberg, et al., 1998")).

2391. Defendants have used this misperception to their advantage. A 1996 article in the American Journal of Public Health cited a 1993 Gallup survey in which 56% of smokers believed use of the term "low tar" conveyed relative safety compared to full-flavor cigarettes. The American Journal of Public Health article also cited a 1987 National Health Interview Survey finding that 46% of smokers of cigarettes with tar yields of 6 mg. or lower (per the FTC Method) believed they had reduced cancer risk compared with smokers of cigarettes with higher FTC tar yields. 2074759740-9746 at 9741 (US 43526); accord 99053048-3558 at 3112 (US 57494) (2001 Institute of Medicine study stating "When filtered and low-yield cigarettes were introduced into U.S. markets, they were heavily promoted and marketed with both explicit and implicit claims of reducing the risk of smoking. Even as data accumulated, albeit slowly, that these products did not result in much -- if any -- decrease in risk, consumers have continued to believe otherwise. . . . Consumer misunderstanding is explained in part by the ways in which these products are marketed. . . . [T]he tobacco companies have appealed to health concerns of smokers at least since 1927. Claims about tar and nicotine levels appeared as early as 1942").

2392. Defendants continue to disseminate false and misleading public statements regarding their true intent in marketing low tar cigarettes. For example, Defendants Philip Morris, RJR, B&W, and Lorillard jointly stated to the FTC in February 1998: "The manufacturers do not claim that lower-yield cigarettes are 'safe' or are 'safer' than higher yield cigarettes." Comments of Philip Morris Inc., RJR Tobacco Co., Brown & Williamson Tobacco Corp., and Lorillard Tobacco Co. on the Proposal Titled FTC Cigarette Testing Methodology Request for Public Comment (62 Fed. Reg. 48,158) at 3, 94 ("Joint Comments") (US 88618).

2393. Defendants have publicly committed to refrain from marketing with implied health claims. In April 1964, the Cigarette Company Defendants adopted the Cigarette Advertising and Promotion Code ("Code"), which includes provisions prohibiting "advertising which makes a representation with respect to health." The Cigarette Company Defendants have claimed publicly that they have obeyed and continue to obey the 1964 Code, last revised in December 1990. Krugman WD, 164:6-21. Each cigarette company Defendant continues to state on its website and in other public statements that it has adopted the Code and that it follows the Code in planning and executing its cigarette marketing. 2070557699-7702 (US 20519). 2025345360-5362 (US 20414); MNAT00608606-8614 (US 78779); TIMN0102493-2494 (US 21271); TIMN0015615-5617 (US 21265); 2022976326-6335 (US 20370); ATX040294056-4056 (US 58599). See Section V(F)(7)(a)((1)) regarding the total lack of enforcement of the Code. More recently, Defendants agreed in the 1998 Master Settlement Agreement not to make "any material misrepresentation of fact regarding the health consequences of using any tobacco product." Section III(r) of the Agreement states:

> Prohibition on Material Misrepresentations. No Participating Manufacturer may make any material misrepresentation of fact regarding the health consequences of using any Tobacco Product, including any tobacco additives, filters, paper or other ingredients.

(no bates) (JD-045158) (Master Settlement Agreement, § III(r)).

2394. Defendants also told the FTC in their 1998 testimony: "Smokers are familiar with the ratings produced by the current test method, and continued use of the current test method assures historical continuity of the data. For these reasons, testing under the current FTC test method should continue." Joint Comments at 4.

2395. In response to the FTC's question regarding the need for official guidance on brand descriptors, Defendants stated: "The manufacturers are not convinced that there is a need for official guidance with respect to the terms used in marketing lower rated cigarettes." As to terms, such as "light" and "ultra light," "[t]he manufacturers believe smokers understand that these descriptors are terms of comparison rather than signifiers of absolute value." Joint Comments at 94.

2396. In response to the following FTC query:

> What data, evidence, or other relevant information on consumer interpretation and understanding of terms such as "ultra low tar," "ultra light," "low tar," "light," "medium," "extra light," and "ultima," as used in the context of cigarettes exists? Do consumers believe they will get significantly less tar from cigarettes described as "light" or "low tar" than from regular full flavor cigarettes, and do they believe they will get significantly less tar from cigarettes described as "ultra low tar" or "ultra light" than from "light" or "low tar" cigarettes? Do the brand descriptors convey implied health claims?

Defendants Philip Morris, RJR, B&W, and Lorillard jointly stated in their joint comments to the FTC:

> The manufacturers believe that consumers choose "light" or "ultra" products for a variety of reasons, including lighter flavor, lighter taste, less menthol (or other flavor) taste, and smoother smoking characteristics. Some consumers may choose such products for other reasons. The manufacturers do not intend the descriptors to convey any level of 'safety' with regard to their products.

Defendants' joint comments further stated: "The manufacturers are not aware of evidence that consumers use descriptors in lieu of the FTC numbers as their primary source of information about the 'tar' and nicotine yields of different brand styles." Joint Comments at 95.

2397. In response to the FTC's question:

> What available evidence exists concerning how consumers view cigarettes with relatively low tar and nicotine ratings and their perception of the relative risks of smoking such cigarettes rather than full flavor cigarettes?

Defendants Philip Morris, RJR, B&W, and Lorillard jointly stated:

> The manufacturers are unaware of evidence concerning such consumer views and perceptions except to the extent that such evidence is presented in [the National Cancer Institute's Smoking and Tobacco Control Monograph No. 7].

Joint Comments at 89.

2398. Defendants' testimony to the FTC fails to make any reference to the vast amounts of consumer research Defendants conducted, and had conducted for them by their numerous advertising and marketing consultants, that expressly found that many consumers strongly disliked the taste of low tar cigarettes, but were smoking them because they believed they were healthier for them. Accord 2041186475-6517 at 6478, 6504 (US 22181*) (November 29, 1994 submission to the National Cancer Institute on behalf of B&W, American Tobacco, Lorillard, and Liggett contending that smokers use FTC tar and nicotine ratings primarily for information relating to taste considerations, referring to what Defendants called "the well-established significance of the FTC's machine-determined yields for comparing the flavor, richness and satisfaction of different brands of cigarettes," and predicting that if modifications to the FTC Method occurred, "[c]onsumers . . . would be deprived of important information about the flavor, taste and feel of cigarettes -- information consumers consider to be highly relevant in distinguishing among" brands).

2399. As detailed below, Defendants' public statements about low tar cigarettes on their websites, the statements of their executives, and their internal documents are false and misleading.

a. Philip Morris

(1) Philip Morris's Low Tar Cigarette Marketing Techniques

2400. Over the last 50 years Philip Morris has used a variety of marketing techniques to reassure smokers that certain brands and types of cigarettes would reduce their health risk from smoking by reducing their exposure to tar. Philip Morris advertisements in the early 1950s made explicit claims of reduced harm, such as the following:

> 1952: "If, like millions today, you are turning to filter cigarettes for pleasure plus protection . . . it's important that you know the Parliament Story." 696000888-0916 at 0894, 0905, 0908 (US 21387); Harris WD, 70:3-6.
>
> 1952: "Parliament's exclusive Filter Mouthpiece gives you the important extra protection of the Parliament 'Safety-Zone' Construction. . . . As the irritants, brown tars and colorless nicotine are trapped, they remain where they belong–in the recessed filter, completely out of contact with your lips." 696000888-0916 at 0894, 0905, 0908 (US 21387)
>
> 1954: "You're So Smart to Smoke Parliaments." (US 2731) (emphasis in original); see also (US 2756) (1956 Parliament advertisement in Sports Illustrated magazine noting same).
>
> 1954: "The cigarette that takes the FEAR out of smoking!" 696000888-0916 at 0908 (US 21387).

2401. In addition to making explicit health claims, since the 1970s Philip Morris has used brand descriptors such as "light" and "ultra light" to communicate that certain brands of cigarettes are low in tar and nicotine. James Morgan, who was Brand Manager of Marlboro from 1969 to 1972, during the time when Philip Morris introduced Marlboro Lights, its first "light" cigarette, explained the intended meaning of the "lights" descriptor. Morgan stated that, from the very

beginning, the "lights" descriptor was intended to communicate that the brand was low in tar -- as opposed to a brand that was lighter in taste:

> From the very beginning the phrase, "Lowered tar and nicotine" was going to be on the package [of Marlboro Lights]. That was the phrase that described to the consumer what the product was in our judgment. . . . We felt the brand name, Marlboro Lights, was a real help in terms of the description of the product being low in tar and nicotine which appeared on the pack from the inception of the project. . . . We are not talking, in my judgment, talking about light . . . as a taste. It's not a term that means anything in terms of taste, and the name Marlboro Lights as I said before, a word which we feel has appeal in a different sense than suggesting what the cigarette even tastes like. . . . It was our desire in this entire Marlboro Lights brand project to constantly position Marlboro Lights as being -- as having lower tar and nicotine from Marlboro [Reds].

Morgan PD, Philip Morris Inc. v. R.J. Reynolds Industries, Inc., 10/15/74, 4:9-10; 10:15-11:4; 78:20-79:14; 79:25-80:5; 81:8-12; 85:23-86:4; Morgan PD, Philip Morris Inc., 11/25/74, 247:11-14.

2402. According to Morgan, Philip Morris made a calculated decision to use the phrase "lower tar and nicotine" even though its own marketing research indicated that consumers interpreted that phrase as meaning that the cigarettes not only contained comparatively less tar and nicotine, but also that they were a healthier option. Morgan PD, Price v. Philip Morris, Inc., 6/15/02, 45:2-45:25, 45:2-46:25, 47:2-47:25, 48:2-48:25, 49:2-49:25, 50:2-50:25, 51:2-51:5, 52:15-52:20.

2403. Morgan, who later became CEO of Philip Morris, further explained in 2002 that rather than relying on the tar and nicotine numbers from the FTC Method, "the major influence in people's perceptions in the tar of a cigarette would have come from the marketing positioning of a brand as opposed to people literally reading the FTC [tar and nicotine figures]." Morgan also stated that,

> if you took the advertising, the point of sale, whatever may have been said on the racks or the cartons, the whole panoply of what the consumer saw about a cigarette brand would be more influential in that consumer's perception of the tar of that brand . . . than the fact that they may or may not have sat down and looked at a newspaper that had the latest Federal Trade Commission report.

Part of the image that Philip Morris was marketing was the concept of lowered tar and nicotine. Morgan PD, Philip Morris Inc., 11/25/74, 174:10-175:4; 175:16-175:25.

2404. Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, echoed these views:

> Philip Morris aims its low tar cigarette marketing at least in part at smokers of regular cigarettes who are concerned about the amount of tar they are inhaling and want to reduce it. . . . Philip Morris was aware that consumers understood the "lights" brand descriptor from its advertising and marketing pieces to be equated with low tar.

Bonhomme WD, 12:6-11; 13:17-19; 15:1-4; 16:1-7; 43:11-14.

2405. In or around 1995, Philip Morris considered changing the name of Merit to Merit Lights, because "Philip Morris was concerned that consumer research showed that Merit marketing no longer effectively conveyed to consumers that Merit was low in tar." Bonhomme WD, 13:1-22.

2406. This contemplated name change is documented in a June 23, 1995 internal Philip Morris memorandum, titled "Merit 'Filter' vs. 'Lights' Test -- Research Proposal," from Lauren Schwed, Philip Morris Analyst, to Jodi Sansone, then Brand Manager for Merit at Philip Morris USA, and Rebecca Gordon, a Philip Morris USA Assistant Brand Manager under Sansone. The memorandum described the motivation behind an attached consumer research study as follows:

> Merit is considering changing the name on the Parent pack from "Filter" to "Lights" in order to clarify the tar level of the cigarette. There is a thought that changing the wording on the pack to replace the word "Filter" with the word "Lights" would help clarify what the

> true tar level is for Merit Parent. However, there is some concern that changing the name to "Lights" could possibly detract from the brand's flavor heritage.

2045628330-8330 (US 26955).

2407. In a memorandum dated November 27, 1995, Shari Teitelbaum, a consumer researcher for Philip Morris, summarized the results of the "Merit 'Filter' vs 'Lights' -- Final Report" for Sansone. Teitelbaum noted that the name change affected Merit smokers' perceptions: "Before tasting the cigarette, Merit smokers seemed to think that Merit Lights was lower in tar than Merit Filter." Teitelbaum noted that changing the name to Merit Lights caused one third of current Merit smokers to "alter their perception of Merit in terms of taste and tar level." The study also confirmed Philip Morris's fear that changing the name to Merit Lights would imply a poor-tasting cigarette: for current Merit smokers, "[t]he name change did seem to have a significantly adverse impact on perceptions of the brand's taste." 2045596010-6012 at 6011 (US 26952); 2045596013-6040 at 6032 (US 26953); Bonhomme WD, 14:1-15:4.

2408. Philip Morris did finally change the name of Merit Filters to Merit Lights, even though there was no difference in the cigarette. Brennan-Lund PD, Price v. Philip Morris, Inc., 9/20/02, 157:15-22.

2409. Similarly, Philip Morris marketed a 15 mg. cigarette as both Virginia Slims and Virginia Slims Lights. 525311179-1223 at 1222 (US 52977).

2410. Jeanne Bonhomme verified that Philip Morris has known for years from its consumer research that some smokers "interpret brand descriptors as communicating a less hazardous cigarette than full-flavor brands." Bonhomme WD, 20:3-6.

2411. In an October 21, 1994 memorandum, titled "Marlboro Medium Smoker Image Study," Marian Halpern, an employee in the Philip Morris consumer marketing research department, reported to Tom Keim, a Philip Morris brand manager, that the "Reasons for Smoking Medium" were as follows:

> Most smokers said they chose Medium because of its perceived health benefit. Over half of the Medium smokers said they started smoking Medium because they wanted a cigarette with lower tar and nicotine (56%). For many respondents, the name "Medium" communicated information on this product feature, with almost one quarter (24%) of these smokers saying that 'Medium' refers to the cigarette's lower tar and nicotine.

2063731671-1688 at 1672 (US 22222); Bonhomme WD, 18:1-19:5.

2412. Philip Morris tries to create marketing pieces that communicate certain brands are low in tar, not just with words like the "lights" brand descriptors, but also with the imagery they present to consumers, such as the color it selects for the cigarette pack and tipping paper. When packaging decisions are made at Philip Morris, it is recognized that the color influences peoples' perception of the strength and tar level of the product. Bonhomme WD, 20:10-17; 22:1-4.

2413. For example, Philip Morris knows that consumers perceive a blue cigarette pack and white tipping paper as an indication that a cigarette is low in tar, and that generally speaking, the lighter the cigarette package color, the lower its tar content is perceived to be by consumers. Philip Morris continues to this day to market and sell Marlboro Lights and Marlboro Ultra Lights with lighter color packaging and tipping paper. Bonhomme WD, 21:13-18; 23:20-22.

2414. Nancy Brennan-Lund, Philip Morris Senior VP of Marketing, confirmed that, in order to communicate low tar in cigarettes, Philip Morris USA has used a "lighter, more white background" and a "white filter as opposed to a cork colored filter." Susan Norris, Marlboro Brand

Manager from 1995-1999, also noted that, in her experience, colors such as silver and light blue communicate to consumers that a cigarette is an ultra light brand. Brennan-Lund PD, Price, 9/20/02, 179:6-17; Norris PD, United States v. Philip Morris, 7/31/03, 162:6-165:8, 179:17-184:19.

2415. Over the last five decades, Philip Morris has conducted extensive consumer research to perfect the delivery of its "light" and low tar cigarette brand marketing message to ensure it provided smokers with health reassurance and offered an alternative to quitting.

2416. Marlboro Lights. With respect to Marlboro Lights, Philip Morris designs the packaging to distinguish it from Marlboro Red and communicate to consumers that it provides "the best of both worlds," -- low tar and good taste. Bonhomme WD, 22:5-18.

2417. A November 15, 1971 "Philip Morris U.S.A. Inter-Office Correspondence" to James Morgan from the Philip Morris USA Marketing Research Department set forth results of a Philip Morris consumer study on Marlboro Lights. Under the heading "Advertising Awareness," the report stated that "[l]ow tar and nicotine remained the most frequently mentioned comment." 1000292744-2762, 2745 (US 35205).

2418. A December 1971 Marlboro Lights "Product Promotion Plan" distributed to the Philip Morris sales force discussed the introduction of Marlboro Lights and ways to market and maximize sales of the brand. It stated:

> The introduction of Marlboro Lights is a very timely move on the part of your company. The consumer is becoming increasingly aware of tar and nicotine contents in cigarettes and many are searching for one with low tar and nicotine content and full flavor. Marlboro Lights fill this need.

2045404133-4163 at 4141 (US 85000).

2419. A retrospective Philip Morris document dated September 1991, titled "Background Information on PM Brands," stated:

> To capitalize on the booming low tar market, Marlboro Lights was introduced in 1972. It became the first successful low tar line extension in the industry . . . Marlboro further broadened its appeal to low tar smokers with the addition of Marlboro Lights 100's in 1978, Marlboro Lights King Size Flip-Top Box in 1980 and Marlboro Lights 100's Flip-Top Box in 1984.

2070143190-4433 at 3206 (US 27257).

2420. James Morgan, former President and CEO of Philip Morris USA, confirmed that Marlboro Lights were positioned as "lower in tar and lighter in taste than Marlboro Red" and were marketed to people seeking a low tar and nicotine cigarette, including smokers of both high and low tar cigarettes. A 1974-1975 Philip Morris magazine advertisement for Marlboro Lights stated: "Marlboro Lights. The spirit of a Marlboro in a low tar cigarette." Philip Morris has used the phrases "lowered tar and nicotine" and "Lights" in association with Marlboro Lights for over 30 years. Morgan PD, Price, 6/5/02, 20:13-25, 21:2-6, 32:22-25, 33:2-25, 34:2-11; 2045404133-4163 (US 85000); 03496228-6630 at 6323 (US 20057); Morgan TT, Price v. Philip Morris, Inc., 2/18/03, 64:4-7.

2421. A May 31, 1988 Philip Morris USA Marketing Research Department report from Philip Morris's primary advertising agency, Leo Burnett, and Philip Morris consumer researchers Karen Eisen and Jeanne Bonhomme, recited focus group results and stating that "many felt that Marlboro Lights was gaining in favor because of health concerns." 2044743883-3891 at 3885 (US 85001); Brennan-Lund PD, Price, 9/20/02, 190:1-192:11; Bonhomme WD, 23:5-19.

2422. Benson & Hedges. A 1974-1975 advertisement for Philip Morris's Benson & Hedges Multifilter brand stated: "Today people not only want a great tasting cigarette, but one that's low in 'tar' and nicotine. Nothing's simple anymore . . . [w]e've managed to lower the 'tar' and nicotine and still give you a cigarette with full rich flavor for you to enjoy." (US 87184); see also 03496228-6630 at 6326 (US 20057).

2423. A September 1991 Philip Morris document, titled "Background Information on PM Brands," stated:

> Benson & Hedges 100's Lights and Lights Menthol were introduced in 1977 in response to consumer preference for a milder, lower tar cigarette . . . today Benson & Hedges is among the leading low tar cigarettes. In mid-1982, Benson & Hedges Deluxe Ultra Lights was launched to take advantage of dynamic growth in both the 100mm and ultra low tar markets. The regular and menthol packings, both at 5mg tar, were instant successes. Fueled by distinctive packaging and taste richer than that of other ultra low (hence the ad slogan "rich enough to be called deluxe"), Deluxe Ultra Lights is a major contributor to the image and sales strength of Benson & Hedges.

2070143190-4433, 3211-3214 (US 27257); see also ADV004 1118-1120 (US 745) (1982 advertisement).

2424. Cambridge. Tom Goodale's handwritten notes from an October 15, 1979 meeting, the regular "new products" meeting of Philip Morris scientists, reflect Philip Morris's plan to create an impression in consumers' minds of Cambridge as being extremely low in tar. The plan was to introduce Cambridge with a tar level below the then-lowest FTC tar brand sold -- Carlton -- and then to raise the tar level over time. The notes reveal, under the heading Project Trinity (Cambridge's project name prior to commercial introduction), "Hit mkt [market] below Carlton tar - afterwards can drift higher." 1001507595-7596 at 7595 (US 85102).

2425. According to Dr. Farone, former Director of Applied Research at Philip Morris USA, based on his participation in numerous monthly meetings in 1979 relating to Cambridge:

> The long-range plan [for marketing Cambridge] was to introduce the product as a low tar product and then eventually to increase the tar of the product. . . . [I]t was anticipated that the product would not sell very well at that low tar and eventually they would increase the tar, and having sold it as a low tar product people still would think of it as a low tar product. In my view, and from my experience, the lowest yielding version of many brands, including the original Cambridge, but also B&W's Carlton, RJR's NOW, etc., were created to give the brands a lowest tar image, while the sales are in the higher tar and nicotine versions of those brands. Those lowest yield versions of the brand are very hard to find in stores.

Farone WD, 2:2-8; 2:15-19; 128:4-128:22.

2426. In 1979, Philip Morris promoted Cambridge as a low tar brand yielding 0.0 mg tar (less than 0.1 mg tar) on the FTC test. The 0.0 mg tar Cambridge cigarette was removed from the market and replaced by Cambridge light and ultra light brands, all of which had considerably more tar than the original Cambridge cigarette. Dr. Farone made it clear that:

> The plan all along was to deceive the public into thinking that the Cambridge Light cigarette was a low tar cigarette, when in fact it was not . . . the trend to increasing tar deliveries in the product is very clear and there is no advertising that says that such increases are being made.

Farone WD, 129:18-132:17; 2024983860-3862 at 3860 (US 20015).

2427. Dr. Farone explained that "Philip Morris never even bothered to consumer test the 0.0 mg [Cambridge] version against the similar variant of Carlton and this is a major piece of evidence that they had no plans to keep it on the market." A September 20, 1979 Philip Morris memorandum, titled "Project Trinity," states that with respect to the 0.0 mg tar version of

Cambridge: "Consumer testing is not required for this model." Farone WD, 128:23-129:17; 1000774422-4422 (US 35306).

2428. Nancy Brennan-Lund, Senior Vice President of Marketing at Philip Morris, admitted that Cambridge Lights had more tar and nicotine than the original Cambridge. She further admitted that, as the tar and nicotine numbers were not identified on the packs of Cambridge Lights cigarettes, the only way consumers could possibly know that Cambridge Lights had more tar than Cambridge regular was by a perceived taste difference. Brennan-Lund PD, Price, 9/20/02, 145:5-154:16.

2429. Merit. In 1976, Philip Morris introduced a new brand, Merit, at 9 milligrams tar with "enriched flavor." Merit formed the basis for line extensions to Merit Ultra at 4 milligrams and later Merit Ultima at 1 milligram. The three were jointly advertised in a "low, lower, lowest" presentation of the product line. Dolan WD, 124:1-4; 1002325022-5022 (US 21510).

2430. Philip Morris's marketing for some of its low tar cigarette brands, including Merit, "encouraged consumers [whom Philip Morris referred to as potential "down-switchers"] to switch from regular cigarettes to low tar cigarettes." Historically, "Philip Morris targeted potential down-switchers with its marketing for Merit," and "Merit [consumer] research is used to target potential down-switchers." Bonhomme WD, 13:4-5; 27:16-21; 29:3-30:5.

2431. Philip Morris's marketing for Merit cigarettes targeted "self-conscious" and "uncomfortable" smokers. A Philip Morris memorandum, titled "The Uncomfortable Merit Smoker," dated January 6, 1993, stated: "'Self-conscious' smokers are defined as people who are uneasy with their status as smokers. They see smoking as a sign of personal weakness and are starting to feel ashamed that they smoke." 2044905001-5007 at 5001 (US 20454); Bonhomme WD, 49:1-3:47:8-11; see also, Teitelbaum PD, United States v. Philip Morris, 4/16/02, 132:21-137:21.

2432. According to Suzanne LeVan, Philip Morris Vice-President of Premium Brands from 1991-2001 with responsibility for Merit, "the Merit strategy is to convince smokers who are switching down [in tar levels] and who are looking for a good tasting cigarette that Merit is a brand that they should try." LeVan PD, United States v. Philip Morris, 6/25/02, 178:13-181:2; accord 2063690017-0018 (US 85002).

2433. According to a retrospective Philip Morris document dated September 1991 and titled "Background Information on PM Brands," the "Benefits Statement" of Merit was: "You'll enjoy low tar and good flavor with Merit." "At only 7 mg. of tar, Merit delivers the rich flavor of leading cigarettes with twice the tar." "With Merit Menthol you get rich menthol flavor at only 8 mg tar." The document indicated that Merit Ultra Lights and Merit Ultra Lights 100's were introduced in 1981. 2070143190-4433 at 3211:3214 (US 27257); accord 2063724711-4714 (US 39838) (Confidential).

2434. Philip Morris's targeting strategy was recorded in a retrospective June 13, 1995 document from Leo Burnett -- Philip Morris USA's long-time marketing agency -- titled "Merit Advertising Overview Historical and Current for Jodi Sansone." Under the heading "Merit -- Current 'You've Got Merit' Campaign," the document stated: "Strategy: Convince Self-conscious and uncomfortable smokers who want to switch to a low tar alternative but won't sacrifice taste completely," "With Merit, you can switch down to lower tar and still enjoy smoking," "Because: Merit delivers satisfying taste at every level of low tar." The document described the "Merit Brand Essence" as follows: "Since the brand's introduction twenty years ago, the core Merit proposition has been low tar with good taste. Once a smoker has made the decision to switch to a lower tar product, they are faced with the challenge of finding one that delivers on taste. Merit offers a positive

solution–they can switch down to lower tar and still get satisfying taste." 2048200699-0727 at 0708 (US 38648) (emphasis in original); Bonhomme WD, 48:12-49:3.

2435. Philip Morris's strategy for Merit was successful. Norma Suter Drew, Philip Morris Vice President for Portfolio Brands and former Brand Manager and Marketing Director for Merit cigarettes from 1992-1994, delivered a July 1993 presentation, titled "Merit Franchise," in which she reported that "Merit is a brand smokers switch to in order to reduce tar/nicotine." Elsewhere in the presentation, Drew wrote that one of the top two "Goals" for Merit advertising was to achieve a "[s]ignificant increase in Merit's highest brand image statement, 'Are among the lowest in tar/nicotine', versus Carlton and Now." The presentation also noted that "70% of industry switching is between tar levels." Under the heading "Merit Advertising," the presentation noted that "Merit smokers tell us that they come to the franchise because they desire a lower tar cigarette that still tastes good – switching down makes them feel better about the fact that they smoke." Bonhomme WD, 49:4-14; 2070661683-1727 at 1685, 1687, 1713, 1716 (US 40337) (emphasis added).

2436. The following Merit advertisements, in conformity with the internal marketing documents detailed above, communicated to consumers that, with Merit, they could reduce their tar intake and thus reduce their health risk, without sacrificing taste:

> 1976: "New Low Tar Entry Packs Taste of Cigarettes Having 60% More Tar." (no bates) (US 5087).
>
> 1976: "The greatest challenge to cigarette-makers in the last two decades has been how to make a low tar cigarette that wasn't 'low'; in taste. It seemed impossible. *Until now.* After twelve long, hard, often frustrating years, Philip Morris has developed the way to do it. The cigarette is called MERIT. It delivers only 9 mg. tar. One of the lowest tar levels in smoking today." (no bates) (US 4981); Biglan WD, 203:17-207:3.

1977: "New MERIT 100's. Only 12 mg. of tar. Yet packed with extra flavor. The kind of flavor that makes 'low tar, good taste' a reality for 100's smokers." (no bates) (US 5342); Biglan WD, 203:17-207:3.

1978: "Merit Solving Smoker Dilemma." (US 5704); Biglan WD, 203:17-207:3; (no bates) (US 5483).

1978: "'Best Move Yet.' MERIT['s] . . . . ability to satisfy over long periods of time could be the most important evidence to date that MERIT is what it claims to be: The first real alternative for high tar smokers." (no bates) (US 5951); see also (no bates) (US 6112); (no bates) (US 6131); Biglan WD, 203:17-207:3.

1978: "Research concludes MERIT taste makes move from high tar to low tar smoking unexpectedly easy." (no bates) (US 5803); Biglan WD, 203:17-207:3.

1988: "You Won't Miss What You'll Miss." (no bates) (US 8505).

1988: "Our Less Is Your Gain." (no bates) (US 8556).

1989: "Smoke This Page. If That Reminds You of Your Ultra Lights, Read This Ad." (no bates) (US 8711).

1994: "You can do it! You really can switch down to lower tar and enjoy satisfying taste." (no bates) (US 12892); Biglan WD, 203:17-207:3; 970469347-9474 at 9421; (no bates) (US 85104).

1994: "Yes you can! You can switch down to lower tar and still get satisfying taste. You've got MERIT." (no bates) (US 9241) (emphasis in original); Bonhomme WD, 30:6-18.

2437. A September 16, 1987 Leo Burnett U.S.A. research report for Philip Morris, titled "Merit Brand Image Study," noted in the section "Attitudes Toward Smoking" that "[w]hile health concerns are motivating factor, taste/enjoyment are still key." A summary at the end of the report stated: "Merit smokers we sampled are committed smokers . . . However, they have mixed feelings

about smoking -- health concerns/loss of control . . ." and their switching to Merit "provides health reassurance." 2072735414-5500 at 5431, 5492 (US 41598); Bonhomme WD, 27:22-28:17.

2438. A January 1991 document, titled "Merit Positioning Study," assessed "perceptions of Merit's positioning within the low tar category." Under the heading "What Down Switchers want in a cigarette," the document noted that approximately half of downswitchers found "very low tar" (50%) and "very low nicotine" (48%) to be "absolutely essential." 2048976844-6906 at 6850, 6890, 6892 (US 85004).

2439. Consumer feedback confirmed the successful delivery of Philip Morris's intended message. An August 1991 report prepared for Philip Morris, titled "Merit Positioning Strategy Development," observed that, "[i]n addition to advantages associated with lesser tar and nicotine delivery, low tar users note that such brands allow higher volume, deeper inhalation smoking with few tradeoffs." The report also commented that Ultra Light users "note their further downswitching to ultralights from lights for health benefits primarily." The report noted that Merit users "like perceiving [Merit cigarettes] as rather safe, sensible, middle-of-the-road, non-threatening, and generating the feeling that they aren't doing anything wrong." 2072735123-5247 at 5131, 5132 (US 41596).

2440. An internal Philip Morris memorandum dated May 16, 1995 from Lauren Herman, an employee in the market information and planning group, to Norma Suter Drew, then acting Brand Manager for Merit cigarettes, titled "Merit Alternative Campaign Qualitative Exploratory -- Final Report," discussed the results of research conducted to gauge consumer interest and appeal of Merit marketing campaigns. Under the heading "Key Findings," Herman reported that "Competitive smokers appear to be most likely to respond to the concepts that offer the clearest product cues.

These smokers require the most rational reason why they should smoke Merit, (e.g. lower tar)." Under the heading "Implications," Herman recommended that "[s]ince low tar is essentially the core of these alternative concepts, the low tar message should be more pronounced." 2063724960-4962 at 4960, 4962 (US 39842).

2441. A September 4, 1996 Leo Burnett document reported on an August 27, 1996 meeting held in New York between Leo Burnett and Philip Morris (Jose de Castro, Suzanne LeVan, and Jodi Sansone) to discuss Merit marketing for 1997. The document acknowledged that past Merit marketing focused more heavily on communicating that it is low in tar, and less on sending a message about the brand's taste. Under the heading "Discussion/Agreements Reached," the document stated: "Client/agency agreed that we need to move the bar forward in terms of taste communication, as currently it is not as recognizable/prominent as low tar in Merit awareness ratings, yet it is a key driver of consumer choice/purchase." 2071522201-2203 at 2201 (US 27299).

2442. A February 9, 1998 draft research report prepared for Philip Morris by the research firm Kane, Bortree & Associates, titled "Merit Strategic Revitalization Plan, Stage I Learnings," analyzed ways to "build Merit's share of the low tar segment." 2063687348-7527 at 7350, 7353-7356 (US 39820*); see also 2063686921-6942 at 6934 (US 88629) ("Kane Bortree makes use of a variety of innovative, psychologically derived techniques. These techniques allow us to get inside the consumers' heads"). The 1998 report discussed two types of low tar smokers who find the taste of light cigarettes unsatisfying and do not feel comfortable smoking: "Quitters" and "Validation Seekers." The report cited Merit Ultima, Merit Ultra Lights, Camel Lights, and Marlboro Ultra Lights as brands for those who do not feel comfortable smoking. 2063687348-7527 at 7356, 7357, 7359 (US 39820*).

2443. The February 1998 draft research report was followed by a March 31, 1998 draft report by Kane, Bortree & Associates, titled "Merit Strategic Revitalization Plan, Stage II Learnings/Stage III Recommendations." Under the heading "Positioning Learnings to Date," the March report noted that "'Light' is a bigger promise than low-tar with opportunity for broad appeal" because it conveys "Tastes light," "Feels light," "Low tar," and "Better for you." The report recommended that Merit's "positioning should convey acceptability of smoking." The report further discussed a contemplated "Additive Free" Merit line extension, and noted that: "Additive-free is an excellent fit with 'light'" because it "[r]einforces 'better for you.'" 2080486996-7108 at 7010-12 (US 45330); Bonhomme WD, 17:2-16.

2444. A May 14, 1998 internal Philip Morris document, titled "Merit Brand Initiatives," incorporated the findings of the March 31, 1998 Kane, Bortree & Associates study, recreating that study's representation of the four segments of the lights market and stated, under the heading "Merit Strategic Positioning Copy Strategy": "What we would like smokers to believe -- Merit offers a viable alternative to Light brands with full flavor heritage." 2070657640-7650 at 7644, 7646 (US 22015).

2445. Marlboro Ultra Lights. A June 1979 draft report prepared for Philip Morris by Goldstein/Krall Marketing Resources, Inc., titled "Smokers' Reactions to an Ultra Light Brand Extension for Marlboro," discloses that Philip Morris began conducting consumer marketing research on a new cigarette line extension of the Marlboro brand, Marlboro Ultra Lights, as early as 1979. Discussing the reactions of Marlboro Red smokers to the concept of Marlboro Ultra Lights, the report stated:

> The introduction of a Marlboro Ultra Light brand appeared to be viewed in the following manner: . . . An attempt to produce a safer cigarette for those interested in cutting down their smoking and in a lighter cigarette. . . . A "smart" way to prevent the loss of or switching of Marlboro smokers to other brands if they are currently unsatisfied in their quest for a lighter/safer cigarette.

2041097977-7999 at 7984 (US 85006); Bonhomme WD, 31:10-34:17.

2446. Under the heading "How Marlboro Ultra Lights Were Positioned," the report stated: The following is a description of a brand image developed from the discussions [with consumers] in all three groups: . . . Safer cigarette -- less tar and nicotine. . . . Probably a better/innovative filter." The report further stated: "With regard to smoker image, respondents suggested: . . . People cutting down for health reasons/people trying to quit. More concerned people (about health). More aware people (those reading the numbers in the ads)." 2041097977-7999 at 7987 (US 85006).

2447. On May 1, 1989, Philip Morris began test marketing Marlboro Ultra Lights, which it positioned as delivering 6 mg. of tar (per the FTC Method). In a February 8, 1989 internal Philip Morris memorandum, Richard Camisa delivered to colleagues at Philip Morris the "Marlboro Ultra Lights Marketing Plan Overview." The overview set forth the target audience for Marlboro Ultra Lights, noting that

> [c]onsumer research suggests that there are vast numbers of smokers, including Marlboro smokers, who are seeking lower tar but who are also unwilling to sacrifice flavor and/or smoking satisfaction in return. The opportunity for Marlboro lies in its ability to offer smokers the lower tar they seek with less trade off in taste.

2070624747-4763 at 4748 (US 22014).

2448. The document further stated: "A blue/gray pack with white tipping . . . provides traditional ultra low tar reassurance." Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, confirmed that "low tar reassurance," as used in the document, referred to the fact that:

> Within the context of selecting a pack color for Marlboro Ultra Lights there was discussion about what pack color would make it readily apparent that the brand was an ultra low tar. Many of the lights and low tar products used blue packaging as a signal of being lower tar, so there were discussions about making sure that advertising and packaging easily communicated that Marlboro Ultra Lights was an ultra low tar.

2070624747-4763 at 4748 (US 22014); Bonhomme WD, 64:1-6.

2449. Philip Morris conducted research to determine how cigarette pack and tipping color influenced consumer perceptions of Marlboro Ultra Lights' strength and tar level. In a June 25, 1990 memorandum from Jeanne Bonhomme, then a contract consumer marketing researcher for Philip Morris, to Richard Camisa, titled "Marlboro Ultra Lights Portfolio Test," Bonhomme reported the results of a cigarette ad pack test conducted on consumers for Marlboro Ultra Lights. Bonhomme reported that for consumers tested, "[p]redictably, expectations about [Marlboro Ultra Lights'] strength and tar level were influenced by the pack and tipping color. Red/Cork was viewed as being strongest tasting and higher in tar than the two white tipped options, particularly Blue/White." 2070197338-7340 at 7338 (US 40255); Bonhomme WD, 21:4-22:4; see also 2071535027-5090 at 5033, 5043 (US 22020).

2450. Marlboro Ultra Lights was launched nationally on January 28, 1998, and Philip Morris continues to market and sell Marlboro Ultra Lights to this day. Philip Morris targeted all Marlboro smokers with Marlboro Ultra Lights, not just current low tar smokers. Norris PD, United States v. Philip Morris, 7/31/03, 132:17-23, 162:6-165:8, 121:13-125:11; Bonhomme WD, 34:15-17.

2451. Marlboro Medium. In June 1991, Philip Morris launched Marlboro Medium, a lower tar line extension of the Marlboro brand. A September 1991 Philip Morris document, titled "Background Information on PM Brands," stated that Marlboro Medium was aimed at "consumers still looking for a satisfying low tar cigarette with flavor." 2070143190-4433 at 3206 (US 27257).

2452. Philip Morris's November 1994 continuous smoker tracking survey (a random smoker phone survey Philip Morris has conducted continuously since the 1980s) discusses Philip Morris's targeting of health-conscious smokers. The document stated that male smokers of Marlboro Medium age 18-24 "need affirmation as smokers" and may be candidates for ultra lights. In this survey, Philip Morris created a profile of 18-24 year old male Marlboro Flavor Low (Marlboro Medium) smokers as individuals who are less comfortable with smoking, feel pressure to quit, and do not enjoy some of the "image benefits" to the same degree as other smokers. The Marlboro Flavor Low (Marlboro Medium) male smokers age 18-24 are more likely to cite the low tar level as influential in determining their regular brand. 2048735500-5604 at 5562, 5543, 5548-5549 (US 21971).

2453. An internal February 10, 1995 Philip Morris memorandum from Marian Wood to Tom Keim, titled "Marlboro Medium Brand Imagery," revealed that in 1991, Philip Morris spent $50 million on advertising for Marlboro Medium, 36% of Marlboro's total advertising budget for that year. 2063731689-1710 at 1695 (US 79820).

2454. Philip Morris continues to sell Marlboro Medium. Bonhomme WD, 20:1-2.

2455. Parliament. Philip Morris marketed the Parliament brand as a low tar brand featuring a "recessed" filter. A Philip Morris document, titled "Background Information on PM Brands," dated September 1991, stated:

> It was during the proliferation of filtered cigarettes in the 1950's that Philip Morris gave Parliament its hallmark of today -- the recessed filter. Unlike ordinary filter tip cigarettes, Parliament's famous recessed filter kept tar from touching the smoker's lips. Since the addition of this unique filter, Parliament smokers have enjoyed their brand's approach to smoking: clean, sophisticated, and distinctive. In 1979, Parliament's name was changed to Parliament Lights. This change reflected the brand's low tar status and helped capitalize on a growing low tar trend.

A "Benefit Statement" in the document was: "Parliament Lights -- since tar on the filter tip never touches your lips, the taste is refreshingly light." 2070143190-4433 at 3217-3218, 3222 (US 27257).

2456. A 1975 Parliament advertisement in Sports Illustrated magazine stated that, although cigarette holders gave "cleaner taste," there was "[n]o need for a cigarette holder today. Parliament's filter is recessed, so you taste only rich, clean tobacco flavor. It's the neatest trick in smoking." (US 4709); see also (no bates) (US 4885).

2457. A 1977 Parliament advertisement in Cosmopolitan magazine stated:

> As you smoke, tar builds up on the tip of your cigarette filter. That's "filter feedback." Ordinary flush-tipped cigarettes put that tar build-up against your lips. And that's where Parliament has the advantage. Parliament's filter is recessed to keep tar buildup from touching your lips.

ADV029 0247-0249 (US 10614).

2458. As noted in the 1981 FTC Report on cigarette advertising, Philip Morris's Parliament advertisements from the time period preceding the Report (i.e., late 1970s-1981) implied that its "special filters minimize the risks of smoking." FTC, 1981 Report at 2-12 (JD 004744).

2459. Jeanne Bonhomme observed that although the recessed nature of the filter did not further reduce the tar delivery or make the cigarette any less harmful, she could "recall learning that some consumers believed that a recessed filter produced a cigarette that was better for you because

it reduced tar and less tar was perceived to be less of a health risk." A November 23, 1988 Philip Morris USA memorandum co-written by Bonhomme and Karen Eisen, with the subject heading "Parliament Super Lights In-Depths," confirmed that "[f]or many, the recessed filter implied a health benefit -- 'keeps tar away.'" Bonhomme WD, 34:18-35:1; 35:20-36:15; 2071388176-8178 at 8178 (US 40452).

(2) Philip Morris's Research on the Low Tar Cigarette Category

2460. Internal Philip Morris documents show that Philip Morris conducted consumer marketing research not just on individual low tar cigarette brands, but on low tar cigarettes as a category. These documents establish that Philip Morris has long known and intended that its advertisements and marketing for low tar cigarettes, featuring claims of lowered tar and nicotine and "light" and "ultra light" brand descriptors, contributed to and reinforced consumers' mistaken belief that low tar cigarettes are better for their health, and encouraged consumers to smoke them for this reason.

2461. According to Nancy Lund, Senior Vice President of Marketing at Philip Morris, Philip Morris was aware in the 1970s and 1980s that some consumers believed that light/low tar cigarettes were safer than full-flavored cigarettes. She also noted that, during this time period, Philip Morris marketed such cigarettes to these consumers and profited from those sales. Brennan-Lund PD, Price, 9/20/02, 158:6-161:15.

2462. James Morgan, the former CEO of Philip Morris, acknowledged that the trend in the 1970s toward low tar cigarettes was due in large part to consumer perception that they were less hazardous to health than higher tar cigarettes, and specifically admitted that "the consumer was

perceiving in the 1970s lower tar as tied to less hazardous." Although Morgan conceded that "we were aware of that," he admitted that, despite being armed with this knowledge, Philip Morris took no additional steps to counter that mistaken perception. Morgan PD, Price, 6/5/02, 42:16-42:25; 43:2-43:25; 44:2-44:25; 45:2 - 45:25; 63:10-63:25; 64:2-64:25; 65:2-65:21; 1004888470-8484 (US 85009); 502641641-1646 (US 85008).

2463. A May 1976 study prepared for Philip Morris by The Roper Organization, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar Cigarettes," stated:

> [T]his study shows that the smoking public is convinced that to the extent any brands are better for health, it is the low tar brands that are. . . . Low tar brand smokers cite as the most liked characteristic of their brand . . . as compared with smokers of flavor filters, they say it is "better for your health" and cite its "more effective filter. . . ." Brands Thought Better For Health -- The low tar brands have cornered opinion that to the extent any brands are better for your health, they are. . . . Three in ten of all smokers said some brands were better for health than others, and almost half of the low tar brand smokers said this. . . . Furthermore, it is the lower tar content of these brands that make people say they are better for your health.

2024921314-1612 at 1333, 1348, 1352-1353 (US 20403).

2464. A January 1979 study prepared for Philip Morris stated:

> These ultra low tar smokers indicated that they are aware of the low tar levels in their brands and that they switched to them specifically because of advertising calling this fact to their attention. . . . As lower and lower tar brands become available, it would appear smokers are subject to advertising pressure and brand availability, and the opportunity for switching obviously occurs. . . . Characteristics of ultra low tar smokers were: people who want to quit . . . more interested in health. . . . When asked how they happened to switch to the brand they are now smoking many of the Carlton smokers cited advertising and tar and nicotine ratings. . . . When Carlton ads were shown in the groups, it was obvious that most respondents had seen them and were aware of the copy claims. It was these claims and other Carlton ads to which smokers referred prior to exposure and

> when discussing the fact that advertising had been one of the factors causing them to try the brand. This would seem to indicate that ultra low tar smokers are paying attention to and being attracted by the advertising. Respondents . . . appeared to react favorably to the Triumph ads. They said that 3 mg. tar was within the ultra low tar range implying that it represented a safer cigarette.

2040066740-6766 at 6747, 6748, 6751-52, 6754, 6756, 6757 (US 20435).

2465. A March 1979 report prepared for Philip Morris, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar and Menthol Cigarettes," stated:

> The appeal of low tars is simple and single -- better for you, less harmful, easier on the lungs, throat, etc. The weakness or objection to low tars is also simple -- tasteless, lacking in satisfaction, and the related factor of hard to draw on. At the same time there is clear evidence that if the appeal -- safety -- is strong enough, people can over time grow used to, and in some cases come to actually like, the main objection to low tars -- low taste.

2049455309-5318 at 5315 (US 22218).

2466. A June 1979 draft report prepared for Philip Morris by Goldstein/Krall Marketing Resources, Inc., titled "Smokers' Reactions to an Ultra Light Brand Extension for Marlboro," stated, under the heading "Awareness of Tar and Nicotine Levels":

> One of the points on which respondents were probed when first shown the array of packs used as stimuli was their awareness of tar and nicotine levels for the brands. While most smokers in the groups could not give correct tar figures for each brand, they seemed to know a general range in which brands fell. . . . Respondents attributed their knowledge . . . to advertising. Evidently, the heavy weight of advertising concentrated against tar claims has penetrated these various groups of smokers to some extent.

2041097977-7999 at 7990 (US 85006).

2467. A July 27, 1987 Philip Morris Asia letter from Joe Tcheng to Cecil Yow stated:

> The mild/lights segment is the fastest growing segment in the Hong Kong market. . . . There is definitely a growing health consciousness in the market due to regular Government anti-smoking campaign. . . . Research shows that Lights = Mild = Less Harmful. Government's anti-smoking measures will intensify and . . . [t]his may further increase health concern and it is very likely that the mild/lights segment will continue its rapid growth.

2504046594-6601 at 6594 (US 85012).

2468. A 1990 Philip Morris transcript of a conversation between Richard Carchman, then Principal Scientist, and John Tindall acknowledged that Philip Morris had used filters and claims of low tar as health reassurance mechanisms and that cigarette sales were tied to health concerns. Tindall stated:

> [T]he things that happened in the market in the past I put under basically three groups. One has to do with people's health concerns which we addressed first through filters and then through low tar and ultra low tar. . . . The main thing that has happened in the market over which we have some control is that we have addressed peoples' health concerns through the number of steps I have mentioned. . . . the[re] are opportunities in the market now in the area of smoking and health. People's perceptions of cigarettes with regard to their effects on them. . . . [I]f we are going to do something significant enough to possibly even reverse the declining sales in the market, we're going to have to make advances in the area of people's health.

2023148544-8550 at 8545 (US 85098).

2469. A 1990 Philip Morris document relating to "New Brand Development" in Pakistan revealed Philip Morris's knowledge that cigarette packaging can communicate "mildness" to consumers anxious about the "health/safety issue":

> There was little doubt that the pack design with its reliance upon the central gold panel against a white background effectively projected the impression of a very mild cigarette. . . . The evidence as a whole seemed to indicate, in fact, that anxiety about the health safety issue had not yet reached the level where avowedly very mild

> cigarettes . . . could expect an extensive franchise. . . . Over time, anxiety levels would rise, as they have done in other markets and when this happened mild/light brands . . . would begin to achieve respectable sales.

2504008471-8519 at 8478, 8518 (US 85013).

2470. Philip Morris USA's 1992-1996 Strategic Plan for Research and Development stated, under the heading "Perceived Health Concerns," that: "An analysis of the cigarette market over the last 50 years suggests that there have been only two major influences on smokers buying patterns; namely smokers seeking to address their perceived health concerns and smokers seeking price relief." The document further stated:

> The development of products which address perceived health concerns . . . is very much an R&D issue. Previous product changes driven by "perceived health concerns" were the growth of filtered products from 3 to 70% of the market between 1945 and 1953, and the growth of the low tar segment to nearly 50% of the market by 1985. . . . Filtered cigarettes now make up over 96% of the market.

2021529528-9638 at 9608 (US 85084).

(3) Philip Morris's Public Statements About Low Tar Cigarettes

2471. Jeanne Bonhomme, Director of Consumer Insights for Philip Morris, stated that to her knowledge:

- "Philip Morris has always denied publicly that it markets low tar cigarettes as safe or safer than full-flavor brands;" and
- "Philip Morris has always denied publicly that it uses brand descriptors such as 'light' and 'ultra light' to communicate they are safe or safer than full-flavor brands."

Bonhomme WD, 11:18-20; 12:12-15.

2472. A November 14, 1994 fax from Censydiam USA to Philip Morris advised that with respect to the "Health & Fitness" trend: "Outside pressures have made consumers more concerned about health and fitness. They are interested in finding 'user friendly' ways of making their lives healthier without making dramatic changes in their current lifestyles." As examples of the consumer health trend, the document noted increased consumer interest in package labeling that included references to "low/no fat/salt" and "all natural," as well as an increase in the sale of products considered "good for you" such as fruits and vegetables. A 1994 Strategic Trend Analysis prepared for Philip Morris by Censydiam USA illustrating the "Health & Fitness" trend recognized how Defendants had capitalized on this trend, noting that: "Implications for Tobacco Companies: While the trend toward health and fitness is still alive, it has tapered off from its rage in the 1980's. The 1990's focus on moderation. The importance of low/ultra low products should continue in the near future." 2063704131-4132 (US 39829); 2063704088-4091 at 4090-4091 (US 39827); 2063704135-4136 (US 27135).

2473. Faxes dated November 17, 1994 and December 7, 1994 from Thomas R. Keen of the consumer research company Censydiam USA to Marian Halpern, an employee in the Philip Morris consumer marketing research department, described an agreement with Philip Morris whereby Censydiam would produce "write-ups" to Philip Morris on consumer "trends," including, among others, "Health & Fitness," "Delusions of Youth & Beauty," "Dieting Dilemma," and "Quality of Life."

2474. In May 1996, representatives from Philip Morris, including Philip Morris General Counsel, Denise Keane, RJR, B&W, and Lorillard met with the FTC to discuss in part "how Philip Morris and other tobacco companies use FTC test results in their advertising," and "whether the FTC

test method could be modified to more accurately reflect actual smoker intake." At that meeting, "the FTC referred to published research showing that smokers believe brand descriptors like 'low tar' and 'light' convey relative safety messages." The FTC requested that the industry representatives provide the FTC with "any information the companies had concerning the issue of consumer perception of low tar, so-called "light" cigarettes." Despite the decades of consumer and marketing research conducted or commissioned by Philip Morris concerning consumers' interpretation of these terms (see Section V(E)(3)(a), supra), Keane testified that "Philip Morris did not provide any such information" to the FTC. Keane WD, 46:18- 48:23; Keane TT, 1/18/05, 10369:20-10370:25; 2048216131-6135 at 6134 (US 38655).

2475. A September 10, 1999 Davis Polk & Wardwell memorandum to Mark Berlind of Philip Morris includes "a series of questions that might arise, as well as possible answers, relating to low delivery cigarettes and brand descriptors." In answer to the question "If the brand descriptors do not indicate what smokers actually inhale or serve as a point of comparison among competing brands, what purpose do they serve?," the memorandum proposed responding that Philip Morris's brand descriptors do communicate that Philip Morris's lower tar brands deliver less tar and nicotine than full-flavor brands: "For example, the 'Lights' in Marlboro Lights indicates that the smoke yields for Marlboro Lights is lower than that for Marlboro, and Marlboro Ultra Lights delivers less smoke 'tar' and nicotine than Marlboro Lights." 2072675414-5417 at 5415 (US 27347).

2476. This document's proposed response to the question whether "Philip Morris ever intend[ed] to or propose[d] to take advantage of" the "perception" of consumers that "lower-yielding brands [are] 'safe' or 'safer' than full-flavor brands" was that "Philip Morris has never intended [to] or proposed to take advantage of this perception. (although over time various individuals in the

Company may have suggested that the Company do so)[.]" 2072675414-5417 at 5415-5416 (US 27347) (bracketed material in original).

2477. Following publication of the NCI's Monograph 13 in November 2001, ABC News.com requested information from Philip Morris regarding low tar cigarettes and, as stated in a November 26, 2001 email from Philip Morris employee Christina Malito, "whether or not there are real health benefits to them." In an internal e-mail reply sent that same day, Ellen Merlo, then Senior Vice President of Corporate Affairs at Philip Morris and a decades-long Philip Morris employee, wrote that Philip Morris's response to the inquiry should be: "[W]e make no claims. Started producing them in response to consumer demand for lighter tasting cigarettes." 2085802175-2176A at 2175B (US 85123*).

2478. Merlo later stated:

> [A]s far as Philip Morris's position publicly, we would advise people not to in any way infer that light or lighter cigarettes are any safer than full flavor cigarettes . . . my communication, both through our website and in any public statements that I make, would be that the general public should not in any way infer that light or lighter means that that cigarette is safer than a full-flavor cigarette.

Merlo PD, Price, 10/2/02, 96:24-101:24.

2479. According to Nancy Brennan-Lund, then Senior Vice President of Marketing at Philip Morris USA, Philip Morris's use of the word "lights" in its marketing of low tar cigarettes is intended to mean a lighter tasting cigarette. Brennan-Lund PD, Price, 9/20/02, 19:21-24.

2480. As recently as 2003 and 2004, the Board of Directors of Altria (formerly known as Philip Morris Companies), publicly made misleading statements to its shareholders and to the U.S. Securities and Exchange Commission ("SEC") in documents filed with the SEC. In a March 17,

2003 Proxy Statement, a group of Altria shareholders proposed to the Altria Board of Directors that "the Board find appropriate ways of informing our customers about the actual health risks of smoking 'light and ultra light' cigarettes to disassociate them from any belief that such products are safer and deliver less tar and nicotine." The shareholder proposal cited Monograph 13 which found that "most smokers believe 'Lights' and 'Ultra Lights' are less harsh and deliver less tar and nicotine," and that, "on average, smokers believe that Lights afford a 25% reduction in risk, and Ultra Lights a 33% reduction in risk;" the Canadian Government's conclusion that the terms low tar, light and ultra light are deceptive to the consumer; and the World Health Organization's recommendation that the terms light and ultra light be banned as misleading. The Board of Directors of Altria recommended that shareholders vote against this proposal, stating: "for those adults who choose to smoke, PM USA and PMI believe descriptors such as 'low-tar,' 'mild,' and 'light' serve as useful points of comparison for cigarette brands regarding characteristics such as strength of taste and reported tar yield." (no bates) (US 87741).

2481. In May 2004, Philip Morris placed the following statement on its website: "Philip Morris USA does not imply in its marketing, and smokers should not assume, that lower-yielding brands are safe or safer than full-flavor brands. There is no safe cigarette." TLT0770066-0088 at 0077 (US 72408); accord TT, 2/24/05, 14340:19-20 (counsel for Defendants referring to Philip Morris website and stating "we don't tell people that these cigarettes are safer"); see also PM3000185282-5319 at 5289, 5291-92 (US 88095).

2482. Philip Morris further states on its website:

> Because smokers have varying preferences, Philip Morris USA offers products with differing yields of tar and nicotine, as measured by machine methods. We believe that it is appropriate to continue to

> differentiate our brands on this basis and that descriptors such as "lights," "ultra-lights," "medium" and "mild" help communicate these differences to adult smokers.

TLT0770066-0088 at 0077 (US 72408); see also PM3000185282-5319 at 5289 (June 2003 Philip Morris website stating same and further stating "we believe that [low tar brand] descriptors serve as useful points of comparison for cigarette brands regarding characteristics such as strength of taste and reported tar yields . . .") (US 88095).

2483. Similarly, on August 22, 2002, although Geoffrey Bible, former CEO of Philip Morris Companies, claimed he had never been presented with any data as to how consumers actually perceive brand descriptors, he testified that he believes that they "simply convey taste preferences." Bible PD, United States v. Philip Morris, 8/22/02, 165:3-166:7.

b. R.J. Reynolds

(1) R.J. Reynolds's Low Tar Marketing Techniques

2484. Camel Lights advertisements in the 1980s offered the "solution" of low tar cigarettes that offered "[s]atisfaction" by providing acceptable "taste," which was lacking in low tar cigarettes:

> 1980: "Discover Camel Lights. Satisfaction. Low tar."
>
> 1980: "Discover satisfaction. Camel Lights. The Camel World of satisfaction comes to low tar smoking. . . . Camel Lights brings the solution to taste in low tar."
>
> 1981: "Camel Lights. Low tar. Camel taste."
>
> 1981: "Camel Lights. . . . Same low tar, same Camel taste."

519315781-5797 at 5788-5789, 5792-5793, 5795, 5796 (US 79583).

2485. RJR's 1994 marketing research on Camel Special Lights advertising ("Concept #17: The Special Lights Filter. Takes out impurities other filters can't touch") included the following statements from smokers that the advertisement conveyed to them:

> "It sounds like it's taking the poison out of the cigarette."
>
> "Takes out the impurities -- makes it sound like a healthier cigarette."
>
> "The special filter would clean the cigarette and make it a healthier cigarette to smoke."
>
> "It makes me feel I can enjoy smoking without harming myself because the filter takes out impurities. It sounds safer to smoke." "[I]t's safer for you."
>
> "Sounds like it would save your lungs."

509619620-9625 at 9620, 9622, 9624, 9625 (US 85015).

2486. RJR marketed Doral as a low tar cigarette brand in the 1970s. A January 1972 Doral advertisement in Newsweek magazine stated: "Doral, the low 'tar' and nicotine cigarette . . . [t]he filter system you'd need a scientist to explain. . . . But Doral says it in two words: 'taste me.'" (US 87452); Schindler WD, 68:12-13.

2487. A June 1975 RJR Doral advertisement in Sports Illustrated magazine analogized smoking low tar cigarettes to a "Doral Diet." The advertisement, depicting a man lighting a cigarette, stated:

> How I lost 700 mg. of "tar" the first week . . . without losing out on taste. I'm not too big in the willpower department. But I lost 700 milligrams of "tar" the first week on what I call "The Doral Diet." Now I can still enjoy smoking, and cut down on 'tar' and nicotine, too. . . . For a pack a day smoker like me, my Doral Diet really ads up.

(US 4746); Schindler WD, 68:14-69:9; 03496228-6630 at 6329 (US 20057).

2488. A June 24, 1975 advertising research report for the Doral "Diet Filter" advertising campaign prepared by Reynolds's Marketing Research Department and "conducted to aid in evaluating six 'Doral Filter' executions in recall impact and communication," recorded smokers' impressions and perceptions of Doral advertisements. 501457575-7706 at 7576 (US 22150). Consumers had the following perceptions of the campaign:

> The ad said something about a diet of tar and nicotine. My impression was that they had less tar and nicotine than other brands. The main idea was that they're better for you because of the cut-down in tar and nicotine. (Id. at 7581).
>
> My impression was that they claim it's safer to smoke Doral than other cigarettes. (Id. at 7585).
>
> The main idea was that it's safer to smoke. (Id. at 7586).
>
> I got the impression that they want you to switch to Dorals and save your health. (Id. at 7587).
>
> They brought out the idea that it might be a good cigarette to try if you're worried about the amount of "tar" and nicotine your lungs are absorbing. The main idea was to save your health, but if you still want to smoke, smoke Doral. (Id. at 7588).
>
> It showed a man sitting in a chair and lighting up a Doral. It said that it had less "tar," but the taste didn't change. The impression it brought out was just the fact that it's a safer cigarette for your health, if you have to smoke. They were trying to get across that it has less "tar," and is still as good in taste as the other cigarettes. (Id. at 7591).
>
> The main idea was that it's less dangerous to your health than any other cigarette. (Id. at 7593).
>
> A man was smoking a cigarette. The ad said that Doral is lower in tar and nicotine than any other cigarette. The impression that came across was that they would be less harmful if you smoked them. There's a lower tar and nicotine count. The main idea of the ad was that smoking Doral is better for your health. (Id. at 7608).

> Their main idea was that they would still taste good, but they're low in tar and nicotine and would consequently be better for you. (Id. at 7611).
>
> The main idea was you have less chance of danger to your health with Doral than another brand. (Id. at 7613).
>
> My impression was it's much less of a health risk. (Id. at 7613).

Schindler WD, 69:14-71:21.

2489. Two months after this Doral Diet research report, RJR placed another Doral Diet advertisement in the August 4, 1975 edition of Sports Illustrated magazine that doubled the claimed loss of tar -- to 1400 mg. -- compared to the June 1975 advertisement, (US 4746). The August 1975 advertisement featured the headline: "How I lost 1400 mg. of 'tar' the first week . . . without losing out on taste." (no bates) (US 4789); Schindler WD, 72:5-17.

2490. A 1975 study regarding the effectiveness of another Doral advertising campaign found that: "Attitude diagnostics indicated that smokers had no problem understanding the 'Wise Up' campaign. Respondents felt that 'Wise Up's' main point was a low tar and nicotine claim (84%) with some taste mentions (24%)." By way of example, some of the respondents noted:

> The main idea they were trying to get across was it's less dangerous to the health and better tasting.
>
> I guess the idea is that Doral is safer to smoke, as it has less tar and nicotine than others.
>
> My impression was that Doral is less harmful.
>
> The main idea they were trying to get across was to smarten up because the cigarettes have less tar.
>
> The main point of the ad was you can have good taste and be a little less harmful, too.

501719738-9761 at 9738, 9748-49, 9752, 9755 (US 22075); Schindler WD, 72:18-73:19.

2491. A July 27, 1976 letter to RJR employee Ed Blackmer discussed Doral's market positioning. The letter noted that the

> smoker we are going after must be concerned about the health controversy. It is understood that we cannot necessarily target our media against "concerned" smokers, but that this must be accomplished via creative. Nevertheless, we believe it is an important factor in further "segmenting" our target audience.

50224143-4151 at 4147-4148 (US 22103).

2492. In discussing a Doral 4 advertising research proposal in June 1977, the copy strategy was described as: "Convince the Prime Prospect that new Doral 4 is the solution to his concern about the smoking controversy because it offers the optimum combination of ultra-low tar and taste satisfaction." As a result, the advertising was to be addressed to smokers "seriously concerned about the alleged hazards of smoking," and who, "because of [their] concern, seek[] one of the lowest tar levels available (or an ultra-low level)." 501533008-3011 (US 22107); Orlowsky WD, 69:1-23.

2493. Martin Orlowsky, former Executive Vice President of Marketing and Sales for RJR, admitted that RJR's advertisements for Vantage were targeted toward smokers who, due to their concerns about health risks, were seeking a low-tar cigarette. Orlowsky TT, 10/13/04, 2288:24-2289:19.

2494. Vantage advertisements from the 1970s used purported testimonials characterizing Vantage as delivering low tar to smokers and thereby reducing the health risk from smoking:

> 1972: "Why I smoke Vantage. I read the papers. I watch TV. I hear the things some of them are saying about smoking. . . . And then, frankly, all that the critics say about 'tar' and nicotine has to make an impression. Fact is, they don't make me feel

guilty about smoking Vantage." (no bates) (US 3683); Biglan WD, 377:12-379:22.

1977: "Smoking. Here's what I'm doing about it . . . like a lot of people I'm . . . aware of what's being said [about the harm of cigarette smoking]. And like a lot of people I began searching for a cigarette that could give me the taste I like with less tar. . . . Vantage. It's everything the ads say it is. . . . What am I doing about smoking? I'm smoking Vantage." (no bates) (US 5578); see also (no bates) (US 324) (1978 Vantage advertisement in Rolling Stone magazine noting same).

1977: "Vantage is solving a lot of my problems about smoking. (no bates) (US 239).

1977: "Vantage is changing a lot of my feelings about smoking. . . . I'm not living in some ivory tower. I hear the things being said against high-tar smoking as well as the next guy. And so I started looking for a low-tar smoke that had some honest-to-goodness cigarette taste. . . . As far as I'm concerned, when I switched to Vantage, I changed to a cigarette I could enjoy." (no bates) (US 87456).

1977: "My wife got me to switch to Vantage. . . . My wife . . . would remind me of the stories being told about high-tar cigarettes. Well, I began looking into those new low-tar cigarettes. . . . [Vantage] tasted really good and they actually had less than half the tar of my old brand. . . . So now, I smoke Vantage. I get the taste I want and the low tar . . . ." (no bates) (US 87457).

1978: "'Why I choose to smoke. . . . I'm not deaf to what's being said about tar. So I searched out a cigarette that would give me taste with low tar. . . . Vantage has all the taste I enjoy yet, surprisingly, much less tar than my old brand." ADV017 1589-1591 (US 5756).

1978: "'Vantage gives us more taste and less to argue about. My husband and I . . . [are] both aware of the things being said against high tar. So there we were facing each other every day, smoking our high-tar cigarettes and daring each other to switch to something lower. . . . Today, we both smoke Vantage. You could say we're getting less tar and we're

getting along -- with Vantage." ADV108 0001-0003 (US 87504).

1978: "These days, why do I smoke? . . . . With all the talk about smoking and high tar, it didn't take much imagination for me to conclude that the cigarette of the future would taste good and probably be low in tar as well. . . . Then I discovered Vantage. It was my kind of cigarette. It gave me taste. Pleasure. And the low tar I was looking for." (no bates) (US 295).

1979: "New Vantage Ultra Lights. Ultra taste. Never-before, silky smooth, truly satisfying taste -- in an ultra low tar cigarette! (And we do mean ultra low. At only 6 mg of tar, it's lower than 90% of all the cigarettes that people buy.) How is it possible? Through a unique blend of very select, very flavorful tobaccos. That's the Ultra Cigarette -- new Vantage Ultra Lights from Vantage." (no bates) (US 6255); (no bates) (US 6286); Biglan WD, 377:12-379:22.

1988: "Vantage Ultra Lights. How can anything so ultra light taste so ultra good? Find out for yourself. Try a pack today." (no bates) (US 1613); Biglan WD, 377:12-379:22.

See also Orlowsky WD, 73:1-76:22 (discussing US 5578; 324; 239; 87456; 87457; and 295); 76:23-77:11 (discussing US 6255); 77:12-78:21 (discussing US 5756 and 87504); Orlowsky TT, 10/13/04 2284:14-2285:20 (discussing US 87504).

2495. The following advertisements for Vantage from the 1970s are clearly encouraging health conscious smokers to switch to Vantage:

1974: "Maybe the people who criticize smoking should stare the facts in the face. Then they might recommend that if you've decided to smoke, but are concerned about 'tar' and nicotine, you might smoke Vantage. Vantage offers smokers the rich, tobacco flavor they've come to appreciate. With a substantial cut in 'tar' and nicotine. So if you're one of those smokers who is now deciding between high 'tar' and nicotine cigarettes that taste good, and low 'tar' and nicotine cigarettes that taste like nothing, you might appreciate Vantage. . . . Vantage is

> both high in flavor and low in ‘tar' and nicotine." 03496228-6630 at 6313 (US 20057).
>
> 1976: "Are you still smoking? In the years since the criticism against smoking first appeared, many people have given up cigarettes. But many more people haven't. . . . [W]e'd like to talk to. . . . [t]hat even larger group of people who are still smoking today. If you're a smoker, you've probably heard the charges leveled against ‘tar' and nicotine. You may have become concerned. And chances are you even tried to do something about it. Like trying . . . low ‘tar' and nicotine cigarettes. . . . Vantage cuts down substantially on the ‘tar' and nicotine you may have become concerned about. . . . So, if you still smoke, but would like to cut down on ‘tar' and nicotine, Vantage is one cigarette you should seriously consider."

500713420-3420 (US 48350).

2496. An internal February 11, 1975 B&W memorandum by "J.V.B." commenting on RJR's Vantage advertisements stated that RJR's advertisement ("Why do you smoke? With what you've been hearing about smoking these days, you probably wonder sometimes why you smoke at all") was "address[ing] the health issue for competitive purposes." 690007757-7760 at 7759 (US 21039).

2497. An April 19, 1978 memorandum states that "Vantage has traditionally limited its target market to ‘concerned' full flavor smokers." 500210073-0075 (US 22108).

2498. In a 1981 memorandum to M.M. Sheridan, titled "Reactions to the VANTAGE/Merit Image Study," K.A. Schmitt reported that, based upon the study, "smokers in our target category have two primary product desires: a lower tar product which addresses their safety/health concerns, and a product which provides taste satisfaction." The memorandum further reported that "VANTAGE is seen as not dealing as directly or effectively with the health/safety concerns of the consumer as Merit. Our current advertising approach focuses much more heavily upon the

taste/pleasure aspects of our brand than on the safety/health aspects." As a result, the memorandum recommended that Vantage marketing be modified to better "target" smokers with health concerns: "Perhaps a more balanced approach is needed, both to tone down the perceptions of harshness and to renew the belief that VANTAGE does indeed address the target consumer's health/safety concerns." 523474848-4851 at 4848 (US 22156); Orlowsky WD, 71:15-72:16.

2499. An August 1981 consumer research study, titled "Vantage Personalities," prepared for RJR by Social Research, Inc., noted that people in the Vantage target market "have very definite concerns about the alleged health hazards connected with smoking. It is these qualms that have prompted many of them to seek out lower tar brands." That report likewise noted that the target market

> abandoned [] harsher brands in search of milder brands with lowered tar and nicotine. This movement was almost always prompted by health concerns. In some cases, people were experiencing actual problems such as coughing, throat irritation, and shortness of breath. Others may not have experienced actual symptoms, but were worried about the publicized alleged health hazards associated with stronger cigarettes.

503148009-8077 at 8006, 8070 (US 22159).

2500. An April 1982 research study, titled "Vantage and Merit Smokers," prepared for RJR by Social Research, Inc., stated:

> <u>Both Vantage and Merit smokers have similar early smoking histories</u> . . . switching to lighter cigarettes to relieve physical symptoms and as an acknowledgment of increased concerns about alleged health hazards. . . . [Quoting a Vantage smoker]: "They are lighter, lower in tar and nicotine. . . . They are satisfying like a full-tar cigarette, but they are better for my health. . . . The filter seems strong and effective as a trap for 'harmful' ingredients." Vantage smokers believe that the filter itself is strong enough to catch these impurities. . . . These ideas make them think the end product is a milder and more "healthful" smoke. . . . [Quoting a Vantage smoker]: "I like the filter because

> there's a lot of it, like it's filtering out a lot of the harmful things, like the tar."

511469097-9250 at 9105, 9116 (US 20842) (emphasis in original); Orlowsky WD, 72:17-23; 81:4-8.

2501. A 1979 study prepared for RJR, titled "An Exploratory Study of Smokers' Comprehension of and Reaction to Several Proposed Winston Lights Campaigns," noted that with respect to one of the Winston Lights advertisements, consumers typically reported that they understood the advertisement to mean: "A low tar cigarette that tastes good, is satisfying and safer." 501071439-1530 at 1453 (US 22110); Orlowsky WD, 83:7-12.

2502. Advertisements for RJR's Now cigarette in the late 1970s and 1980s described Now as "the lowest," "lowest in tar," and "lowest tar champion," and included the following:

> Now. It's a Satisfying Decision.
>
> LOWEST TAR CHAMPION. NOW MENTHOL IS LOWEST By U.S. Gov't. testing method.
>
> NOW is LOWEST Of All Softpack 100's.
> Pick the Lowest. NOW IS LOWEST By U.S. Gov't Testing Method.
>
> WHEN IT COMES TO THE LOWEST IN TAR, ONLY ONE MEASURES UP. NOW IS LOWEST Of All Soft Pack 100s. By U.S. Gov't. testing method.

(no bates) (US 5852) (1978); 970469347-9474 at 9430, 9429, 9427, 9431 (US 85104).

2503. A 1983 Now Brand Image report, prepared for RJR, concluded that health concerns heavily influenced a smoker's decision to choose one brand over another and that smokers perceived lower tar cigarettes as healthier than their full-flavor counterparts. It stated that "[a] major motivation in brand switching has been concern over health. . . . The typical solution to this dilemma is the two pronged approach of trying to cut down and/or moving to a lower tar brand."

The report went on to indicate that, when respondents were asked what the words "low" and "lowest" in the advertisements meant to them, "[t]hey interpret this to mean that the two brands are 'safer' and pose less of a health hazard. Consequently, they reason, this would make the brands more appealing to younger people who are very health conscious or to older, long-time smokers who are concerned about the long-range effects of tobacco." 506671319-1418 at 1379 (US 22160).

(2) R.J. Reynolds's Research on the Low Tar Cigarette Category

2504. Internal RJR documents show that RJR conducted research not just on individual low tar cigarette brands, but on low tar cigarettes as a category. These documents demonstrate that RJR has long known and intended that its advertisements and marketing for low tar cigarettes, featuring claims of lowered tar and nicotine and "light" and "ultra light" brand descriptors, contributed to and reinforced consumers' belief that low tar cigarettes are better for their health, and caused consumers to smoke them for this reason.

2505. A 1974 survey showed that "a substantial majority of smokers said they agreed with the statement, 'low tar and nicotine cigarettes are a major step in making smoking less harmful to their health.'" 501238259-8269 at 8265, 8269, 8271 (US 22072); 501238270-8357 (US 48736).

2506. As part of a 1975 marketing plan to introduce a new low tar Salem product, RJR recognized that "[l]ow numbers are the primary benefit/feature which can solve the concerned smoker's anxiety about health." 50231320-3308 at 3253 (US 22151).

2507. A November 17, 1975 report prepared for RJR by Rosenfeld, Sirowitz & Lawson, Inc., titled "An Evaluation of the 120MM Market and Its Potential for RJR," stated:

> Currently RJR divides the total cigarette market into three basic categories: Full Flavor; Medium Flavor; High Filtration. However,

> the recent rapid growth of the High Filtration segment, may be a signal that the consumer is beginning to be more health conscious than ever before, and will be even more so as time goes on. If this is the case, we believe that consumers will ultimately divide the market into three categories which in their minds would be categorized as: "Least Safe Brands" "Safer Brands" "Safest Brands."

The RJR report defined the "Safer" and "Safest" brand categories as follows:

> Safer Brands: These are brands which are perceived to combine an acceptable level of taste with mildness. Smokers of these cigarettes, while not overtly concerned with health, do switch to them after feeling some physical discomfort from their previous brand. Although they are not aware of T&N numbers, they know they are "moving down" to a milder cigarette.
>
> Safest Brands: Cigarettes in this category are perceived to have a mild taste. Smokers of these brands are very concerned about health and quite aware of T&N numbers. Their concern -- more than any physical discomfort -- causes them to switch to brands with low T&N numbers.

2508. The report further concluded: "We believe that the most dramatic evidence of the growing interest in Safer Cigarettes may be seen in the growth of the various Lights/Milds line extension products." 500671364-1454 at 1402, 1403, 1405 (US 22158) (emphasis in original). The report also stated: "As previous research has indicated, Smokers of Lights/Milds products (designated in this report as Safer Brands) are not aware of T&N numbers. Hence, the fact that a 120MM Lights entry will have high T&N numbers (on a total cigarette basis) should not impede its progress." 500671364-1454 at 1408, 1436-37 (US 22158); Schindler WD, 75:5-13.

2509. A November 16, 1976 RJR document, titled "New Brand Development," recommended introducing a "New, Single-Minded Advertising Campaign" that would "convey our lowest 'tar' benefit." In terms of future plans, the document stated "[f]or example, in the new and special wants area, there is style and value which we met with MORE, extreme health concerns

which we are meeting with NOW [brand cigarettes], and with the evolution of the market toward low ‘tar', many more opportunities will be present in this area . . . ." A section of the document titled "Super Low ‘Tar' Products" stated: "We will also be working on super low tar products which address the wants of very concerned smokers. A growing number of smokers seek products with tangible/visible features to assuage their concern about smoking." 501282466-2513 at 2480-2481, 2488, 2496, 2502 (US 48813).

2510. A June 21, 1982 Product Research Report on Non-Menthol Ultra Low Tar Consumer Probes, written by RJR's Marketing Development Department, stated: "Most respondents [ultra low tar smokers] preferred a white filter to a cork filter because they considered white to be more indicative of ULT cigarettes. The white filter generated strong associations with gentleness, purity, cleanliness, modernization, and innovativeness." 503394459-4485 at 4464 (US 85036).

2511. The 1982 report also stated: "Women are more optimistic about new brands that could offer lower tar. They are more willing to compromise on taste if they feel a cigarette has more personal benefits, although ‘It would be great if it has good taste, too.’" The report further stated that ultra low tar smokers "want as little tar as possible, but they want taste to be at least on par with current ULT brands. They feel they have made taste trade-offs by smoking a ULT." The report continued: "It is unlikely ULT smokers would switch brands if the tar level of the new cigarette is equivalent to their current brand. Lower tar is a strong motivating factor." The report also recognized that smokers perceive low tar cigarettes as having less desirable taste, stating: "The main obstacle appears to be to convince smokers the new cigarette delivers a more flavorful, richer taste, and lowering the tar does not reduce taste and smoking satisfaction." The report also noted:

> Women seem to be more accustomed to moderation in their lifestyles. For example, they are inclined to trade-off some taste for the weight control and health benefits of low calorie and low fat foods. They want some taste assurance, but are open to compromise. They are willing to tolerate an adjustment period as they become acclimated to a new product they perceive to be better for them.

The document further stated: "ULT smokers perceive low tar claims to be credible. They try to balance their desire to smoke and personal concerns." 514343517-3566 at 3522, 3524-26, 3530, 3540 (US 51848).

2512. According to Gary Burger, RJR Senior President of Research & Development, RJR was aware that consumers smoke low tar cigarettes for the perceived health benefit. Burger observed that "[c]ertainly, smokers perceive lower tar cigarettes in some ways to be better for them and therefore they want them." He noted that consumers "have that impression that there are higher levels of bad stuff in high tar cigarettes and lower levels of bad stuff in low tar cigarettes." Burger PD, Arch v. American Tobacco Co., 8/21/97, 226:9-243:18.

(3) R.J. Reynolds's Public Statements About Low Tar Cigarettes

2513. In May 2004, RJR's website stated: "Reynolds Tobacco is not interested in trying to persuade any nonsmokers to begin smoking or in persuading any smokers not to quit." Andrew Schindler, Executive Chairman of Reynolds American Inc., testified that "Reynolds Tobacco is not interested in trying to talk any smokers out of quitting." TLT0770095-0128 (US 72410); Schindler WD, 76:17-77:5.

2514. RJR's website further stated:

> Our company, like other cigarette manufacturers, uses brand descriptors such as "full flavor," "lights" and "ultra lights" to differentiate cigarette brand-styles in terms of such characteristics as

> strength of taste, and reported "tar" and nicotine yield. These terms do not, and are not meant to, imply that any cigarette brand-style or any category of cigarettes is safer than any other.

TLT0770095-0128 at 0111 (US 72410); Schindler WD, 64:19-65:3.

2515. A March 21, 2003 RJR statement to stockholders presented a proposal "to find appropriate ways of informing our customers about the actual health risks of smoking 'light and ultra light' cigarettes to disassociate them from any belief that such products are safer and deliver less tar and nicotine." This proposal cited the conclusions of NCI Monograph 13 that low tar cigarettes present no significant reduction in harmfulness relative to full-flavor cigarettes, and that "'many smokers choose these products as an alternative to cessation'" out of a mistaken belief that they are less harmful. The proposal also referenced several pending lawsuits against one or more of the Defendants alleging fraudulent marketing of low tar cigarettes as less harmful. The Board of Directors of RJR recommended a vote against this proposal. One of the reasons given by RJR for rejecting this proposal was that, "if implemented, this proposal could significantly interfere with RJR's defense of pending litigation." TLT0960025-0029 at 0027-0028 (US 87993); Schindler WD, 66:4-67:16.

c. Brown & Williamson

(1) Brown & Williamson's Marketing of Low Tar Cigarettes

2516. A B&W document, titled "Kool Family Utopian Objectives 1979-1985," stated that "Kool must move into the health reassurance segment so that 45% of KOOL business will be in the perceived product safety arena by 1982 which will approximate the 45% of total smokers who will be smoking hi-fi products by 1982." Under the heading "Strategies," the document stated: "Provide product safety reassurance while enhance [sic] the satisfaction and refreshment perception of the

appropriate KOOL styles through the successful national launch in 1979 of either: 1. Low 'tar' parent [or] 2. Repositioned KOOL Milds." 680559149-9162 at 9149-9150 (US 54048).

2517. An internal March 25, 1983 B&W memorandum from A. J. Mellman, a B&W marketing employee, to R.A. Blott, B&W Senior Vice President of Domestic Marketing, regarding current cigarette project ideas for the Kool brand family, including low tar brands, stated: "KOOL maintained a three share level for over 30 years (through mid-60's) while positioning itself as a specialty cigarette to be smoked only for remedial or medicinal purposes." The fourth project idea was: "Improve health aspect: Anything that can be done to decrease the risks associated with cigarettes is a positive to most consumers." 514110006-0009 at 0007-0008 (US 21745).

2518. An April 28, 1998 document prepared for B&W, titled "Kool Natural Lights Round I & II Focus Groups: Presentation of Findings Prepared for Brown & Williamson," under the heading "Highlights : Natural Lights Idea," stated: "Respondents assumed that a natural light cigarette would be less harmful than a regular cigarette, they did not assume it would be 'healthy.'" 210430297-0396 at 0322 (US 67711); Smith WD, 83:18-84:20, 85:6-8.

2519. B&W's objectives for the 1957-1961 Viceroy advertisements were to "[a]ttract smokers . . . promising . . . implied health benefits because of filter" and "with substantial health benefit implications, because of blend and filter." Ivey WD, 51:15-52:13; Smith WD, 71:18-72:1; 670001750-1766 at 1754-1755 (US 20962).

2520. A 1975 B&W document, titled "Viceroy Marketing Strategy," identified the "Problem Advertising Must Solve": "[A]dvertising must . . . cope with consumer attitudes about smoking, providing either a rationale or a means of repressing the health concern." 680113760-3763 at 3762 (US 20987); accord 680116947-6968 at 6959, 6961 (US 21877) (1975 document, titled "Viceroy

Agency Orientation Outline," stating "Test Market Campaigns: Strategy-Given consumers awareness of the smoking and health issue, full flavor smokers must deal with their illogical behavior. Therefore, we attempted to communicate Viceroy's flavor/satisfaction benefits by providing consumers a rationalization for smoking or a repression of the health concern"); Smith WD, 73:2-17.

2521. The memorandum noted that, in 1953-1954, Viceroy's advertising campaign slogan was "VICEROY's double barreled health protection" and "Better Your Health," with the "objective and creative strategy" being to "[a]ttract smokers of all other cigarette brands by promising superior health protection because of more effective filtration from both a new filter and a longer length." The memorandum concluded that "[t]hese two product changes firmly positioned VICEROY as a high-filtration, healthier cigarette and attracted smokers in droves." The same theme continued in 1955-56, when one of the "Objectives and Creative Strategies" listed was to "Attract smokers of non-filter brands and the new filter brands by promising good taste equivalent to non-filter brands and superior health protection because of blend and filter." 670001750-1766 at 1752-1754 (US 20962); see also (US 87468); (US 87469); (US 87470) (1953 magazine advertisements featuring claim of Viceroy's "double barreled health protection").

2522. Carlton is a low tar brand that was originally manufactured by American Tobacco until that brand was acquired by B&W in 1994, along with American Tobacco's Lucky Strikes, Pall Mall, & Tareyton brands. Gesell PD, State of Minnesota v. Philip Morris Inc., 9/18/97, 6:10-17; 117:3-15; 25:23-26:3; 93:2-13.

2523. According to Sharon Smith, former Director of Marketing Services and Operations at B&W, "Carlton advertising focused on tar delivery." She explained:

> For Carlton, it's not an imagery campaign. It's more communication of tar levels. I'm familiar with consumers of competitive brands to Carlton saying in focus groups that to convince them to switch from their brand to Carlton, an understanding of what the tar levels are is more important to them.

Smith further explained that, for those smokers, her research has found that their understanding of the tar and nicotine numbers is based "certainly on our advertising." Smith WD, 69:10-14; 75:3-23.

2524. A B&W document circa 1996-1997, titled "Carlton Creative Plans," disclosed that the first "Primary" trait of Carlton's target audience was "Health Conscious." With respect to print advertisements, the report stated: "Magazine [advertisements for Carlton] Will be Driven by Editorial That is: 'Health Conscious.'" Carlton's "brand strategy" was "to continue to defend the franchise while communicating its 'lowest' positioning to maintain switching inflows from those smokers trading down in tar levels." The document went on to state that "CARLTON packaging issues will be explored to determine how best to communicate ultra light product cues . . . hype its increased communication of ultra low tar." 176020783-0800 at 0785, 0792, 0798 (US 23351); accord 176020856-0926 at 0868-0869 (US 23357).

2525. In 1999, B&W began a promotional campaign emphasizing that Carlton cigarettes were Ultra Ultra Light, including package statements that Carlton delivered only "1 mg." of tar. B&W's advertisements featured the slogan "Isn't it time you started thinking about number one?" According to Susan Ivey, "many factors drove consumers' preference for Carlton, and for some smokers, one of those factors was a belief that ultra low tar could reduce one's risk." Ivey WD, 52:14-53:15; ADV027 0780-0782 (US 9846); ADV045 0468-0470 (US 11362) (1999 advertisement); ADV027 0924-0926 (US 9892); ADV032 0011-0013 (US 10678).

2526. In March 1999, Nicholas Brookes, B&W Chairman and CEO from 1995 to 2000, became aware of a discrepancy in the tar delivery of Carlton cigarettes. The cigarette, when smoked by human smokers, delivered three milligrams instead of the advertised one milligram of tar. Because B&W had just introduced a new advertising campaign "touting Carlton as the '1' for you," Brookes attempted to delay the publication of a study that would have alerted the public to the new findings. Brookes did not direct B&W's marketing department to discontinue the "Carlton is the '1' for you" campaign, even though he acknowledged that it might cause confusion for consumers. 190245079-5080 (US 85018); Brookes PD, United States v. Philip Morris, 3/31/03, 146:18-148:12; 149:3-149:20; 150:14-150:18.

2527. A July 27, 2000 document prepared for B&W by Kay Harwood Marketing Analysts, Inc., titled "Topline Report of Findings for Carlton Advertising Research," indicated that smokers continue to view Carlton cigarettes as healthier, stating: "Focus groups were allowed to submit two words in addition to those suggested by the group hosts. Among the words independently chosen to describe Carlton cigarettes were 'feeling healthier' and 'healthier.'" Among the Report's 'Key Findings' are the statements from the focus groups in response to several Carlton campaigns. The statements include:

> Healthier -- trying to sell a healthy cigarette -- Very few people have realized that Ultra is better . . . Purity/better for you. . . . Fewer people have health problems smoking this brand . . . . This cigarette is best for you . . . better for you. . . . Clean & improved -- healthier brand; less nicotine. . . . Healthier living. . . . Carlton is healthier for you. . . . Gives next to nothing harmful -- means healthier -- Carlton is healthier for you . . . safe cigarette. . . . They are much better for you -- A healthier cigarette. . . . Healthier. . . . This is the best for you -- lowest in bad stuff. . . . Better for you, lighter smoke. . . . Carlton will make you happier and healthier. . . . Health-minded, concerned people (get healthier). . . . The safe cigarette -- Cut down

> your risk -- Light and less harmful. . . . This will save you -- this is the solution you have been waiting for.

250255336-5347 at 5340, 5343-5347 (US 22031). These statements were repeated in an August 8, 2000 document prepared for B&W by Kay Harwood, Marketing Analysts, Inc. titled "Carlton Advertising Research: Report of Key Findings." 250255060-5075 at 5064, 5066-5068, 5071-5075 (US 22170).

2528. A document, titled "Carlton Advertising Research: Four Focus Groups," bearing MAI (Marketing Analysts, Inc.) and B&W insignia on the cover, discussed July 2000 focus groups stating that smokers of both Carlton and competitive Carlton Ultra light associated Carlton cigarettes with being "[b]etter for you/[h]ealthier." The Report concluded that the Carlton "It's the Least You Can Do" campaign (labeled the "U" campaign) created the impression that "Carlton is better for you." The Report's "Key Recommendations" include: "If the primary objective of the advertising campaign is to position Carlton as a lower/the lowest tar and nicotine cigarette, the current research suggests the "U" campaign (It's the least you can do) effectively conveys this positioning." 250221262-1294 at 1275, 1277, 1287 (US 22030); Ivey WD, 59:20-6060:12.

(2) Brown & Williamson's Research on the Low Tar Cigarette Category

2529. Susan Ivey acknowledged that she is aware that "some smokers choose lights because they perceive a health benefit," and that "Brown & Williamson's consumer research . . . indicates that certain smokers switch to low tar cigarettes because they believe that these cigarettes are 'less harmful' than regular cigarettes." As demonstrated below, these consumer research documents establish that B&W has long known and intended that its advertisements and marketing for low tar cigarettes, featuring claims of lowered tar and nicotine and "light" and "ultra light" brand descriptors,

contributed to and reinforced consumers' mistaken belief that low tar cigarettes are better for their health, and caused consumers to smoke them for this reason.

2530. For instance, a 1967 B&W advertising and marketing strategy for high-filtration/low tar products describes B&W's marketing strategies:

> [Vanguard brand strategy:] "To capitalize upon a prevalent smoker desire to lessen the health risk involved in his smoking via a switch to a low tar cigarette . . . . Advertising Objective -- Communicate a dual smoker benefit: low tar and satisfying taste."
>
> Modified LIFE "Marketing Strategy -- To fully capitalize on health vs. cigarette smoking publicity and publishing of tar/nicotine data by marketing LIFE as the lowest tar cigarette in the filter 85 segment."
>
> Filter 70's "Marketing Strategy -- To capitalize on smoker concern of 'smoking too much' by offering a means for reducing smoking without . . . cutting down on number of cigarettes smoked . . . . Advertising -- Filter 70's would offer smokers the opportunity to smoke up to one-third less (shorter tobacco section), but they can light up as often."

Ivey WD, 57:22-58:10, 63:1-8; 670186789-6824 at 6790, 6792, 6798, 6802, 6804 (US 21431).

2531. An August 1967 B&W document, titled "A Psychological Map of the Cigarette World," stated that

> PEOPLE WHO SMOKE FILTER CIGARETTES . . . ARE MORE CONSCIOUSLY IN CONFLICT ABOUT SMOKING . . . . THEY CAN'T COMPLETELY ENJOY SMOKING BECAUSE THEY KNOW IT IS NOT HEALTHY. . . . THEY MAY BE RECEPTIVE TO ADVERTISING WHICH HELPS THEM ESCAPE FROM THEIR INNER CONFLICTS ABOUT SMOKING.

680282619-2668 at 2642 (US 85305).

2532. A 1969 marketing document from B&W's files prepared by a consultant for Imperial Tobacco, the sister company of B&W, stated that the smoker "seeks a new covenant between himself

and the tobacco industry" and has "trust" that the industry "is going to provide him with a product that he can enjoy without fear of physical or psychological reprisal." 680082943-3125 at 2959-2960 (US 20983).

2533. An October 21, 1971 Philip Morris document acknowledged that it "was abundantly clear" that manufacturers in the United States, and B&W in particular, "are concentrating on the low TPM [total particulate matter] and Nicotine segment in order to create brands with distinctive product features which aim . . . to reassure the consumer that these brands are relatively more 'healthy'" than regular full-delivery cigarettes. "Hence B&W is devoting its efforts entirely to the Hi-Fi ["high filtration"] segment, and its two major projects . . . demonstrate this strategy." 100028935-8937 at 8935 (US 20089).

2534. A September 1974 B&W marketing research study, titled "The 'New' Smoker," examined the "Behavioral Factors" of new smokers and concluded that new smokers are "mis-informed on cigarette strengths." The study concluded that new smokers believed that low tar cigarettes were "better for you." 779217794-7833 at 7822-7823 (US 21055).

2535. A November 29, 1976 B&W memorandum from F.E. Latimer to B.L. Broecker and M.J. McCue, all B&W marketing employees, described the role cigarette advertising plays in allaying smokers' fears of the health consequences of smoking:

> [B]ecause such large numbers of the institutions and leaders he believes in are against smoking, the average smoker often seeks self-justification for smoking. Good cigarette advertising in the past has given the average smoker a means of justification on the two dimensions typically used in anti-smoking arguments. . . . All good cigarette advertising has either directly addressed the anti-smoking arguments prevalent at the time or has created a strong, attractive image into which the besieged smoker could withdraw.

680086039-6044 at 6039-6040 (US 20984).

2536. A January 1977 report prepared for B&W by Post Keyes Gardner, Inc., discussed successful cigarette marketing in similar terms:

> The fundamental long term trends in the business are for smokers to move gradually to products that represent benefits of "health" and modernity . . . . Successful brands have offered "real" or "perceived to be real" products benefits that are founded on smokers' needs for "health" and modernity. . . . Successful advertising in the cigarette business is achieved by establishing a brand image based on a product benefit that fulfills consumers' needs for taste, "health" and modernity. . . . Historically, brands that have achieved the most success are those that offer taste within the confines of "health. . . . ." [T]he real "action: is in products that deliver, or are perceived to deliver, taste while representing the most reasonably "safe" product available . . . products have evolved along the long term continuum toward "health" and modernity. Those that have capitalized on these trends with a point-of-difference are the ones that have been the most successful. . . . Viceroy was the first brand to directly capitalize on [the perceived health benefits of filters] by featuring its filter benefit, and sales were dramatic for the brand. . . . [In 1965,] Carlton was introduced -- the first real response to the "health" issue as we see it today . . . . Three hifi [high filtration] brands, True, Doral and Vantage (with new, more modern filters) were successfully introduced [in the late 1960's], capitalizing on the "health" atmosphere that the anti-smoking forces were creating . . . . FORECAST FOR THE FUTURE. . . . In sum, the dynamics of "health" and modernity trends will be dominant. The smoker appears to be ready to make another major shift, losing gratification and obtaining a "safer" product, to a new generation of products with single digit tar numbers. . . . The smoker will be inundated with 'health' oriented advertising.

776158413-8426 at 8416, 8419, 8422-8423, 8425 (US 22339) (emphasis in original).

2537. B&W's 1977 New Products Annual Marketing Plan reviewed marketing strategies for new "health oriented" low tar brands to be directed at "the extremely health conscious (worried) segment of the market." According to the plan, the "Overall Objective" was "[t]o develop and

successfully launch a product which distinctively positions itself as being the 'safest' alternative in smoking." In a review of Savannah brand cigarettes, the plan noted that the "Hi-Fi [high filtration] segment stems directly from the increasing concern over the smoking and health issue." The Savannah brand was to be "positioned against those consumers with serious health concerns who continue to smoke full flavor brands." 670156293-6424 at 6303, 6323-6324, 6342 (US 53746*).

2538. This same 1977 Marketing Plan recommended that the:

> [a]dvertising copy should assume the tone of objectivity and genuine importance. The authenticity and frankness of the copy must be arresting enough to gain the attention of those consumers concerned about their health. Taste reassurance for the brand should be subordinated in efforts to play up health reassurance claims.

In a section titled "Market Review," the plan went on to say that "[t]he appeal of the brands competing in this segment [enriched flavor ultra low tar] is solely on the basis of implied health claims." 670156293-6296 (US 53745); 670156297-6242 at 6324, 6327 (US 53746*).

2539. A July 25, 1977 B&W Internal Marketing Study, titled "Low 'Tar' Satisfaction, Step 1: Identification of Perceived and Underperceived Consumer Needs," recited the percentage of starters and quitters from 1969-1976, and stated:

> [A]s the dynamic proportion of quitters continues to be larger than the proportion of starters, actual smoking incidence has declined about ten percentage points over the last ten years. . . . Increases in per capita consumption are assumed to correlate with lowered "tar" delivery as well as other factors. . . . HEALTH REASSURANCE: Almost all smokers agree that the primary reason for the increasing acceptance of low 'tar' brands is based on the health reassurance they seem to offer. . . . It must be assumed that Full Taste smokers come down to "low tar" expecting less taste . . . [t]hey are willing to compromise taste expectations for health reassurance.

775036039-6067 at 6043-6044, 6047, 6052 (US 21053).

2540. A 1977 document bearing the B&W seal discusses B&W's Belair low tar cigarette:

> Does Belair have growth opportunities? -- Increasing "health"-orientation of cigarette marketing and the correspondingly greater potential for 'lighter' cigarettes.
>
> To realize this growth opportunity, Belair must: . . . -- compete directly in the low 'tar' segment where greatest potential is. . . .
>
> Current Positioning Objective: To reestablish and maintain the relevancy of Belair's heritage as a cigarette which provides a light, yet, satisfying menthol alternative and a 'health' reassurance relative to full-taste brands. . . .
>
> July 1977 'tar' reduction . . . will allow for specific low "tar" support of the important "health" reassurance element of this brand positioning. . . .
>
> Overall Belair Operating Strategy: -- Through advertising, make the Belair historical image/positioning as a "light" cigarette more relevant to the current 'tar' conscious environment. . . .
>
> Belair Copy Strategy: To position Belair as a cigarette which offers . . . lower "tar" reassurance relative to full-taste brands. . . .
>
> Belair Prime Prospect: The current Belair smoker with whom the reassurance of the lower "tar" positioning addresses possible concerns which might otherwise prompt the user to switch to a competitive low 'tar' cigarette.

779027336-7360 at 7339-40, 7350-51, 7354-55 (US 22163).

2541. A September 26, 1977 letter from P.J. Tighe, B&W Senior Brand Manager of New Products, to colleague Don Johnson discussed additions to Low Tar Brand Plans. The letter stated that the "Low 'Tar' Menthol Plan" needed to provide "Health Reassurance." 660093935-3935 (US 53576).

2542. A document, titled "Fact Operational Plan for Fourth Quarter 1977 and 1978," noted that "[t]o the extent that health reassurance equates with smoking fewer of less 'harmful' cigarettes,

the reassurance must be handled carefully, since consumers clearly consume low ‘tar' cigarettes in greater quantities." The document also concluded that "[t]he greatest need in the marketplace is for a cigarette that promises and delivers: 1) Taste/Flavor, 2) Product Quality, and 3) Health Reassurance." 676038502-8796 at 8573, 8578, 8590 (US 53923).

2543. A 1978 B&W document, titled "Purite Filter," acknowledged that the "common area of leverage" of successful brands was implied health benefits due to low tar:

> The move to hi-fi cigarettes is continuing, motivated by consumers who demonstrate personal concerns towards smoking in either the health, social areas, or both. To capitalize upon these perceived consumer needs, three successful positionings have emerged in hi-fi: health reassurance, taste reassurance, and social acceptability. All three positionings use low "tar" as a common thread. . . . To stem the continued decline in smoking incidence, the industry must rapidly move to a point where it can address cigarettes in a totally positive light. . . . The modern hi-fi segment . . . has been growing dramatically over the last five years. This growth has been spurred by the consumer desire for health protection, as achieved through particulate matter reduction and the industry response in offering low "tar" brands with heavy marketing support. . . . Although the hi-fi segment is continuing its rapid expansion to a projected 50% by 1982, only three positionings are demonstrating vitality and durability among the freestanding low "tars": low "tar"/implied health, i.e. Carlton, True; extra flavor, i.e. Merit; social acceptability, i.e. Vantage. . . . Low "tar"/implied health is the common area of leverage with all these entries.

680559100-9124 at 9100, 9101, 9110, 9120 (US 21003).

2544. A November 14, 1978 document, titled "Low Delivery Cigarette Project For Brown & Williamson Tobacco Corp.," reported that, between 1974 and 1976, 60-74% of consumers believed that "‘low tar and nicotine cigarettes represent a major step in making smoking less harmful.'" Under the heading "'Health' vs. Image/Taste/Satisfaction," the document stated that B&W's marketing plan included "using acceptably Low Delivery numbers to provide assurance that

the brand is at least at parity with its health-oriented competitors." 670133560-3690, 3572, 3581 (US 87887).

2545. An October 1979 "History and Key Trends in the U.S. Cigarette Market," compiled by E.T. Parrack, B&W Vice President of Brand Management, confirmed B&W's knowledge that smokers turn to low tar cigarettes in response to health, not taste, concerns. 670624932-5364 at 4935 (US 53869). The document contains the following statements, reflecting B&W's knowledge that the increase in filtered and low tar cigarette sales from the 1950s through the 1980s resulted from consumers' belief that these products were less harmful, as a result of Defendants' extensive marketing of these products:

> The success of hi-fi brands is due in part to the large sums being spent to advertise them. Id. at 5279.
>
> [Between 1957 and 1960] the consumer was bombarded with messages regarding high filtration. Id. at 5036.
>
> 1964-1975 -- Emergence of brands using low "tar" as primary appeal . . . appearance of brands which actually based their appeal on low tar and nicotine numbers. Id. at 5275, 5277.
>
> Two forces are driving the current high rates of brand switching: Smoker concern about personal health [and] Smoker concern about social censure. . . . successful new brand development would have to be aimed at and satisfy the smoker needs arising out of these two key forces. Id. at 5165.

Regarding the perceived health benefits of menthol cigarettes, the compilation stated:

> [T]he split between menthol and Hi-Fi continued. Smokers were forced into a trade off of Hi-Fi vs. menthol. But was it indeed a trade-off? As we have noted, Salem was perceived as a relatively mild cigarette, and menthol itself had been promoted for years for soothing throats irritated by smoking and was the cigarette used by many when they had colds. Thus Salem and other menthols could be regarded as equivalent to a Hi-Fi. Id. at 5036-5037.

670624932-5364 (US 53869).

2546. A June 2, 1980 B&W memorandum from Brian R. O'Hare to J.F. Roberts stated:

> It now becomes necessary, in light of the increasing importance of the smoking and health issue and Kent's repositioning as the health reassurance brand[,]" to implement the remaining phases of B&W's plan to position Kent as a less harmful brand. The memorandum noted the importance of implementing this plan" as the smoking and health issue becomes more important on a worldwide basis.

660942115-2116 at 2115 (US 53580) (emphasis in original).

2547. In a July 2, 1982 B&W report, titled "What Are the Obstacles/Enemies of a Swing to Low 'Tar' and What Action Should We Take?," B&W Assistant General Counsel J. Kendrick Wells gave his views that B&W should respond to attacks on low delivery cigarettes in the following manner:

> B&W will undertake activities designed to generate statements by public health opinion leaders which will indicate tolerance for smoking and improve the consumer's perception of ultra low "tar" cigarettes (5 mg. or less). The first step will be the identification of attractive scientists not previously involved in the low delivery controversy who would produce studies re-emphasizing the lower delivery, less risk concept. Through political and scientific friends, B&W will attempt to elicit from the administrative and legislative branches of the federal government, and perhaps voluntary health groups, statements sympathetic to the concept that generally less health risk is associated with ultra low delivery cigarette consumption. The program is designed to produce statements of sufficient news interest to reach the public through the media. In addition, B&W would seek to generate spontaneous mainstream media articles dealing with component deliveries, much as the old Readers Digest articles. . . . B&W will urge the industry to sponsor research in the ultra low delivery cigarette area which turns the principles used against the industry to positive use. . . . Industry positions favoring the low delivery cigarette can be effectively presented, but must be carefully structured.

680592164-2169 at 2164-2168 (US 21009); (no bates) (US 76213); Wells WD, 46:11-49:3.

2548. A March 27, 1985 B&W memorandum from E.T. Parrack, Jr., Vice President of Domestic Marketing, to Thomas E. Sandefur, Jr., B&W's CEO, stated that "health reassurance" is one of the "'rational' benefits" that have been grafted on to the two "basic benefits" that cigarettes have always offered to consumers. The two basic benefits are: "physical smoking satisfaction" and "Emotional (image/social) reinforcement: 'The me I want to be.'" 528010755-0759 at 0755, 0757 (US 20926).

2549. A 1999 B&W document, "Current Trends in Lights and Ultra Lights," stated under the heading "Learnings": "Consumers were ready for low tar before Marlboro Lights. Health concerns. . . . Anti-smoking pressure and PM's initiative ignited the process. Manufacturers' focus on Lights accelerated the growth." 430403186-3194 at 3193-94 (US 22084).

2550. According to Sharon Smith, former B&W Director of Marketing Services and Operations, her consumer research indicated that smokers of light cigarettes, as compared to ultra light smokers, "did not have the same level of understanding of the tar numbers, and instead spoke in terms of full flavor versus lights," and as a result "rely primarily on brand descriptors like 'light,' 'medium,' and 'ultra light' as relative indicators of the cigarette's tar level," and that they "think of light and ultra light cigarettes as being lower in tar and nicotine." Smith WD, 76:4-12.

(3) Brown & Williamson's Public Statements About Low Tar Cigarettes

2551. Since at least 1981, Brown & Williamson's public position has been that "it has never marketed filtered or low tar cigarettes as less harmful than regular cigarettes." Similarly, Sharon Smith, former Director of Marketing Services and Operations at B&W, denied that the words "low

tar" communicates any health benefit, stating that "I would not say that low tar implies any sort of benefit, other than it's lower in tar." Ivey WD, 51:9-13; Smith WD, 66:19-22.

2552. A June 17, 1999 B&W Question & Answer ("Q&A"), labeled a "working document," stated that B&W did not lower the tar and nicotine in its cigarettes for health reasons and that B&W does not "claim that [low tar] cigarettes are any better/safer for you than any other cigarette on the market." 127030138-0138 (US 22113).

2553. In March 1999, Nicholas Brookes, B&W Chairman and CEO from 1995 to 2000, denied that B&W had conducted research on consumer perception of light cigarettes and whether reduced risk was associated with these cigarettes. Brookes PD, United States v. Philip Morris, 3/31/03, 162:13-163:9.

2554. Sharon Smith has claimed that "Brown & Williamson has only used the terms 'low tar' or 'light' with respect to its cigarettes to communicate lighter taste -- lighter taste and nothing else," and that "consumers have overwhelmingly responded that lighter taste is the only benefit that Brown & Williamson's advertising for its low tar brands has indicated." Similarly, Susan Ivey has also said that "[m]y experience is that most consumers choose lights for taste, because they prefer a lighter tasting cigarette." Smith WD, 50:7-51:2; Ivey WD, 57:18-21.

2555. B&W states on its website: "We do not believe that people who are concerned about the health risks of smoking should view lower tar products as an alternative to quitting." TLT1040050-0055 at 0055 (US 88620); Ivey WD, 63:9-16, 64:1-6; Smith WD, 61:19-23.

2556. Despite the substantial evidence already referred to, supra, that B&W was aware that consumers interpreted its low tar brand descriptors to be indicative of a less harmful cigarette, in

May 2004, B&W stated on its website that brand descriptors were intended only to communicate taste:

> Cigarette brands in the U.S. are usually identified on packs, cartons and advertising as belonging to the following categories: "Ultra Lights" or "Ultra Low Tar," "Lights" or "Low Tar," and "Full Flavor. . . ." Recent published studies suggest that the majority of smokers use descriptors to guide their product selection based on taste. . . . It is not Brown & Williamson's intention to suggest that any individual brand, regardless of the category descriptor terminology used, or tar yield, is safer than any other.

TLT1040056-0062 at 0061 (US 88628); Ivey WD, 70:5-14.

d. BATCo

(1) BATCo's Research on the Low Tar Cigarette Category

2557. BATCo's research documents establish that the company has long known and intended that its advertisements and marketing for low tar cigarettes, featuring claims of lowered tar and nicotine and "light" and "ultra light" brand descriptors, contributed to and reinforced consumers' mistaken belief that low tar cigarettes are better for their health, and caused consumers to smoke them for this reason.

2558. A 1972 BATCo memorandum pointed out that health reassurances usually result in increased sales:

> Over the years manufacturers have provided the public with a variety of platforms to . . . "enhance the association in smokers minds between the benefits of smoking and our cigarette products." Increasingly, by implication, these claims have turned to a health orientation and very often the closer these have come to relating the smoking benefit to being one of "health" the more successful has been the brand.

100006864-6868 at 6864 (US 20076).

2559. A May 3, 1974 note from Anthony D. McCormick of BATCo's Legal Department "[t]o all Members of the Conference" enclosed a document for discussion by BATCo employees at an upcoming company conference. Under the heading "SMOKING AND HEALTH ASSUMPTIONS," the discussion document stated: "On legal grounds alone it will continue to be to the industry's advantage not to make explicit health claims. The industry will make increasingly competitive use of products for which health claims are implied." 100428581-8599 at 8581, 8583, 8599 (US 34649).

2560. A March 29, 1976 BATCo report, titled "The Product in the Early 1980s," stated that "opportunities exist for filter and cigarette design which offer the image of 'health reassurance.'" 11069974-9982 at 9974, 9979 (US 20268).

2561. An internal April 14, 1977 BATCo memorandum by P.L. Short, Manager of BATCo's Marketing Department, describing BATCo's marketing plan, stated that "[a]ll work" would be

> directed toward providing consumer reassurance about cigarettes and the smoking habit . . . provided . . . by claimed low deliveries, by the perception of low deliveries and by the perception of "mildness." Furthermore, advertising for low delivery or traditional brands should be constructed in ways so as not to provoke anxiety about health, but to alleviate it, and enable the smoker to feel assured about the habit and confident in maintaining it over time.

100427791-7800 at 7794 (US 34641) (emphasis in original).

2562. An April 1982 document, titled "Conference on Marketing Low Delivery Products: January 1982," stated: "The BATCo.'s Board policy stated in the Market Expansion document is to lead the industry in the trend towards lowering deliveries. . . . [C]onsumers will probably believe that lower deliveries mean less 'risky' products." 690120722-0756 at 0726, 0728 (US 21043); Ivey WD, 80:14-81:9.

2563. An undated BATCo document, titled "Lights Segment Project Consumer Insight Into Smoking Lights," listed under the heading, "How to Create a Positive Lights Culture," the following three ways to "differentiate the lights from full flavor smoking . . . Color, Cues e.g. Blues & Whites . . . Lighter Lifestyles e.g., water related outdoor fun activities . . . Light symbols e.g. Bubbles[;] Air balloons[;] Light winds." 321546706-6724 at 6719 (US 46770).

2564. Susan Ivey, who worked in marketing for BATCo from 1990 to 1999, admitted that, in her experience, "while many smokers know they are buying a lights product, their actual understanding of what the specific delivery numbers are is quite limited. For example, consumers might know they are smoking a lights version of a brand, but they wouldn't know what the machine-measured tar yield was for that cigarette."

2565. Similarly, a September 1992 BATCo Business Review prepared by Norma Simamane, BATCo Lights Project Manager, stated that "[g]enerally, the specific meaning of Tar and Nicotine is not understood by consumers. However, they perceive a strong association between the numbers with 'perceived health effects.' Basic understanding is that 'the higher the numbers, the stronger the negative health effects.'" Instead of precluding use of advertisements intimating that low tar cigarettes are healthier, the document stated: "Reference to overt communication of health related issues must be avoided." The document also advocated using brand descriptors such as "'Light,'" "'Ultra'" and "'Suave (indicating Lights)'" as opposed to tar and nicotine yields, because "T&N numbers . . . tend to highlight negatives and to remind consumers of the negatives of smoking thereby increasing the 'guilt' feeling." The document further stated: "The importance of the Lights segment is demonstrated by the growth trend that is 5 times faster than total world cigarettes volume.

. . . In addition to being profitable, future projections indicate an even faster growth of lights." Ivey WD, 76:10-12. Ivey WD, 82:4-11, 76:10-18; 321683062-3099 at 3087, 3090, 3065 (US 28586).

2566. A January 1995 research report prepared for BATCo, titled "Silk Cut Brand Status Check & Concept Evaluation," stated, under the heading "Attitudes to LTN [low tar and nicotine]":

> There was universal agreement . . . amongst ff [full flavor] smokers that they would switch to LTN if and only if a lights brand with taste could be produced. But that seemed almost a contradiction in terms for many of them as many ff [full flavor] smokers described a direct correlation between tar and nicotine levels and taste. Regular lights brands smokers -- even Marlboro Lights -- were reassured about health concerns by choosing to smoke such brands.

800056515-6581 at 6526 (US 31643).

2567. A BATCo document bearing the heading "Barclay Business Review 1996" concludes both that consumers rely on product packaging and marketing (as opposed to FTC tar and nicotine deliveries) to indicate low tar level and that reduced tar level significantly increases purchase interest:

> Consumers -- with the exception of 1MG [tar cigarette] smokers -- are not able to quote correct tar/nic deliveries of the brand they are smoking currently. This means that the consumer does not segment the market in terms of deliveries but he uses colour coding and descriptors to distinguish FF, Lights and Ultra Lights . . . shelving according to [FTC tar and nicotine] deliveries has a positive impact on the awareness of the Lights category in general. The willingness to try Barclay increased significantly.

700767443-7457 at 7452 (US 22123); accord 321184656-4672 (US 22045).

2568. In a BATCo Kent Super Lights Brand Plan, BATCo discussed ways in which to "accelerate its lights segment growth." Under the heading of "Key Insights from 1997," the plan reported that "[l]ights franchise is skewed towards upscale 35+ female smokers, this is consistent with associated smoker (who is assumed to be health conscious)" and that "'[h]ealth conscious' brand

choice is seen by ASU [adult smokers under] 30s as a purchase pattern for 40+ smokers." 321551304-1323 at 1304, 1305 (US 22057); Ivey WD, 78:1-13.

2569. A "Qualitative Research Report on Light Cigarette Brand Perceptions" dated January-February 1997, stated, under the heading "Benefits Sought From Lights":

> Most older males pointed out that the main benefits of Lights was the fact they were less harmful. This factor was also very important for younger females, who often said they "had to think of the future." Some of the girls were sure Lights didn't form so strong smoking habits, [believing that] "it's easier to give up smoking if one smokes lights."

The "Conclusions" Section stated: "Light brands are primarily perceived as . . . less harmful for one's health (easier breathing, better physical state in general). . . . Some of the females perceive the concept of ULTRA LIGHTS as . . . the last step before giving up smoking," and noted that 18-24 year olds "ranked health care features of lights most highly." 760008596-8803 at 8686, 8692-8693 (US 54588) (Confidential).

2570. A 1999 BATCo document, titled "Lightning -- Extreme Smoking Regimes Testing Results and Implications for IT and The Light-Mild Issue," cited a "Smokers' attitudes report" which showed that more smokers perceive the terms "light" and "mild" to indicate low tar than to connote taste or any other characteristic. 321989078-9276 at 9121-9122 (US 28819).

2571. A 1999 BATCo presentation on marketing in Europe bearing the headings "Research" and "Heathrow Proposition" stated that many smokers want to "trade down" in tar in order to minimize risk and harm caused by their cigarettes:

> [S]trong potential for a new low tar brand -- many smokers looking to trade down. . . . Low tar Minimise Risk, Maximise Pleasure. . . . New Product Proposition Low tar product with smoother yet fuller

> smoking experience[.] All, bar quitters, welcome proposition -- more fun/enjoyment, less harm.

321628040-8076 at 8056, 8059, 8061 (US 22060).

2572. A January 2001 BATCo file, titled "Consumer Concept Trial Notes Jan 2001 Project Baltec II," contains a section dated January 10-12, 2001, titled "Philadelphia -- General Impressions and Summary," that revealed the results of consumer research on low tar cigarette smokers. The document stated: "There was some guilt over smoking . . . some had switched to lights with the belief that lights are better for them. . . . General feeling that lights are healthier." 325238922-8994 at 8981, 8991-8994 (US 22079) (Confidential).

2573. A January 10, 2001 BATCo document written by Steven Coburn, titled "Project Balcony," that referenced Philadelphia, Pennsylvania marketing studies related to proposed campaigns, stated "3rd board impresses the low nic/tar idea -- appears to imply healthier though no cig is healthy." 325239028-9036 at 9029 (US 22083). An identically titled document from the same author dated January 11, 2001, stated under the heading "Benefit": "Lights are supposed to be more healthy." 325239035-9036 at 9035 (US 22083). A BATCo document dated January 15, 2001 with the same title and author, but which referenced Santa Monica, California marketing studies related to proposed campaigns, stated "less tar nic -- less harmful." 325239014-9027 at 9015 (US 22082).

(2) BATCo's Public Statements About Low Tar Cigarettes

2574. Susan Ivey claimed that BATCo's public position was that the use of low tar brand descriptors was "not intended to make any health claims," and was "not meant to imply that light or ultra-light cigarettes are less harmful." Ivey WD, 71:20-72:3.

e. American Tobacco Marketing of Low Tar Cigarettes

2575. American Tobacco's brands included Carlton, Lucky Strikes, Pall Mall, and Tareyton, until they were acquired by B&W in 1995. Gesell PD, State of Minnesota v. Philip Morris Inc., 9/18/97, 6:10-17; 117:3-15; 25:23-26:3; 93:2-13. Like the other Defendants, American Tobacco used descriptive terms and low FTC tar ratings to convey misleading and unsubstantiated health messages to the public regarding their low tar cigarettes.

2576. For nearly 30 years, American placed advertisements in nationally-circulated magazines that emphasized Carlton's purportedly low tar. For instance, American's advertisements in Time and Newsweek in 1964 for Carlton cigarettes stated:

> Everything about Carlton is selected and crafted to produce this one result: A cigarette that is low in 'tar' and nicotine -- yet high in smoking pleasure. Carlton is so low in 'tar' and nicotine that we print test results on all packs, on all cartons. . . . Carlton -- lightest smoke of all. See for yourself.

ATX040070514-0519 at 0514(US 21125); see also ADV011 1575-1579 (US 3028); ADV107 0020-0022 (US 88689); ADV107 0023-0027 (US 88690) (1964 Carlton advertisements).

2577. A June 8, 1964 report prepared by Gardner Advertising Company for American Tobacco, titled "A Summary Report of Two Carlton Research Studies," summarized "Carlton Concept Research" and "Carlton Penetration Research." The report stated as a "Highlight" that "Based on Ad Exposure Before Product Availability," smokers "[s]aw CARLTON as a high filtration cigarette, low in tar and nicotine. Although the advertisement made no mention of it, there was a tendency to interpret CARLTON as lower in tar and nicotine, safer, less harmful." ATC2503644-3706 at 3650 (US 87891) (emphasis in original).

2578. A 1967 Annual Report of American Tobacco shows that its Carlton cigarette, which "was developed to appeal to those smokers preferring a light cigarette -- one that is low in 'tar' -- and nicotine yield," achieved "sizeable sales increases in 1967" resulting from "favorable publicity" as a low tar, low nicotine cigarette. MNAT00029170-9201 at 9176 (US 21222).

2579. In 1968, American's Carlton advertising stressed the fact that it was found lowest in 'tar' by U.S. Government testing and cited its "unique Air-Stream Filter" as the source of its ability to reduce tar to 4 mg. (as compared to what was then the industry average of over 20 mg.). ATX40397140-7141 (US 85020); MNAT00386652-6652 (US 85112); Dolan WD, 124:12-17.

2580. American Tobacco's Carlton advertisements in the 1970s emphasized FTC machine test yields to support the company's "low tar" health claim:

> 1973: "For 10th straight published Gov't Report Carlton. Still lowest in 'tar' of all regular filter kings tested. . . . For the last 10 consecutive Government Reports. Carlton has been found lowest in 'tar' of all regular filter kings tested. That's every Report since October 1968." ATX040070514-0519 at 0515 (US 21125).
>
> 1974: "Of all filter kings tested: Carlton is lowest. For the 12th straight time, the U.S. Government has reported Carlton to be the lowest in tar of all filter kings tested." (US 87178).
>
> 1975: "Of all filter kings tested: Carlton is lowest. Look at the latest U.S. Government figures for other brands that call themselves low in tar." US 4605; Biglan WD, 281:17-283:22; (US 87183).
>
> 1975: "U.S. Government Report shows only one is lowest . . . Carlton." (US 88691).
>
> 1978: "U.S. GOVERNMENT REPORT: CARLTON LOWEST. Carlton claim confirmed. Many cigarettes are using national advertising to identify themselves as 'low tar.' Consumers, however, should find out just how low these brands are–or

aren't. Based on U.S. Government Report: 14 Carltons, Box or Menthol, have less tar than one Vantage. 11 Carltons, Box or Menthol, have less tar than one Merit. 11 Carltons, Box or Menthol, have less tar than one Kent Golden Lights. 6 Carltons, Box or Menthol, have less tar than one True. . . . This same report confirms of all brands, Carlton Box to be the lowest with less than 0.5 mg. tar and 0.05 mg. nicotine." (US 5961); (US 5978).

1978: "Carlton is lowest. See how Carlton stacks down in tar. Look at the latest U.S. Government figures [table comparing Carlton favorably with Winston Lights, Vantage, Salem Lights, Kent Golden Lights, Merit and True cigarettes]" (US 5811); (US 5707).

1978: "Based on latest U.S. Government Report: Carlton is lowest. See how Carlton stacks down in tar. Look at the latest U.S. Government figures [referring to table indicating Carlton has lower tar than Winston Lights, Vantage, Salem Lights, Kent Golden Lights, Merit and True cigarettes]." (US 5948).

1983: "Read the numbers on the pack. Carlton is lowest." (US 7637); Biglan WD, 281:17-283:22.

ATX040070514-0519 (US 21125); 03496228-6630 at 6309, 6310, 6580 (US 20057).

2581. A September 1973 report prepared for American, titled "Tareyton, Iceberg 10, Carlton," discussed marketing strategies for these three brands. In the "Advertising Strategy Statement" for Carlton, the report noted that in focus group interviews "the ‘health' problem is most frequently mentioned, but people tend to ignore the negatives and continue to smoke out of pleasure or habit." The report went on to say that "Carlton's copy strategy for 1973/1974 will continue to be straight forward and factual, appealing to those smokers whose concern for ‘health' hazards leads them to seek out a cigarette with truly low ‘tar' and nicotine content." ATC2472182-2243 at 2216, 2225 (US 87892).

2582. When Eric Gesell, who worked for American from 1963-1994, was asked what American intended by its Carlton cigarette advertisements from 1974 and 1978 with the slogans "Carlton is lowest" and "Carlton lowest," he admitted that, "[w]hat [American is] doing in this ad is using the FTC figures in order to try to sell a cigarette." Gesell PD, State of Minnesota v. Philip Morris Inc., 9/18/97, 5:8-25, 6:5-6, 6:10-17, 115:19-118:14; ATX040070514-0519 (US 21125).

2583. When Gesell was asked what the significance was of a cigarette being lower in tar, he answered that: "It's lighter, lighter taste." When asked: "Isn't there also an implied health claim there?," he denied it: "No, there isn't." Gesell also claimed that the company "didn't have an understanding that people tended to smoke low-tar cigarettes because they were concerned about their health." Gesell PD, Minnesota, 9/18/87, 5:8-25, 6:10-17, 97:8-13, 130:25-131:4.

2584. Carlton's 1981 Marketing Plan, dated August 18, 1980, discussed ways to make Carlton cigarettes "the brand of the 1980's." The forward to the plan noted that "[t]he Ultra Low segment of the market is continuing to grow rapidly as more and more smokers search for smoking pleasure at tar levels more in tune with the mores of the times. Carlton, as innovator and category leader, is well poised to capitalize on this trend by its inherent positioning." ATC0735197- 5261 at 5199 (US 87893) (emphasis in original).

2585. A 1983 letter to H.W. Bahrenburg, American Tobacco Product Manager, from Tom Keane of Laurence, Charles & Free, Inc., discussed advertisements for American's Carlton cigarettes, stating that American would proceed with the advertisement that best communicated that Carlton was "'lowest'" in tar and nicotine:

> Our recommendation was to go with the Bad -- "Compare" with the "U.S. Gov't Report." This ad did very well in the general low-tar area and in fact it was the only ad which showed a "lowest" playback on

> the primary question -- "What do you get out of this ad?". . . . [W]e are proceeding with "Compare" and "U.S. Gov't" on the new . . . ad.

The advertisements attached to the letter stated: "Compare to your brand. . . . Box King -- lowest of all brands -- less than 0.01 mg. tar, 0.002 mg. nic. Carlton is lowest. . . . U.S. Gov't Report -- no brand lower than Carlton Box King -- less than 0.5 mg. tar, 0.05 mg. nic. . . . FTC Report Mar. '83." 991034809-4816 at 4809, 4816 (US 85113); see also (US 7536) (1983 Carlton advertisement that appeared in Sports Illustrated magazine).

2586. An August 4, 1983 American Tobacco memorandum from John A. McGinn, Product Manager, to W.J. Moore, Marketing Director, titled "CARLTON Slims," stated: "At a 6 mg. tar level, this 100 mm product would be responsive to those consumers seeking low tar. . . . It would also extend CARLTON's 'lowest' position to yet another cigarette category." 991341428-1440 at 1428 (US 85114).

2587. A February 1987 magazine advertising campaign for Carlton also prominently featured claims for tar and nicotine reduction:

> If you smoke. . . . Compare your cigarette to Carlton. If you're interested in smoking an ultra low tar and nicotine cigarette, you should compare the tar and nicotine content of your cigarette to Carlton. Most cigarettes sold today have 10 times the tar and nicotine of Carlton Box Kings & Box 100's.

Another Carlton advertisement campaign from the late 1980s also had lowest tar as its centerpiece and implied a United States Government endorsement, listing Carlton as having lower tar than Philip Morris's Merit and RJR's Vantage cigarettes:

> If you smoke. . . . Here's the latest comparative information for smokers who want lower tar & nicotine. . . . CARLTON became the first brand to put these figures right on the pack. . . . In the last 21 reports issued by the U.S. Government, no cigarette has tested lower

> than Carlton. . . . If you are interested in the tar content of your cigarette, you should compare the tar content of your cigarette vs CARLTON. If you are interested in the lowest . . . LATEST U.S. GOV'T REPORT CONFIRMS: no brand lower than Carlton Box King.

MNAT00746229-6229 (US 21230); (US 8246) (1986 Carlton advertisement that appeared in Sports Illustrated magazine).

2588. A February 29, 1988 American Tobacco memorandum from R.E. Smith, Director of Brand Management, to K.P. Noone, Product Manager, stated:

> The singular objective of all consumer communication should be registering Carlton's lowest positioning. We must continue to hammer this lowest message home to our current franchise. It's why they came to Carlton. As switching losses to Now show, it's the best way to lure them away. . . . It is my belief that most smokers will continue to seek lower tar. They have switched for it in the past, often several times.

991216857-6858 at 6857 (US 85115).

2589. In the 1990s, American's advertisements for Carlton also featured purported testimonials of smokers who claimed to have reduced their exposure to tar by switching to Carlton, including the following:

> 1994: "I switched to less tar. Like many other smokers, I wanted less tar. But I thought I'd have to sacrifice flavor . . . and isn't that what smoking's all about? Then I tried Carlton . . . and I switched! Carlton is the lowest in tar. . . . I figure if you're going to switch to less tar, why not go the distance!" (US 9257); ATX040268971-8971 (US 21127).
>
> 1994: "I switched to lowest tar." (US 9285).
>
> 1994: "If you want less tar please try Carlton. . . . U.S. Gov't. Test Method confirms of all king soft packs: Carlton is lowest in tar and nicotine." 970469347-9474 at 9460 (US 85104).

See also 970469347-9474 at 9452-9457 (US 88612) ("Carlton Creative" collection of advertisements including Carlton's "I Switched To Lowest Tar" advertisements); 970557462-7465 (US 85116) (Dec. 6, 1993 letter on American Tobacco letterhead from James M. Murray to Nancy Gavlick attaching similar "print ad comps" for Carlton).

2590. American Tobacco also placed advertisements for Carlton in the 1990s claiming that smokers could smoke ten packs of Carlton and still receive less tar than they would from smoking one pack of Marlboro, Camel, Winston, Kent, or Viceroy. (no bates) (US 9182) (1993 advertisement in Sports Illustrated magazine stating: "10 packs of Carlton Menthol have less tar than 1 pack of these brands"); (no bates) (US 9122) (1992 advertisement noting same); Biglan WD, 281:17-283:22; (no bates) (US 9093) (1992 Carlton advertisement stating same); 970469347-9474 at 9464-9466 (US 85104) (1990s Carlton advertisements stating same); (no bates) (US 9186) (1993 advertisement stating: "A WHOLE CARTON OF CARLTON . . . HAS LESS TAR THAN 1 PACK OF THESE BRANDS. . . . Carlton is lowest in tar and nicotine"); Smith WD, 68:15-21.

2591. A September 13, 1994 document prepared for American Tobacco, titled "LCF & L Agency Orientation Handbook," describes American's print advertising strategy to

> [p]rompt competitive target smokers to question their Brands Tar Level and present CARLTON as a contemporary, satisfying answer for those smokers seeking lower tar. The strategy and presentation should start and build from a common 'truth' in our prime prospects mindset -- to serve as a reminder that they too want less tar.

The "Positioning Statement" was: "Carlton is the brand chosen to 'switch' to in the ULT category because it is the lowest in tar and nicotine, as confirmed by the U.S. government FTC method. By smoking Carlton you get the lowest and you do not have to sacrifice flavor." 970469347-9474 at 9354, 9411 (US 85104).

2592. In 1974, American Tobacco advertised that by switching to Lucky Strikes, smokers could: "Cut your 'tar' in half with Lucky 100's." (no bates) (US 4405); (US 4415); Smith WD, 74:3-14; Ivey WD, 52:4-8.

2593. American Tobacco advertisements for Pall Mall Gold cigarettes in the 1950s and 1960s featured claims of "mildness" and lowered tar and nicotine, and stated: "You make out better at both ends." (no bates) (US 88720) (1953 Life magazine advertisement); (no bates) (US 87209) (1969 Life magazine advertisement); ATX040696413-6413 (US 88613*) (1968 Time magazine advertisement); (no bates) (US 87476) (1968 Time magazine advertisement); MNAT00282147-2147 (US 88614) (1969 Life magazine advertisement).

2594. A 1976 advertisement for American's Pall Mall Extra Mild cigarettes published in Sports Illustrated magazine stated: "Lower in tar than 95% of all cigarettes sold. De-tarred but not de-tasted." (US 5232); MNAT00742048-2048 (US 21229) (1976 New York Post advertisement stating same).

2595. A 1954 Tareyton advertisement explicitly stated that its cork filter provided health protection, stating: "Tareyton's genuine cork tip protects your lips." 696000888-0916 at 0913 (US 21387).

f. Lorillard

(1) Lorillard's Marketing of Low Tar Cigarettes

2596. In a May 20, 1958 letter to Morgan J. Cramer, Lorillard's Director of Export & Government Operations, the General Manager of a Venezuelan distributor of Kent cigarettes noted that "the health angle" had been "our main selling and advertising point" for Kent advertising in the United States. The letter added: "We have succeeded in covering a good part of the American

colony who are by far the majority of people who are sticking to Kent. No doubt they are influenced by American advertising and no doubt the mildness of Kent chimes in with the ‘protection' angle." 95508397-8398 (US 32365).

2597. A July 31, 1963 Lorillard memorandum from R.F. Kieling, Director of Market Research, to M.J. Kramer, President of Lorillard, with the subject heading "1963 Gallup Attitude Survey on Smoking," reached the following conclusions concerning the public's perception of the "safest" cigarette brand based on Gallup polling:

> As in the past two studies (1959 and 1962) Kent leads the field here, with 18% of all cigarette smokers saying this brand is “safest” to smoke. Among filter smokers, Kent rates even higher (21%). . . . Winston and Salem are second and third choice brands, although considerably below KENT. . . . Filter and mentholated cigarettes are considered most favorably, with most people voting them “very safe” or ‘moderately safe. . . ."

The "General Wrap-Up" stated: "Although the American public is considerably more antagonistic towards the cigarette industry this year, the Kent brand continues to stand alone as the one brand believed ‘safest' by a significant proportion of other brand smokers, as well as among Kent smokers themselves." 89836071-6076 at 6074-6076 (US 32095).

2598. A September 15, 1964 Lorillard memorandum from M. Yellen to Morgan J. Cramer, President and CEO, concerning Lorillard's marketing and sales policies, stated that, for several months before the release of the first Surgeon General's Report in January 1964, "LARK [a Liggett cigarette brand] was setting a base for future sales activities through the use of hospitals via rumors or otherwise . . . that medical scientists endorse LARK as the safest cigarette. This marketing technique on the part of LARK proved successful." This memorandum also acknowledged that Lorillard's marketing of Kent cigarettes as a less harmful brand contributed to its increased sales:

> As all of us are aware, KENT was marketed as a "safer" cigarette for the smoker who was concerned about smoking and health. In 1956 when an innocent third party (Reader's Digest) created an awareness to the consumer that KENT was the "safest" of all popular cigarettes, Lorillard exploited this advantage so that within a short period of two years the KENT volume grew from less than four billion cigarettes to thirty-eight billion annually. . . . I feel we were successful in accomplishing our objective and maintaining the safety image of KENT among consumers sensitive to health.

01124257-4265 at 4259, 4257-4258 (US 20033).

2599. In the early 1970s, Lorillard returned to the Micronite filter, redirecting its efforts to the product feature it had promoted for decades as providing health benefits to smokers. With respect to Kent's "marketing strategy," the "Lorillard Brand Reviews & Projections 1970/71" report stated: "Losses sustained as a result of moves to higher filtration brands will be stemmed through revitalization of the Kent health assurance heritage provided by the 'Micronite' Filter." 04105292-5384 at 5296 (US 29394).

2600. A May 1971 Report prepared for Lorillard, titled "A Study of the Meaning of the Micronite Filter to Smokers Today," demonstrated that Lorillard targeted "health-anxious" smokers with "health reassurance:"

> The marketing strategy has been to hold on to its current Kent smokers and to attract lo-fi [low tar] smokers by promising taste satisfaction plus health reassurance. With the growth of the hi-fi [full-flavor] segment, a third target is those health-anxious hi-fi smokers who are looking for more taste satisfaction than these current hi-fi brands can deliver.

The report added that

> Kent and micronite filter may be, after years of advertising, strongly associated in smokers minds. . . . Prior research suggests that dropping micronite for five years had little effect on Kent's health filter image. This does not mean, however, that if Kent had <u>not</u>

> dropped micronite for those 5 years that Kent might not have been even more strongly perceived as a health brand.

03340192-0201 at 0195-0196 (US 29265) (emphasis in original).

2601. A Lorillard document circa 1972, titled "Kent Status," stated:

> Kent became a major brand after the 1957 Reader's Digest article had proclaimed it as the brand with the most effective filter. In the next years of gains and consolidation, the micronite filter was advertised as a unique Kent benefit, giving health reassurance to its growing franchise of older, better-educated, health concerned smokers.

03300409-0418 at 0411 (US 29263).

2602. A document, titled "Kent Local Newspaper Support Summary Apr/August '73," under the heading "Kent Creative Strategy," stated: "1) Consumer Benefit To convince smokers that Kent offers a combination of satisfying taste . . . . With health reassurance through superior filtration." 03078097-8110 at 8100 (US 74705*) (emphasis in original).

2603. A March 21, 1978 "Kent Advertising Brief" was prepared for the consumer research firm Foote, Cone and Belding, to provide "the background and brand information necessary to develop a global creative strategy for the Kent brand." In a section titled, "Brand Positioning," the brief recommended that "[a]dvertising and support materials should emphasize Kent's mildness in taste and health terms. The white pack and tipping will be exploited to reinforce this positioning." Also in this section, it was noted that "Kent Deluxe will present an image consistent with the King Size styles in offering health reassurance." In a section, titled "Target Audience," the brief stated that "[a]s the Smoking and Health controversy expands, it is assumed that some smokers from all socio-economic and age groups will be prepared to switch to milder, healthier brands which provide an acceptable taste and prestige." The brief maintained that "we wish to try and develop advertising

for the Kent parent brands which clearly offers the smoker health reassurance. . . . The Come/Stay campaign goes some way to projecting a health image for Kent while retaining a taste message and communicating prestige." 661076440-6453 at 6445, 6446 (US 53620).

2604. On March 21, 1978, a "Kent Golden Lights Advertising Brief" was prepared for Foote, Cone and Belding, to provide advertising guidelines for Kent Golden Lights, that stated: "In industrialized nations the target consumer is unlikely to need education on the benefits of smoking low deliver [sic] products in general terms. . . . Prospective Golden Lights' consumers will know and understand the vocabulary of mildness, low tar and nicotine." 464012420-2429 at 2424 (US 47672).

2605. Lorillard's implicit health claims in Kent advertisements from the 1970s and 1980s included the following:

> 1972: "Micronite filter. Mild, smooth taste. For all the right reasons. Kent." (US 3785); (US 87460); (US 3837); (US 10229); (US 3797); (US 3816); see also (US 10257); (US 3932); (US 3949) (1973 magazine advertisements noting same).
>
> 1982: "Kent. When you know what counts." (US 7275); (US 7379) (1983 magazine advertisement noting same); (US 7504); (US 7702); (US 7746) (1984 magazine advertisements noting same).

2606. In 1966, Lorillard introduced True brand cigarettes. Martin Orlowsky, Chairman, President, and Chief Executive Officer of the Lorillard Tobacco Company, admitted that Lorillard's True advertisements were targeted toward smokers who, due to their concerns about health risks, were seeking a low-tar cigarette. Orlowsky TT, 10/13/04, 2288:24-2289:19.

2607. A report, titled "Lorillard Brand Reviews & Projections 1970/71," stated that one of True's "marketing objectives" was to "[s]eek out highly health-conscious smokers from all filter brands." One of True's "marketing strategies" was to "[p]roject TRUE's low tar and nicotine benefit in a way that is compelling to health oriented smokers." The report also listed the following as the "copy strategies" for True: "1. Capitalize on the basic True low tar and nicotine image and the thought that health-conscious smokers have devoted to the cigarette/health issue [and] 2. Switch to True characterized as being the logical, appropriate and popular thing to do." 04105292-5384 at 5328-5329 (US 29394).

2608. Lorillard's True advertisements in the early 1970s made the following statements, which implied that switching to True brand cigarettes would provide health benefits:

> 1971: "Think about it. Doesn't it all add up to True?" (no bates) (US 3436).
>
> 1973: "U.S. Government tests show True lower in both tar and nicotine than 98% of all other cigarettes sold. . . Think About It." (no bates) (US 4029); see also (no bates) (US 3846) (1972 True advertisement); Biglan WD, 233:20-235:22; (no bates) (US 4221) (1974 True advertisement).
>
> 1974: "True. Easy on your mind. Easy on your taste . . . because True is so low in tar and nicotine, every cigarette is as easy on your mind as it is on your taste. Think about it." (no bates) (US 4491); see also 03496228-6630 at 6271 (US 20057) (circa 1974 True advertisement noting same).

2609. Lorillard's True advertisements from the mid-1970s portrayed True as an acceptable alternative to quitting smoking, as the following examples show:

> 1974: "My wife bugged me into it, would you believe it? It seemed every time I'd light up a cigarette, my wife would put on that look . . . So, we had one of our little talks. . . . Look hon, I said . . . would it make you feel better if I changed to a low tar

and nicotine cigarette? She smiled. So I bought a pack of True next morning." 01767161-7161 (US 74702).

1975: "Considering all I'd heard, I decided to either quit or smoke True. I smoke True." (no bates) (US 4853); (no bates) (US 4939); (no bates) (US 5000) (1976 advertisement in Sports Illustrated magazine noting same); Biglan WD, 233:20-235:22.

1975: "With all the talk about smoking I decided I'd either quit or smoke True. I smoke True." (no bates) (US 87206).

1975: "With all I've read about smoking and things I decided to: 1. Play as hard as I work. 2. Cut out the heavy lunches. 3. And either quit smoking or smoke True. I smoke True. The low tar, low nicotine cigarette. Think about it." 03496228-6630 at 6268 (US 20057).

1975: "I thought about all I'd read and said to myself, either quit or smoke True. I smoke True." (no bates) (US 10447); 03061394-1394 (US 21700).

1975: "I'd heard enough to make me decide one of two things: quit or smoke True. I smoke True." (no bates) (US 87462); 01408237-8237 (US 21808); 03496228-6630 at 6269 (US 20057).

Dolan WD, 125:1-5.

2610. As a 1981 FTC Report on cigarette advertising noted, Lorillard's True advertisements "incorrectly impl[y] that when the alternatives of quitting smoking or smoking a low 'tar' cigarette are weighed, the low 'tar' cigarette is the healthier option." FTC, 1981 Report at 2-12 to 2-13 (JD 004744).

2611. Several other True advertisements from 1974-1975 emphasized True's FTC method tar and nicotine measurements:

> U.S. Govt. tests show True is lower in both tar and nicotine than 98% of all other cigarettes sold. That means True is not only gentle on your mind, it's gentle on your taste.
>
> No other cigarette can make this statement: U.S. Government tests of all cigarettes show True is lowest in both tar and nicotine of the 20 best-selling cigarettes. In fact, True is lower than 99% of all cigarettes sold. . . . Doesn't it all add up to True?

03496228-6630 at 6272, 6274 (US 20057).

2612. A May 1987 report prepared for Lorillard, titled "AN EXPLORATORY STUDY – AN OVERVIEW OF THE TRUE BRAND," discussed smokers' perceptions of Lorillard's True cigarette. The report contained the following statements:

> Use of the True brand or consideration of it via trial is viewed as an expression of health concern. . . . Both True smokers and those who smoke other brands expressed awareness of the way True has been advertised. It was not uncommon to attribute initial trial of the brand to being attracted by that presentation of the brand. Respondents specified having noticed the emphasis on tar count and filter. . . . Based on these findings, it would appear important to continue to stress True as a low tar brand with taste, and the "specialness" of the filter, since those are clearly important factors in motivating trial, and in conversion to the brand. . . . The respondents were also asked whether they think the image of True has changed over a period of time. Most felt unable to answer this, but it was suggested that True stood alone originally, as the brand for the health concerned.

93359378-9437 at 9378, 9385, 9387, 9420 (US 57295).

(2) Lorillard's Research on the Low Tar Cigarette Category

2613. Lorillard's internal research documents demonstrate that Lorillard conducted research not just on individual low tar cigarette brands, but on low tar cigarettes as a category. These documents establish that Lorillard has long known and intended that its advertisements and marketing for low tar cigarettes, featuring claims of lowered tar and nicotine and "light" and "ultra

light" brand descriptors, contributed to and reinforced consumers' mistaken belief that low tar cigarettes are better for their health, and caused consumers to smoke them for this reason.

2614. A November 13, 1973 presentation by Alexander Spears, a Lorillard scientist and later Lorillard's CEO, noted in a discussion of "Health psychology" that smokers' concern about the health effects of smoking "has been used to an advantage in marketing both the KENT and TRUE brands." The document stated: "Clearly the consumer is concerned about smoking and health, and is convinced in varying degrees that smoking is a possible detriment to his health. Presently, this factor is of active interest to R&D, since it has been used to an advantage in marketing both the KENT and TRUE brands." 80634635-4642 at 4639 (US 21063).

2615. Lorillard was well aware in 1976 that consumers perceived its low tar brands as less harmful. A November 30, 1976 Lorillard memorandum from R.E. Smith to fellow Lorillard marketing executive J.R. Ave, with the subject heading "1976 Switching Study," stated:

> I share MCA's overall conclusion that the Switching Study confirms the rightness of our 5 Year Plan; focussing [sic] Company effort against smokers' health concerns. . . . This view suggests sensible positionings for those Lorillard brands that directly address smokers' health concerns. (I believe these are totally compatible with ongoing work).

03918494-8495 at 8494 (US 74777), 03296482-6544 at 6485 (US 64511).

2616. Lorillard's "CONFIDENTIAL" 1976 "DOMESTIC CIGARETTE MARKETING 5 YEAR PLAN 1976-1980" stated:

> Consumer preferences have shown a dramatic shift since World War II away from non-filter brands towards brands more responsive to the cigarette smoking and health controversy, and less harsh, filtered cigarettes, and, most recently, towards filtered brands offering low tar and nicotine.

The document further stated: "The most recent 6 year period has followed the traditional pattern in many essential characteristics . . . 2) impressive gains by brands offering a perceived solution to health concerns." 03357128-7178 at 7137 (US 85023); Orlowsky WD, 65:10-19; 65:20-66:2.

2617. Lorillard's Five Year Plan for 1977-1981 stated: "The structure of the market is changing in the direction we forecast in 1976 -- toward brands responsive to the cigarette controversy." The plan further pointed out: "The success rate of new products . . . is again on the uptrend with the emergence of products responsive to very specific and tightly focused concerns about the cigarette controversy." 904100641-0706 at 0642, 0646 (US 74853).

2618. A January 26, 1977 Lorillard memorandum from Dick Smith to J.R. Ave stated:

> The Nowland Research strongly confirms the rightness of Lorillard's marketing concentration in the area of health concern. Smokers are extremely and increasingly health concerned. And these smokers are actively interested in better ways to lessen/eliminate this concern -- while continuing to smoke. More specifically, our going projects are on target. . . . I suggest that both the Kent and TRUE Brand Groups analyze the complete Nowland Report. Our established health concern brands should be able to develop specific strategic and executional actions from this rich, diagnostic research.

01244406-4408 (US 74669); Orlowsky WD, 66:10-67:5.

2619. A June 14, 1978 Lorillard document stated:

> <u>There is a major opportunity for a brand which can simultaneously satisfy smokers and address the concerns arising from the cigarette controversy</u>. 1. Very low tar products -- line extensions and independent brands -- have been the fastest growing cigarette segment during the last two years which indicates that an ever increasing number of 'concerned' smokers are striving to go as low in tar as possible while still getting acceptable taste. There is no reason to believe that these smokers have found their ultimate reduced tar brand. More likely, they are prime candidates to move even lower over time. Comparing 1976 with 1977 sales, the ultra low tar segment grew 14% and is now accounting for a total of 24 billion

> units. We project that by 1981, the category will increase to 47 billion units, a growth of 96%."

00138232-8233 at 8232 (US 74655) (emphasis in original).

2620. A January 31, 1980 Lorillard memorandum from Larry DuLude to fellow consumer researcher Gordon Flinn stated, under the heading "Consumer Attitudes toward Smoking": "Increasing interest in Low Tar . . . Increased number of health-concerned smokers." 01782312-2322 at 2313 (US 74959).

2621. A Lorillard document circa 1984 reported that Laurence Tisch, who served on Lorillard's Board of Directors in 1969 and 1985, and who from 1959 was the Chairman of the Board of Loew's which merged with Lorillard in 1968, stated at a New York State Department of Insurance hearing:

> Lorillard was the leader in the so-called health cigarettes, the low tar, the low nicotine cigarettes. They first introduced Kent with the micronite filter ten or fifteen years ago. It was a very successful entry because that was when the health scare first came into vogue. They followed that with the successful entry of True by Lorillard. . . . We feel that we make cigarettes that are healthier than other cigarettes -- low in tar and nicotine.

91780361-0398 at 0362-0363, 0375, 0394 (US 85024).

2622. A Lorillard document discussing its three-year plan for 1985-1987 stated, below the "Influence of Low Tar" heading: "More smokers will continue to see low tar brands as a way of dealing with the smoking controversy. Reduced Tar volume now represents 48% of the total industry, up from 37% in 1979." 80403362-3376 at 3362 (US 55377).

2623. According to Stephen Jones, a Lorillard chemist who worked for Lorillard for more than twenty-eight years and participated in the design of almost all the Lorillard cigarette brands,

including Newport, Kent Golden Lights, Kent III, Triumph, Maverick, Style, Old Gold, and Max, Lorillard's marketing plans sought to address what the company thought consumer preferences would be. Jones believed that consumers felt that there was a health advantage to smoking reduced tar or filtered cigarettes and that, by and large, smokers of all ultra low tar cigarettes, including Lorillard's True brand, perceived such cigarettes to be more healthy. Jones PD, Reed v. Philip Morris, 4/22/97, 136:5-139:21;Jones PD, Reed, 4/27/97, 141:12-141:18; 143:12-143:15.

g. Liggett

2624. On September 5, 2001, Dr. Anthony Albino, Executive Vice President, Strategy, Communication and Consumer Contact at Vector Tobacco, Inc., sent an e-mail to a number of recipients, including Bennett LeBow, Chairman of the Board and Chief Executive Officer of Vector Group, Ltd., and VGR Holding Inc., admitting that: "the adoption of 'light' cigarettes over the past 25 years was mainly due to the PERCEPTION of safety." VDOJ6743-6744 at 6743 (US 64727) (emphasis in original); LeBow TT, 4/4/05, 17594:24-17596:17.

2625. Liggett sold its Chesterfield, Lark, and L & M brands to Philip Morris in 1998. The Liggett Group Inc. continues to market light cigarettes under its brands Class A, Eve, Jade, Liggett Select, Montego, Pyramid, and under a generic Private Label. Bennett LeBow admitted that his company continues to market light cigarettes under these brand names because Liggett could not cease marketing light cigarettes and remain in business. LeBow asserted that every cigarette manufacturer in the industry must continue to sell light cigarettes in order to survive. (no bates) (US 93254); LeBow WD, 66:10-12; LeBow TT, 4/4/05, 17597:6-17598:16, 17600:4-17603:2.

6. Conclusions

2626. The evidence set forth above overwhelmingly establishes the following facts.

2627. It is clear, based on their internal research documents, reports, memoranda, and letters, that Defendants have known for decades that there is no clear health benefit from smoking low tar/low nicotine cigarettes as opposed to conventional full-flavor cigarettes. It is also clear that while Defendants knew that the FTC Method for measuring tar and nicotine accurately compared the nicotine/tar percentages of different cigarettes, they also knew that that Method was totally unreliable for measuring the actual nicotine and tar any real-life smoker would absorb because it did not take into account the phenomenon of smoker compensation. Defendants also knew that many smokers were concerned and anxious about the health effects of smoking, that a significant percentage of those smokers were willing to trade flavor for reassurance that their brands carried lower health risks, and that many smokers who were concerned and anxious about the health risks from smoking would rely on the health claims made for low tar cigarettes as a reason, or excuse, for not quitting smoking.

2628. Despite this knowledge, Defendants extensively -- and successfully -- marketed and promoted their low tar/light cigarettes as less harmful alternatives to full-flavor cigarettes. Moreover, Defendants opposed any changes in the FTC Method which would more accurately reflect the effects of compensation on the actual tar and nicotine received by smokers, denied that they were making any health claims for their low tar/light cigarettes, and claimed that their marketing for these cigarettes was based on smokers' preference for a "lighter," "cleaner" taste.

2629. By engaging in this deception, Defendants dramatically increased their sales of low tar/light cigarettes, assuaged the fears of smokers about the health risks of smoking, and sustained corporate revenues in the face of mounting evidence about the health dangers of smoking.

F. From the 1950s to the Present, Different Defendants, at Different Times and Using Different Methods, Have Intentionally Marketed to Young People Under the Age of Twenty-one in Order to Recruit "Replacement Smokers" to Ensure the Economic Future of the Tobacco Industry

1. Definition of Youth

2630. There is much confusion, both in the internal documents of Defendants and the various kinds of evidence introduced in this trial, over the definition of the term "youth."

2631. In most states, the legal age at which a person can purchase cigarettes is eighteen. The exceptions are Alabama, Alaska, and Utah, where the legal age is nineteen, and Massachusetts, where the legal age is twenty. Defendants argue that so long as they are marketing to persons over the legal age, they are not marketing to "youth." That approach is both simplistic and inaccurate.

2632. Defendants' own internal documents make constant reference to eighteen to twenty-one year olds as "youth." Defendants' public utterances often use the word "youth" to refer to those under the age of eighteen, as well as to those between eighteen and twenty-one. The expert witnesses on both sides also used the term interchangeably to refer to those under eighteen and those between eighteen and twenty-one. In short, no uniform and consistent definition of the term was used by any party to define the age parameters for the term "youth." Moreover, it is clear from the evidence that the eighteen to twenty-one year age bracket encompasses young people transitioning to adulthood who are deciding whether or not to experiment with smoking, who are still immature and at their most vulnerable to the blandishments of advertising and marketing, and who are usually not yet addicted, heavy smokers.

2633. Given this background, and Defendants' repeated assertions that their marketing is directed at maintaining brand loyalty and attracting brand "switchers" rather than inducing "youth"

to initiate smoking, the Court finds that defining the term "youth" to include those twenty-one and under is the most appropriate definition, as well as the one used most frequently by the parties.

2. The Defendants Need Youth as Replacement Smokers

2634. Every year, over 400,000 people die of smoking related diseases. In addition, there are a relatively small number of people who quit smoking each year. In order to sustain and perpetuate themselves, Defendants must bring in new smokers to replace those leaving the market. Each cigarette manufacturing company gains a small amount (less than 10%) of smokers through "switching" or changing brands. Only about 9% of adult smokers switch among Defendants' brands. Krugman WD, 154:31-158:5; see also 2045165002-5014 (US 38402). Defendants' own employees admit that brand switching rates are low and falling. According to David Beran, Executive Vice President of Strategy, Communications and Consumer Contact for Philip Morris, the brand switching rate for 1997 was 4.0%, Beran TT, 4/18/05, 19395:15-17 (Confidential) (closed court); (no bates) (JD 053375) (Confidential); was 6.3% for 2002, Beran TT, 4/18/05, 19322:16-25; (no bates) (JDEM 040331); and was 5.4% for 2003. (no bates) (JD053375) (Confidential); Beran TT, 4/18/05, 19394:25-19395:3. Switching, by definition, does not bring in new smokers to the industry as a whole.

2635. The only way Defendants can sustain themselves is by bringing in large numbers of replacement smokers each year. Carl Schoenbachler, current president and CEO of BATIC (a former parent of B&W Tobacco and holding entity for B&W Tobacco) acknowledged that although the company has a stated policy of not marketing to non-smokers, "it was a reasonable conclusion" that B&W would become unprofitable if non-smokers did not become smokers. Schoenbachler PD, United States v. Philip Morris, 5/21/02, 72:16-21, 73:13-22, 141:11-141:21, 152:20-25.

2636. The majority of people who become addicted smokers start smoking before the age of eighteen, and many more before the age of twenty-one. Ellen Merlo, Senior Vice President at Philip Morris, admitted that she was aware that over 80% of smokers start smoking before they turn eighteen. Merlo PD, United States v. Philip Morris, 6/11/02, 42:22-45:15, 48:2-48:6. A 1989 RJR document titled "Camel Y&R Orientation" discussed the "strategic importance" of young adult smokers ("YAS"): "YAS are the only source of replacement smokers. Less than one-third of smokers start after age 18." The document further stated: "To stabilize RJR's share of total smokers, it must raise share among 18-20 from 13.8% to 40% . . . ASAP." 507241613-1838 at 1617, 1620 (US 20774). In a September 20, 1982 memorandum, Diane S. Burrows, RJR Marketing Development Department researcher, stated, "if a man has never smoked by age 18, the odds are three-to-one he never will. By age 21, the odds are twenty-to-one." 500582269-2272 at 2270 (US 20641).

2637. Moreover, smokers are remarkably brand-loyal. LeVan PD, United States v. Philip Morris, 6/25/02, 225:3-228:12, 229:4-230:11 ("premium tobacco brands and smokers are very highly loyal and . . . they don't switch brands very often."). Defendants realize that they need to get people smoking their brands as young as possible in order to secure them as lifelong loyal smokers. As Bennett LeBow, President of Vector Holdings Group, stated, "if the tobacco companies really stopped marketing to children, the tobacco companies would be out of business in 25 to 30 years because they will not have enough customers to stay in business." LeBow WD, 63:16-64:1.

2638. In internal documents, Defendants admit that stimulating youth smoking initiation and retaining and increasing their share of the youth market is crucial to the success of their businesses. For example, in a 1999 slide presentation, titled "ASU30 [Adult Smoker Under 30]

Project," manager Rick Stevens analyzed BATCo's "ASU30 Performance 1998," stating that younger adult smokers were a "critical factor in the growth and decline of every major brand and company over the last 50 years." Furthermore, a slide, titled "Value of YAS," recognized that "[m]arket renewal is almost entirely from 18 year old smokers" and "[n]o more than 5% start smoking after age 24." 321539777-9806 at 9782, 9787-9788 (US 24084); see also 2041518797-8956 at 8819-8820 (US 23907).

2639. Defendants know that marketing their cigarettes to youth is essential to each company's success and longevity, and for that reason create marketing campaigns designed to increase youth consumption. VXA1240104-0567 at 0272 (US 64316) (2000 Surgeon General Report noting that "considerable evidence" demonstrates that "advertising and promotion recruit new smokers"). As United States marketing expert Dr. Robert Dolan explained:

> The trend in tobacco companies' spending on marketing has continued to increase dramatically. Tobacco industry spending of $2 billion on advertising and promotion in 1980 reached $4 billion in 1988 and then $6 billion in 1994. After four years around the $6 billion mark, spending shot up [to] $11.2 billion by 2001. In 2002, the last year for which data is available, the tobacco companies spent $12.47 billion, an increase of 11.61% over 2001. The fundamental dynamic of the industry has not changed though. The tobacco companies knew that brand loyalty is a key phenomenon and if someone doesn't start smoking as a teenager, he or she is unlikely to start. . . . Defendants still represent that the only objective of marketing is impacting brand choice while they implement marketing programs which increase the value potential customers see in smoking -- attracting people including teenagers to the market and deterring others from quitting.

Dolan WD, 147:10-148:18; 2070802707-2770 at 2728 (US 89172).

2640. In a February 29, 1984 memorandum, titled "Younger Adult Smokers: Strategies and Opportunities," to Martin Orlowsky, CEO of Lorillard, Diane Burrows, market researcher at R.J. Reynolds, stated:

> Younger adult smokers have been the critical factor in the growth and decline of every major brand and company over the last 50 years. They will continue to be just as important to brands/companies in the future for two simple reasons:
>
> [1] The renewal of the market stems almost entirely from 18-year old smokers. No more than 5% of smokers start after age 24. [2] The brand loyalty of 18-year-old smokers far outweighs any tendency to switch with age. . . . Marlboro and Newport, the only true younger adult growth brands in the market, have no need for switching gains. All of their volume growth can be traced to younger adult smokers and the movement of the 18-year-olds which they have previously attracted into older age brackets, where they pay a consumption dividend of up to 30%. A strategy which appealed to older smokers would not pay this dividend. . . . Younger adult smokers are the only source of replacement smokers. Repeated government studies . . . have shown that: Less than one-third of smokers (31%) start after age 18. . . . Thus, today's younger adult smoking behavior will largely determine the trend of Industry volume over the next several decades. If younger adults turn away from smoking, the Industry must decline, just as a population which does not give birth will eventually dwindle.

503049069-9072 at 9069 (US 20711); 501431517-1610 at 1519 (US 20680); 506653291-3348 at 3291, 3296 (US 85235).

2641. In an April 13, 1984 RJR letter, R.C. Nordine stated that "[i]t is relatively easy for a brand to retain eighteen-year-old smokers once it has attracted them. . . . Conversely, it is very difficult to attract a smoker that has already been won over by a different brand." 502033156-3157 at 3156 (US 49017).

2642. A March 1988 report, titled "Younger Adult Smoker Opportunity," discussed "RJR's most critical strategic need -- Younger Adult Smokers." The report stated: "Improved younger adult development is a key Corporate priority . . . -- Necessary for core brand revitalization (#1 Corporate priority) -- Lack of younger adults responsible for total Company volume trend." It indicated that RJR's "[m]arketing department [was] refocusing efforts against younger adult smokers." The report indicated the importance of unrestricted advertising for reaching these younger smokers and stated that a possible advertising ban "would severely limit RJR's ability to introduce [a] new brand or attract younger adult smokers." The report also stated that "[y]ounger adult smokers drive the growth of two major competitors" -- Marlboro and Newport -- which were "capturing an ever increasing share of younger adult smokers." Finally, the report explained that young smokers were crucial to the continuing survival of RJR because teenagers remain loyal to their brand of choice as they age and because teenagers smoke an increasing volume of cigarettes as they become adults: "[Y]ounger adult smokers are the **key** to future growth for any company or brand for several reasons: (1) Aging explains **75%** of SOM [Share of Market] growth. (2) Benefits of younger adult smokers compound over time as a result of **brand loyalty** and the **increase in rate per day** as smokers age." In summary, the report stated, "RJR must begin now to capture younger adult smokers: -- Volume decline inevitable without YAS -- Potential for future advertising restrictions -- Marketing department restructured to address the issue." 506664499-4558 at 4499-4500, 4506-4507, 4557 (US 20763) (emphasis in original).

2643. Marketing reports prepared for RJR, under the heading "Decision to Smoke," included the following statement: "66% of all new smokers by age 18." The document also reported on the brand loyalty of smokers, indicating that "90% [of] smokers use only one brand," and that the

"Implications for 90's" are that eighteen to twenty-four year olds will be "[c]ritical to long term brand vitality as consumption increases with age." Another report prepared for RJR, from approximately 1989, titled "Younger Adult Smokers," discussed the strategic importance of younger adult smokers, stating that "YAS are the only source of replacement smokers-[l]ess than one-third of smokers start after age 18." The report analyzed the differences between "FUBYAS" [First Brand Young Adult Smokers] (ages 18 to 20) and "Switchers" (ages 21 to 24), stating that "FUBYAS are in transition -- belonging to the **FAMILY** (secure) replaced by belonging to selected **PEER GROUP** (not as secure)." MBDOJ06953-6966 at 6955-6956, 6969, 6993, 6996 (US 59747) (emphasis in original).

2644. In a letter dated October 12, 1989, titled "Dollar Value of YAS Over Time," Burrows provided "estimates . . . of the value of capturing Younger Adult Smokers and holding them over time." The letter calculated the profits that RJR would gain "[i]f an 18 year old adopts an RJR full price brand" for 3 years ($1,359), for 7 years ($3,710), for 10 years ($6,148), or for over 20 years ($18,794). Burrows concluded:

> Our aggressive Plan calls for gains of about 5.5 share points of smokers 18-20 per year, 1990-93 (about 120,000 smokers per year). Achieving this goal would produce an incremental cash contribution of only about $442MM during the Plan period (excluding promotion response in other age groups and other side benefits). However, if we hold these YAS for the market average of 7 years, they would be worth **over $2.1 billion in aggregate incremental profit**. I certainly agree with you that this payout should be worth a decent sized investment.

507181261-1261 (US 20007) (emphasis in original).

2645. An RJR document, titled "1990 Workplan Objectives," stated that "**[t]he number one priority for 1990 is to obtain younger adult smoker trial and grow younger adult smoker share of market**." In addition, the document asked "Why target the YAS market?" and answered:

> Each Year:
>
> -- 800,000 new smokers (18+) enter the market
>
> -- 1,500,000 smokers leave the market
>
> With about 50 million smokers, this means that each year there are:
>
> -- 1.6 share points of new smokers
>
> -- 3.0 share points of quitters
>
> At least 95% of all new smokers are 18-24. About 70% are exactly 18 (i.e., aged in the 18+ market).
>
> Each brand and company has a share of new smokers and quitters, which is reflected in their shares of YAS and older smokers. These shares drive long-term market performance.

513869196-9303 at 9197, 9198 (US 30058) (emphasis in original).

2646. Carl Schoenbachler, current president and CEO of BATIC (a former parent of B&W Tobacco and holding entity for B&W Tobacco), when asked if the statement, "The key to sustainable long-term profit growth in the U.S. is ASU 30," was accurate, responded: "Yes, I would say that's true." He explained that

> there tends to be a great deal of loyalty in cigarette brands. So, just a natural mathematical equation would suggest if you -- if you don't have thirty-year-olds smoking your product, you won't have forty-year-olds and fifty-year-olds. It's a very brand loyal business.

Schoenbachler PD, United States v. Philip Morris, 5/21/02, 72:16-21, 73:13-22, 141:11-141:21, 152:20-25.

3. Defendants' Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2647. Cigarette marketing, which includes both advertising and promotion, is designed to play a key role in the process of recruiting young, new smokers by exposing young people to massive amounts of imagery associating positive qualities with cigarette smoking. Research in psychology and cognitive neuroscience demonstrates how powerful such imagery can be, particularly for young people, in suppressing perception of risk and encouraging behavior. Slovic WD, 53:22-63:11 Defendants' own statistics demonstrate how successful they have been in marketing their three main youth brands: Philip Morris's Marlboro, RJR's Camel, and Lorillard's Newport.

a. Development of the Link Between Marketing and Youth Smoking

(1) No Single-Source Causative Factor Can Describe the Complex Link Between Marketing and Youth Smoking

2648. In 1989, the Surgeon General concluded:

> There is no scientifically rigorous study available to the public that provides a definitive answer to the basic question of whether advertising and promotion increase the level of tobacco consumption. Given the complexity of the issue, none is likely to be forthcoming in the foreseeable future.

(no bates) (JE 063621 at 516-17) (1989 Surgeon General Report).

2649. In her 1994 Report, Youth and Tobacco: Preventing Tobacco Use Among Young People, the Surgeon General echoed these sentiments and further warned that the debate "about whether tobacco promotion 'causes' young people to smoke" was "misguided because single-source causation is probably too simple an explanation for any social phenomenon." (no bates) (US 64693 at iii) (1994 Surgeon General Report); see also Eriksen TT, 2/2/05, 11827:8-11828:1 (agreeing that

the Surgeon General's major conclusion does not say that cigarette advertising causes smoking initiation).

2650. Social scientists are increasingly uncomfortable applying the term "causation" and its corresponding rigorous criteria, which require proof of consistency, strength, specificity, temporality, and coherence of the association, in describing social behavioral phenomena. VXA1601844-2232 at 1874 (US 64057). Government expert Dr. Dean Krugman noted he would "never phrase the question [of the relationship between marketing and youth smoking initiation] in a causal manner":

> You cannot look at advertising and promotion and get a direct causal link to behavior. That has been well cited in the literature, it's been well cited in the 1994 Surgeon General's Report, that the whole notion of positing a causal question is really not germane to understanding if there is influence between advertising and sales promotion and youth behavior.

Krugman TT, 12/16/04, 8901:2-4, 8915:10-18; see also Krugman WD, 158:18-159:4 ("the advertising/promotion and smoking initiation/continuation relationship is not an empirically verifiable phenomenon"). For more on Dr. Krugman's credentials, see ¶2681, infra.

(2) Public Health Authorities Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2651. In her 1994 Report, the Surgeon General pointed out:

> A substantial and growing body of scientific literature has reported on young people's awareness of, and attitudes about, cigarette advertising and promotional activities. Research has also focused on the effects of these activities on the psychosocial risk factors for beginning to smoke. Considered together, these studies offer a compelling argument for the mediated relationship of cigarette advertising and adolescent smoking.

UXA013058-0484 at 0362 (US 64693).

2652. In the same Report, the Surgeon General explicitly addressed and rejected Defendants' claims that their marketing activities are directed only toward adult brand-switchers:

> Even though the tobacco industry asserts that the sole purpose of advertising and promotional activities is to maintain and potentially increase market shares of adult consumers, it appears that some young people are recruited to smoking by brand advertising. Two sources of epidemiologic data support the Surgeon General's assertion. Adolescents consistently smoke the most advertised brands of cigarettes. . . . Moreover, following the introduction of advertisements that appeal to young people, the prevalence of the use of those brands -- or even the prevalence of smoking altogether -- increases.

UXA013058-0484 at 0368 (US 64693).

2653. The Surgeon General further noted in the 1994 Report:

> Current research suggests that pervasive tobacco promotion has two major effects: it creates the perception that more people smoke than actually do, and it provides a conduit between actual self-image and ideal self-image -- in other words, smoking is made to look cool. Whether causal or not, these effects foster the uptake of smoking, initiating for many a dismal and relentless chain of events.

UXA013058-0484 at 0167 (US 64693).

2654. In the 1998 Surgeon General's Report, Tobacco Use Among U.S. Racial/Ethnic Minority Groups, the Surgeon General concluded that:

> Advertising is an important influence on tobacco use initiation and maintenance. . . . Cigarette advertising and promotion may stimulate cigarette consumption by . . . encouraging children and adolescents to experiment with and initiate regular use of cigarettes. . . . In addition, cigarette advertising appears to influence the perceptions of youths and adults about the pervasiveness of cigarette smoking and the images they hold of smokers.

This 1998 Report also pointed out that:

> Available data indicate that young people smoke the brands that are most heavily advertised. In 1993, the three most heavily advertised brands of cigarettes, Marlboro, Camel, and Newport, were the most commonly purchased brands among adolescent smokers.

HHA0430685-1029 at 0914 (US 64831).

2655. In the 2000 Surgeon General's Report, Reducing Tobacco Use, the Surgeon General stated that:

> [i]ntensive review of the available data . . . suggests a positive correlation between level of advertising and overall tobacco consumption -- that is, as advertising funds increase, the amount of tobacco products purchased by consumers also increases.

Moreover,

> [i]ndirect evidence of the importance of advertising and promotion to the tobacco industry is provided by surveys that suggest that most adolescents can recall certain tobacco advertisements, logos, or brand insignia; these surveys correlate such recall with smoking intent, initiation, or level of consumption.

VXA1240104-0567 at 0272 (US 64316).

2656. In her 2000 Report the Surgeon General rejected Defendants' claims that their main purpose in advertising is to maintain brand loyalty and increase market share among current smokers and found that "[c]onsiderable evidence" supported the hypothesis that "advertising and promotion recruit new smokers." The Surgeon General stated:

> Attempts to regulate advertising and promotion of tobacco products were initiated in the United States almost immediately after the appearance of the 1964 report to the Surgeon General on the health consequences of smoking. Underlying these attempts is the hypothesis that advertising and promotion recruit new smokers and retain current ones, thereby perpetuating a great risk to public health. The tobacco industry asserts that the purpose of marketing is to maintain brand loyalty. Considerable evidence has accumulated

> showing that advertising and promotion are perhaps the main motivators for adopting and maintaining tobacco use.

Id. at 0129.

2657. Regarding the Joe Camel campaign, the Surgeon General noted in the 2000 Report:

> The role of advertising is perhaps best epitomized by R.J. Reynolds Tobacco Company's Camel brand campaign (initiated in 1988) using the cartoon character 'Joe Camel.' Considerable research has demonstrated the appeal of this character to young people and the influence that the advertising campaign had on minors' understanding of tobacco use and on their decision to smoke.

Moreover,

> an increase in smoking initiation among adolescents during 1985-1989 has been ecologically associated with considerable increases in promotion expenditures [by the tobacco industry], as exemplified by the Joe Camel campaign.

Id. at 0130, 0272.

2658. The 1992 United Kingdom Department of Health, Economics and Operational Research Division publication, "The Effect of Tobacco Advertising on Tobacco Consumption: A Discussion Document Reviewing the Evidence," concluded that:

> the great majority of the results [of aggregate statistical studies] point in the same direction -- towards positive impact [on tobacco consumption]. The balance of evidence thus supports the conclusion that advertising does have a positive impact on consumption.

0212977-3036 at 0243 (US 34282). The Department of Health further concluded, regarding studies of advertising bans in other countries, that "[i]n each case the banning of advertising was followed by a fall in smoking on a scale which cannot reasonably be attributed to other factors [other than the advertising ban]." Id.

2659. The Institute of Medicine, chartered in 1970 by the National Academy of Sciences, which advises the Federal government on science, engineering and medicare and enlists distinguished members of the appropriate professions in the examination of policy matters pertaining to the health of the public, earlier reached a similar conclusion. The 1994 Institute of Medicine publication "Growing Up Tobacco Free, Preventing Nicotine Addiction in Children and Youths" concluded:

> The images typically associated with advertising and promotion convey the message that tobacco use is a desirable, socially approved, safe and healthful, and widely practiced behavior among adults, whom children and young people want to emulate. As a result, tobacco advertising and promotion undoubtedly contribute to multiple and convergent psychological influences that lead children and youths to begin using these products and to become addicted to them.

HHA2242048-2211 at 2122 (US 33038).

2660. Other reputable experts have concurred with the conclusions drawn by the Surgeon General. NCI's Monograph 14: Changing Adolescent Smoking Prevalence, a 2001 National Cancer Institute publication, found:

> Tobacco advertising and promotional activities are an important catalyst in the smoking initiation process. A review of the existing evidence on the relationship between exposure to advertising or having a tobacco promotional item and smoking behavior . . . suggests that there is a causal relationship between tobacco marketing and smoking initiation.

CXA0240054-0325 at 0079 (US 72977).

2661. Regarding the numerous studies which examine the role of tobacco advertising and promotion in smoking initiation, NCI's Monograph 14 concluded that:

> When [these studies are] viewed as a group, . . . the conclusion that there is a causal relationship between tobacco marketing and smoking

> initiation seems unassailable. . . . . [T]obacco advertisements are particularly attractive to adolescents who, for one reason or another, are looking for an identity that the images are carefully designed to offer.

(3) Independent Studies Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2662. Several independent longitudinal studies have demonstrated the positive link between marketing and youth smoking. "Longitudinal studies, which collect data at two or more points in time, can help sort out the 'directionality' of the relationship between advertising and smoking behavior." Eriksen (Liability) WD, 75:15-17; see also Biglan TT, 1/11/05, 9638:11-20; Eriksen TT, 1/27/05, 11471:12-11472:22.

2663. Unfortunately, "[t]here is not one longitudinal study that directly measures the impact of exposure to cigarette marketing on the one hand, with initiation of smoking on the other." Eriksen TT, 2/2/05, 11798:3-6; see also Biglan TT, 1/11/05, 9670:4-12 (testifying that he cannot "identify a single longitudinal study that measures the relationship between the actual marketing practices on the one hand -- not receptivity or susceptibility or attitudes or needs -- but independently measures . . . defendants' cigarette marketing as a variable in its relationship to actual smoking behavior.") This is largely because of widespread concerns about the ethical issues raised in devising a controlled experiment which would expose children and young people to cigarette advertising for purposes of comparing them to children and young people not exposed to such advertising.

2664. As a result, longitudinal studies have been forced to rely upon "proxies" for exposure, such as "susceptibility," and "receptivity" to smoking initiation. For example, one of the receptivity measures used in studies is the possession of cigarette company promotional items. However, there

is concern that the studies fail to account for "unobserved preferences" for smoking that may have "already existed among the adolescents studied." As a result, a simple correlation between the possession of such smoking-related items and future smoking does not indicate that the items caused smoking. Heckman WD, 31:6-19.

2665. Recognizing the limitations of such longitudinal studies, there have been four which have provided useful information about the relationship between marketing and youth smoking:

- Pierce, et al., Journal of the American Medical Association, 279(7): 511-515 (1998)
- Biener and Siegel, American Journal of Public Health, 90:407-411 (2000)
- Sargent, et al., Preventive Medicine, 30:320-327 (2000)
- Choi, et al., American Journal of Preventive Medicine, 22(4):228-233 (2002).

Eriksen (Liability) WD, 76:16-78:22; (no bates) (US 17684).

2666. The Pierce study is a prospective study that examined whether California adolescents who had never smoked, "who had a favorite cigarette advertisement, . . . or were willing to use a cigarette promotional item, were significantly more likely to progress toward smoking, including increased susceptibility and intention to smoke" than adolescents not susceptible to smoking. Eriksen (Liability) WD, 76:16-77:2; Wecker WD, 54:23-55:19. Pierce concluded that "tobacco promotional items are causally related to the onset of smoking." Wecker WD, 55:20-23 (quoting Pierce). However, the Pierce study does not purport to determine the effect of marketing on actual smoking behavior, but rather on progression along a smoking susceptibility continuum. Eriksen TT, 1/27/05, 11543:19-11544:11.

2667. The 2000 Biener & Siegel study was similar in design in many respects to the 1998 Pierce study. Unlike Pierce, Biener & Siegel's "baseline" included youth who had smoked one cigarette, in addition to older smokers. Biener AL & Siegel M., "Tobacco marketing and adolescent smoking: more support for a causal inference," American Journal of Public Health 90(3):407-411 (2000). In addition, Biener & Siegel measured progression to smoking behavior (i.e., smoking at least 100 cigarettes), not just susceptibility to smoking. Id. at 61:13-15. Biener & Siegel "attempt[] to improve upon the Pierce study" "by examining the connection between advertising (using possession of a branded promotional item as a receptivity proxy) and actual adolescent smoking behavior." Heckman WD, 37:6-12. The study found a statistically significant relationship between "receptivity" and progression to established smoking, and specifically found that, among persons who reported smoking less than one cigarette in their lifetime in 1993 (ages twelve through fifteen), but who had a favorite cigarette advertisement or who owned a cigarette brand promotion item, 46% progressed to established smoking (ages sixteen through nineteen). See Eriksen (Liability) WD, 77:23-78:5.

2668. In the Sargent (2000) study, researchers in New Hampshire reported the results of a longitudinal study conducted among a cohort of rural Vermont students. Baseline data (data from the starting point of the study) were collected in 1996, with follow up surveys in 1997 and 1998. The researchers found that receptivity to cigarette advertising (owning or being willing to own a cigarette promotional item) at baseline was associated with higher smoking rates at the eighteen month follow-up. After controlling for possible confounding factors, the researchers reported: "our study documents a strong and statistically significant association between receptivity to cigarette

promotions and increased smoking uptake over time in a cohort of adolescents." Sargent, et al., Preventive Medicine 30:320-327, 2000.

2669. The Choi (2002) study measured progression to smoking in 1996 among young persons who reported being confirmed "never smokers" in 1993 (ages twelve through seventeen), but who had a favorite cigarette advertisement, or who owned or were willing to own a cigarette brand promotion item, and concluded that 34% of all experimentation with cigarettes in California between 1993 and 1996 (ages fifteen through twenty) was attributable to tobacco marketing activities. Pierce JP, Choi WS, Gilpin EA, Farkas AJ & Berry CC., "Tobacco industry promotion of cigarettes and adolescent smoking," JAMA 279 (7): 511-515 (1998).

2670. Finally, the Cochrane Review, a "systematic review [of nine longitudinal studies] on the impact of tobacco marketing on adolescent smoking behaviors," concluded: "Longitudinal studies suggest that exposure to tobacco advertising and promotion is associated with the likelihood that adolescents will start to smoke." Eriksen (Liability) WD, 79:5-14, 79:24-27.

2671. While it is true that no study has ever attempted to measure the direct link between exposure to marketing and youth smoking initiation or continuation, all of the studies discussed used proxies to study that relationship and, most significantly, all demonstrated a positive correlation between marketing and promotion on the one hand and youth smoking progression on the other.

(4) Credible Expert Witnesses Have Found that Marketing Is a Substantial Contributing Factor to Youth Smoking Initiation

2672. The testimony of the expert witnesses establishes that the weight of all available evidence, including survey data, scientific studies and experiments, and behavioral and econometric studies, supports the conclusion that cigarette marketing is a substantial contributing factor in the

smoking behavior of young people, including the decision to begin smoking and the decision to continue smoking. Eriksen (Liability) WD, 1:20-3:19.

2673. Despite Defendants' frequent public assertions that cigarette marketing only affects brand switching and brand loyalty, marketing has been and continues to be enormously effective in influencing young people to smoke. For example: (a) young people who are more familiar with the advertising are more likely to begin smoking; (b) increased expenditures on cigarette marketing campaigns have been associated with increases in the incidence of smoking among adolescents; (c) adolescents who are exposed to more cigarette advertising are more likely to begin smoking; and (d) the brands that are most popular with young people are the ones where advertisements are designed to appeal to their interest and vulnerability and where the most money has been spent on advertising and promotional activities. Biglan WD, 36-95; Dolan WD, 147:10-148:18; Krugman WD, 84-149.

2674. The evidence is overwhelming that Defendants intentionally exploit adolescents' vulnerability to imagery by creating advertising that utilizes the themes of independence, adventurousness, sophistication, glamour, athleticism, social inclusion, sexual attractiveness, thinness, popularity, rebelliousness, and being "cool." Cigarette Company Defendants have, over the years, placed this advertising in magazines, on billboards, at point of sale (or "POS," meaning marketing materials placed in retail locations such as convenience stores), and in other venues that historically and currently reach millions of teens. Krugman WD, 100-139.

2675. Knowing that advertising and promotion stimulated the demand for cigarettes, Defendants used their knowledge of young people, gained through tracking youth behavior and preferences, in order to create marketing campaigns (including advertising, promotion, and couponing) that would appeal to youth, in order to stimulate youth smoking initiation and ensure that

young smokers would select their brands. Dolan WD, 24:3-16, 65:7-74:23; Chaloupka WD, 30:8-32:20; Biglan WD, 100-379; Krugman WD, 50:1-149:23.

2676. The messages, images, and merchandise used in cigarette advertising have corresponded precisely to adolescent psychology. Teens smoke the most heavily advertised brands: Philip Morris's Marlboro, Lorillard's Newport, and B&W's Kool. Biglan WD, 36-95.

2677. Defendants' marketing activities brought new smokers into the market and retained existing smokers in the market. Dolan WD, 24:3-16.

2678. Dr. Robert Dolan, Dean of the University of Michigan School of Business, former Harvard Business School Professor, and widely used marketing consultant, while acknowledging that marketing practices of the tobacco companies were not the only factor impacting the likelihood of an individual's smoking, and that behavior of other family members and peers are other contributing factors, still concluded that the marketing of the tobacco companies, carried out in a highly sophisticated and heavily financed fashion, was a substantial contributing factor to the number of teenagers who began smoking, the likelihood they would continue as smokers, and their consumption rate. Dolan WD, 24:11-16.

2679. Dr. Anthony Biglan, currently a Senior Scientist and Director at the Oregon Research Institute, has been conducting research on adolescent smoking for over twenty-five years. He has written over 100 publications on adolescent problem behavior, particularly smoking, and has completed grant projects for the National Cancer Institute and the National Institute on Drug Abuse. From September 2000 through June 2001, Dr. Biglan was a Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford, and also served as a Participant on the Behavior Change Expert Panel of the Office of White House National Drug Control Policy from 1998 to 2001.

2680. Upon reviewing the published literature on adolescent development, his own research and clinical work with adolescents and their families, and Defendants' internal documents, Dr. Biglan concluded that

> tobacco companies understand what motivates adolescents to smoke, such as desires to be popular, masculine, independent, cool, rebellious, or to have excitement. The companies use their understanding of adolescent needs to create images in marketing their brands (e.g., Marlboro, Camel, Newport) that convey to adolescents they can achieve such desired outcomes by smoking these brands. In short, tobacco companies market cigarettes to adolescents by exploiting the psychological needs of adolescents.

Biglan WD, 37: 1-10. The central purpose of the tobacco companies' image advertising is motivating adolescents to smoke.

> These studies show that adolescents have distinct images of smokers and they are more likely to smoke if their self-image is like the image they have of a smoker. . . . [T]he images adolescents have of smokers of specific brands are precisely the images that the tobacco companies convey in their marketing.

Id. at 95:23-96:5.

2681. Dr. Dean Krugman, Professor and Chair of the Department of Advertising and Public Relations at the University of Georgia, has published over thirty peer-reviewed articles on marketing, particularly tobacco marketing, including an article, titled "Teenage Exposure to Cigarette Advertising in Popular Consumer Magazines," published in 2000. Dr. Krugman has also served as a reviewer for numerous scholarly journals, including the Journal of Broadcasting & Electronic Media, and the Journal of Marketing Research, and is currently a Member of the Editorial Board of the Journal of Advertising.

2682. Dr. Krugman concluded that the tobacco industry knowingly targeted adolescents under eighteen years of age. In his estimation, the marketing strategies of the tobacco industry have been effective, thorough and well-planned efforts to attract teenagers to cigarettes and contribute to the continuance of teenage smoking. Krugman WD,17:4-7.

> Tobacco companies: (1) employed the concept of peers in order to market to teenagers; (2) use images and themes in their marketing that appeal to teenagers; and (3) employ advertising and promotion strategies to knowingly reach teenagers. Brand share data confirms that the leading brands among teenagers are image oriented and have been among the most heavily supported brands by advertising and promotion. Taking all these elements together, I have reached . . . [the] conclusion, that the tobacco industry has been effective in the planning and execution of cigarette advertising and promotion to teenagers.

Id. at 84:25-85:8.

> It is my conclusion that advertising and promotion are an important part of the smoking uptake and continuation process. I am very satisfied after examining the total situation -- industry investments, the actual advertising and sales promotion, academic and industry research, industry documents and industry comments -- that advertising and sales promotion are influential in the initiation and continuation of smoking among teenagers.

Id. at 160:8-12.

2683. Dr. Michael Eriksen was the longest serving Director of the Public Health Service's Center for Disease Control and Prevention's Office of Smoking and Health ("OSH"), the primary federal agency responsible for coordinating tobacco and health issues. From 1992 to 2000 at OSH, Dr. Eriksen was responsible for the preparation of the Reports of the Surgeon General. In addition, Dr. Eriksen has researched and published about the tobacco industry and tobacco-related disease control and prevention for over twenty years. Dr. Eriksen has written nearly eighty peer-reviewed

articles and books on tobacco-related issues and has received numerous professional awards and honors.

2684. Dr. Eriksen, relying upon "the weight of the evidence," including numerous scientific studies, Reports of the Surgeon General, and other reliable publications and reports, concluded that Defendants' cigarette marketing is a substantial contributing factor to youth smoking initiation and continuation. Eriksen (Liability) WD, 55:4-8. Dr. Eriksen also concluded that adolescent smoking initiation is an immature behavior, one driven by the psychosocial development of adolescents and the cigarette brand imagery that corresponds precisely to adolescent aspirations. Eriksen (Liability) WD, 3:14-16.

2685. Dr. Eriksen explained that he used the term "substantial contributing factor" to mean "one cause among many." Eriksen TT, 2/02/05, 11892:7-15, 11893:18-25, 11894:3-19. He provided extensive and clear testimony on this point:

> Q. And the question there is, "Is there any difference in your mind between saying that advertising is a substantial contributing factor to the decision to smoke and saying that advertising is the cause of the decision to smoke?" . . .
>
> A. Yes.
>
> Q. Dr. Eriksen, your testimony at lines 20 of page 92 through line 5 of 93, was "That the language that I've used in my depositions and testimony and statement that there will be consistency between using the term contributing factor and a cause implying -- as long as it's understood it's not being said to be the only cause, but it's one factor among many or one cause among many. I would generally be comfortable with that being used interchangeably." And is that consistent with the testimony that you were providing today?
>
> A. It certainly was my intent to be consistent with that. . . . I'm comfortable with using cause if it's one cause of many. It's in

> my written testimony to that effect, and that's how I believed I was answering the question in the context of cause. If it's meant the only cause, I don't agree that's the only cause. But if it's one cause of many I'm comfortable with using the term cause.
>
> Q. So by choosing the term "substantial contributing factor," you meant to indicate that marketing was one cause among many?
>
> A. Yes, I meant it to mean a cause, but not the cause.

Eriksen TT, 2/02/05, 11892:7-15, 11893:18-25, 11894:3-19.

2686. Dr. Biglan's views were consistent with that provided by Dr. Eriksen. When asked if marketing was the "cause" of smoking initiation, Dr. Biglan answered:

> That word is not used much in the behavioral sciences any more. The term "influences" has come to be used largely because it better connotes the fact that behavior is multiply determined and so no single variable cause is -- of behavior. Behavior is influenced by a set of variables.

Biglan TT, 1/11/05, 9681:3-8.

2687. The testimony of all of the Government's marketing experts, cited in the Findings of Fact contained in this Section, was credible and is accepted by the Court. First, the academic and professional credentials and experience of Drs. Eriksen, Biglan, Krugman, Chaloupka, and Dolan were outstanding. Second, each and every one had studied smoking and health issues for many years and had written numerous peer-reviewed articles in the field. Third, each had significant non-academic "real world" experience in the field. For example, Dr. Dolan has consulted to a number of Fortune 500 companies, Dr. Eriksen directed the Office of Smoking and Health at the Department of Health and Human Services for many years, and Dr. Biglan served as a member of a White House drug control panel. Fourth, all were fully conversant with the internal documents and practices of

Defendants. Finally, many of their conclusions were consistent, even though they each drew from different studies and segments of the field.

2688. In contrast, Defendants called a single expert on the topic of marketing, Dr. Richard Semenik, who is the Dean of the College of Business at Montana State University in Bozeman and has researched, written, and taught on marketing and consumer behavior for over thirty years. Dr. Semenik offered the opinion that cigarette advertising is a weak force, and that the cigarette market is a mature market similar to laundry detergent and chewing gum, i.e., one which is not growing by bringing in new consumers. Dr. Semenik admitted that he did not review any internal company documents for this case. Dr. Semenik "didn't review the deposition testimony of any tobacco company employees at all in this case" and he "did not review the written direct testimony filed in this case or any trial testimony of any of the tobacco companies' witnesses." He also did not review any tobacco company point-of-sale marketing pieces, any direct mail pieces, or any of the tobacco companies' direct mail marketing databases. He provided no testimony about the extent and impact of any of Defendants' marketing efforts, whether through television, on billboards, in magazines or at retail. His reason for failing to review any of these materials was that Defendants' internal marketing documents are "irrelevant" to his expert opinions. Semenik TT, 4/4/05, 17644:9-12, 17738:7-25, 17669:4-6, 17667:9-14, 17666:20-23, 17666:24-17667:2, 17674:11-25, 17680:15-25. Finally, Dr. Semenik failed to cite a single article, peer-reviewed or not, to support his mature market theory. Semenik TT, 4/4/05, 17690:21-24. For all these reasons, the Court does not find Dr. Semenik's analysis and conclusions persuasive and cannot credit them.

b. The Ubiquity of Defendants' Marketing Normalizes and Legitimizes Smoking for Youth

2689. Defendants have consistently, over the past fifty years, spent vast sums of money on advertising and promotion, ensuring that their brand imagery would be repeated frequently and in as many different media as possible so that the message is received by the maximum number of smokers and potential smokers. Krugman WD, 21:1-31:23.

2690. Some cigarette marketing vehicles reach a wider range of viewers, readers or customers than other vehicles. For example, television, outdoor advertising (billboards), and in-store or point-of-sale displays are less selective and tend to reach more people than more targeted vehicles like magazines. Krugman WD, 47:2-48:10.

2691. Although there is no one framework for understanding social influences, media play a significant role in the way individuals develop ideas. (Bandura, 1994). Moreover, the cumulative impact of media assists in cultivating tastes and expectations among audience members. (Webster and Phalen, 1997). In short, because people learn how to act, at least in part, by observing what happens in the media, the media often help set the tone for how they act. Krugman WD, 49:10-17.

2692. Between 1952 and 1962, the six leading cigarette manufacturers, including these Defendants, spent approximately $1.2 billion for television, newspaper, and general magazine advertising. Their total expenditures for all media in this time period may have been as high as $2 billion. Between 1963 and 1970, they spent over $1.5 billion on television advertising, and over $180 million on radio advertising. It has been estimated that on a single evening in this time period, Defendants' television cigarette advertising reached 46% of thirteen to seventeen year olds, 38% of the United States population eighteen years old and over, and 26% of the population ages two to

twelve. 03573546-3751 at Table 10 (US 75032); FTCDOCS00491753-1821 at Table 7 (JD-003567).

2693. In recognition of the enormous impact of television advertising, on January 1, 1971, Congress imposed a broadcast ban that ended all cigarette advertisements on television. On January 1, 1971, alone, the last day on which such advertisements were permitted, Cigarette Company Defendants spent over $2 million, three times as much as was spent on an average day in 1970. Id. at FTCDOCS00491753-1821 at Table 7 (JD 003567).

2694. Following the broadcast ban that banned their advertisements from television, Cigarette Company Defendants turned to billboard advertising, newspapers, and magazines as a substitute to reach massive numbers of young people. Defendants' spending on newspapers and magazines increased close to three-fold after the television ban, from over $64 million in 1970 to nearly $160 million in 1971, and spending on outdoor advertising (mostly billboards) increased five-fold from under $12 million in 1970 to over $60 million in 1971. Id. at Tables 7, 8.

2695. As a May 1981 FTC Staff Report noted, by 1979, "[a]lmost half of all billboards in the United States advertise cigarettes." The Report continued:

> In 1979, cigarettes also continued to be the product most heavily advertised in newspapers. . . . The tobacco industry dominated outdoor advertising even more than it does magazines and newspapers. The top five outdoor advertisers in 1979 were the five largest cigarette companies.

(no bates) (JD 004744 at ch. 2, 2-5).

2696. In his 1998 Report, the Surgeon General concluded:

> The tobacco companies both in the past and present invest an enormous amount of money in cigarette advertising and promotion. The dollars invested, and the artful way that advertising and

> promotion are employed, make cigarettes a ubiquitous part of the American culture and landscape accessible to teenagers. Testimony of the tobacco companies' employees and many internal documents demonstrate that the tobacco companies' ubiquitous marketing communications have been well planned and far reaching in terms of making cigarette smoking an ever present part of our culture.

Cigarette brand names, logos, and advertising messages are pervasive. (no bates) (US 64831) (1998 Surgeon General Report at 220). While cigarette industry advertising and sales promotion strategies have changed quickly over the years in response to different types of regulation, cigarette products still maintain a very high profile in terms of images and messages reaching teenagers. By making their cigarette products and messages ubiquitous, the tobacco companies normalize smoking and make smoking an acceptable behavior among adolescents. Tobacco companies' plans indicate their intent to make their brands an ever-present part of the culture, "while becoming a fabric of the community." 2041940822-0852 at 0822 (US 38244).

2697. Teenagers in particular have a heightened sensitivity to image and promotion themes because they are at a stage in their psychosocial development when they are struggling to define their own identities. (no bates) (US 64276 at 106). Teenagers actively search for cues in advertising and amongst peers for the "right" way to look and behave. Krugman WD, 49:19-23. A 2004 Report of the American Psychological Association notes that advertising is particularly effective with teenagers when it normalizes smoking (and alcohol consumption). Id. at 50:4-12. In this way, ubiquitous cigarette advertising and sales promotion serve to normalize and socially sanction smoking.

2698. In sum, the ubiquity of Defendants' marketing increases young peoples' perceptions of the prevalence of smoking ("everyone is doing it"), normalizes smoking, and connects positive imagery (sex appeal, popularity, peer approval, success, and independence) with smoking, all of

which work together to encourage youth smoking initiation and continued consumption. Krugman WD, 100:1-139:23.

c. Risk Perception: The Inability of Youth to Grasp the Full Implications of Smoking

2699. Dr. Paul Slovic, an expert in the field of risk perception, was one of the first to publish research in this area and recently published a book, titled "Smoking: Risk, Perception, and Policy." He has been a Professor in the Department of Psychology at the University of Oregon since 1986, and the President of Decision Research in Eugene, Oregon. Dr. Slovic is a charter fellow of the American Psychological Society and a fellow of the American Psychological Association. In addition, he currently serves on the editorial boards of Risk Analysis, Risk Abstracts, Behavioral Decision Making, Risk, Decision and Policy, and the Journal of Psychology and Financial Markets.

2700. Dr. Slovic concluded that most people have a deficient appreciation of the risks associated with smoking, particularly when they begin to smoke. See generally Slovic WD. Many people, and particularly young people, do not adequately understand and appreciate the cumulative risk that smoking entails. Most smokers only begin to think of risk after they have started to smoke regularly and have already become addicted. At that point, more than 80% of smokers wish they had never begun to smoke. Id. at 29:4-30:2. As people become more experienced smokers, they overwhelmingly regret having started smoking. Paul Slovic, Annenberg Survey ch. 6 (2001). Smokers in the Annenberg survey were asked, "If you had to do it over again, would you start smoking?" More than 85% of adult smokers and about 80% of young smokers answered no. Id.

2701. Many young smokers tend to believe that smoking the "very next cigarette" poses little or no risk to their health. Because the most serious harmful consequences of smoking are

cumulative, and occur in the distant future, and because teenagers are focused on the present rather than the future and lack an understanding of the addictive properties of cigarettes, it is unlikely that the decisions by teenagers to initiate smoking are influenced by concerns about future harmful consequences. Slovic WD, 11:18-12:3.

2702. Initiation of smoking before the age of twenty-one is particularly harmful because, the earlier one begins smoking, the more likely one will become addicted, the less likely one will be able to quit, and the more likely one will develop a smoking-related disease. VXA130158-0484 at 0203-0207 (US 64693) (1994 Surgeon General Report).

2703. Cigarette smoking, particularly that begun by young people, continues to be the leading cause of preventable disease and premature mortality in the United States. Of children and adolescents who are regular smokers, one out of three will die of smoking-related disease. Eriksen (Liability) WD, 3:10-19.

2704. Recent studies indicate that early onset of cigarette smoking is associated with heavier smoking. Heavier smokers are not only more likely to experience tobacco-related health problems, but they also are the least likely to quit smoking. The level of dependence on nicotine in adults has been found to be inversely related to the age of initiation of smoking.

2705. Dr. Neal Benowitz, an expert in toxicology and pharmacology, is Professor of Medicine, Psychiatry and Biopharmaceutical Sciences at the University of California, San Francisco ("UCSF"). He also serves as Chief of UCSF's Division of Clinical Pharmacology and Experimental Therapeutics, as well as Vice Chair of the Department of Biopharmaceutical Sciences at UCSF's School of Pharmacy. In addition, Dr. Benowitz is an attending physician and consultant at the San Francisco General Hospital. Dr. Benowitz has worked extensively on smoking and health issues.

He has written over 300 peer-reviewed articles and almost fifty book chapters on subjects related to the pharmacology of nicotine and nicotine addiction. He was also a senior scientific editor and contributing author of the 1988 Report of the Surgeon General. Dr. Benowitz also served as a peer reviewer for the Surgeon General's 1994 Report concerning tobacco use by youth. Based on his academic credentials, his clinical experience as an attending and consulting physician, his work for the Surgeon General, and his prodigious output of peer-reviewed articles, the Court credits his testimony. According to Dr. Benowitz:

> The earlier a person starts smoking cigarettes, the more highly dependent they will be as an adult, and the more difficult it will be for them to quit. In addition, the earlier someone starts smoking, the higher that person's smoking rate is later on in life.

Benowitz WD, 40:8-11; VXA0130158-0484 at 0256-0260 (US 64693) (1994 Surgeon General Report, Tables 20 and 22).

2706. Similarly, Dr. Neil Weinstein found that most people do not appreciate the risks associated with smoking in order to make informed decisions about whether to commence or continue smoking. Dr. Weinstein is a psychologist with expertise in the study of risk perception, risk communication, and health protective behavior. He has been studying individual risk perception since 1974 and wrote a chapter in the NCI's Monograph 13 on consumers' perceptions of light cigarettes. See generally Weinstein WD.

2707. Most people do not possess a meaningful knowledge of the adverse health effects of smoking. Most people do not have a complete understanding of the many serious diseases caused by smoking, the true nature of addiction, or what it would be like to experience either those diseases or addiction itself. Rather, most people have only a superficial awareness that smoking is dangerous.

Slovic WD, 20:16-21:5. Surveys have demonstrated that individuals have little knowledge of the reality of the pain, suffering, and despair of those with lung cancer, emphysema, congestive heart failure, and other smoking related diseases. One survey showed that 53% of adolescent smokers and 49% of adult smokers know "a little" or "not much at all" about the pain and suffering associated with lung cancer. Likewise, 68% of adolescent smokers and 54% of adult smokers know "a little" or "not much at all" about the pain and suffering associated with emphysema. More than 70% of adults and 80% of adolescents overestimated the likelihood that lung cancer is curable. Slovic WD, 19:4-20:15 (citing Weinstein, N.D., Slovic, P., Waters, E., and Gibson, G., Public Understanding of the Illnesses Caused by Cigarette Smoking, Nicotine and Tobacco Research (April 2004)).

2708. Underage smokers and potential smokers are particularly vulnerable to cigarette marketing because they are not capable of making a fully informed decision whether to start or continue smoking for a variety of reasons, including the fact that they underestimate personal risks and lack the judgment which can only be developed through experience. Youth also fail to appreciate the risks and consequences of addiction. VXA0300208-0848 (US 64591) (1988 Surgeon General Report); Benowitz WD, 47:3-48:10; Weinstein WD, 61:5-74:2.

2709. Studies demonstrate that adolescents not only underestimate the harm that results from smoking cigarettes, but are overly optimistic about their ability to quit smoking. In one peer-reviewed study of ten to eighteen year olds, the subjects were asked to estimate the probability of four smoking-related conditions, including heart trouble, cancer, breathlessness, and carbon monoxide in the blood. They found that adolescents rated the hypothetical risk that they would experience if they became a regular smoker to be lower than the risk for another smoker, even though

the two were said to have the same amount and duration of smoking. Weinstein WD, 64:7-16. See Hansen & Malotte, 1986 at 363.

2710. In addition, teens tend to believe that they are at less risk to become addicted than other teens and that they can smoke without much chance of becoming addicted. Furthermore, they rate occasional cigarette use as less harmful than adults' rating. The 1995 Cohn study asked 376 teenagers about their risk of experiencing nineteen health problems and other negative life events, one of which was "get[ting] hooked on cigarettes." Overwhelmingly, the teenagers claimed that they were less likely than their peers to become addicted. Furthermore, when asked about their perceptions of the harmfulness of various risky activities, including cigarette smoking, the teenagers rated these activities as significantly less harmful than did their parents. Weinstein WD, 64:17-65:15.

2711. Most smokers give no thought to how long they will smoke when they first begin, apparently believing that quitting is something that can be easily undertaken at a later date. By that "later date," addiction can make it extremely difficult to quit. In the 2001 Annenberg Study, a large national survey, 24% of youth smokers said they expected to smoke for less than a year, 10% said one to five years, and only 5% said they expected to smoke longer than five years. However, a much larger proportion, 61%, said they had never thought about it. Weinstein WD, 66:3-69:19.

2712. Moreover, the data shows that while adolescents believe that it is hard for other smokers to quit, they believe they will be able to quit more easily than others. In one study, 96% of the teen respondents believed that it is "hard," "very hard," or "almost impossible" for a half-pack-a-day smoker to quit, and 96% agreed that the longer you smoke the more difficult it is to quit. However, 43% of the teen smokers in the survey reported that they, personally, would find it easy

to quit and never smoke again, and a mere 16% said it would be either "very hard" or "almost impossible" for them. Teenagers' reluctance to give up the reassuring illusion of easy quitting is demonstrated by the finding that, even among teens who had already made a serious quit attempt and failed, 32% still said it would be easy for them to quit. Weinstein WD, 66:3-69:19.

2713. The 2000 Annenberg Study of 3,506 teen and adult smokers and nonsmokers nationwide asked smokers who said that they planned to try to quit in the next year, "If we called you again in a year, would you guess you would have successfully quit smoking?" A very high 83% of youths and 78% of adults said they expected to succeed in their quit attempt. The reality, however, is that only 28% of teenage quitters manage to quit smoking for a year, and only 7% of adult smokers who try to quit are able to remain cigarette free for a year. Weinstein WD, 66:3-69:19.

2714. In the 2001 Weinstein & Slovic Study, smokers who were planning to quit in the next year, and who had tried and failed in the past, were asked about their next quit attempt. From this group, 88% of youths and 64% of adults said that they would be nonsmokers a year later. Even among those who stated that quitting was very hard or almost impossible for others, 83% of youths and 57% of adults predicted their own success. Weinstein WD, 68:22-69:4.

2715. Finally, in the University of Michigan's Monitoring the Future survey, high school seniors were asked, "Do you think you will be smoking cigarettes 5 years from now?" These same seniors were contacted five years later. The results showed that both light smokers and heavy smokers overestimated the likelihood that they would have quit. Of seniors who smoked less than one cigarette per day, approximately 85% stated that they probably or definitely would not still be smoking after five years. When the same group was polled five years later, 58% were still smoking.

Almost one third of seniors who smoked a pack a day thought that they, too, would quit within five years. Only 13% actually quit. Weinstein WD, 66:3-69:19.

2716. In sum, the research and expert testimony demonstrate that most youth, at a time when they are deciding whether to start smoking, have a very inadequate understanding of the medical consequences, physical pain, and emotional suffering which results from smoking and the unlikelihood of their being able to quit smoking at some future time. Weinstein WD, 66:3-69:19.

4. Tracking Youth Behavior and Preferences Ensures that Marketing and Promotion Reach Youth

a. Defendants Track Youth Behavior and Preferences

2717. Defendants spent enormous resources tracking the behaviors and preferences of youth under twenty-one, and especially those under eighteen. Defendants want to draw a bright line between tracking and targeting youth. Defendants claim that tracking is only a research tool to obtain information about youth and that targeting is the directing of all forms of marketing at a particular demographic group, i.e., people under the age of twenty-one. Whether all of the activity detailed below is labeled tracking or targeting is simply a matter of semantics. The activities have the same purpose: to start young people smoking and to keep them smoking. Defendants' argument that their tracking was not done to determine youth preferences and behaviors so as to market to youth more effectively, is patently not credible. Despite their denials that they used such information for marketing purposes, the evidence indicates that Defendants tracked youth in order to determine how best to induce them to start, and continue, smoking cigarettes.

(1) Philip Morris

2718. In August 1953, "A Study of People's Cigarette Smoking Habits and Attitudes," conducted by Elmo Roper for Philip Morris studied the smoking habits of a "cross section of men and women 15 years of age and over." Questions included: "How old were you when you started smoking?" and "What was your first regular brand?" The document indicated that Philip Morris had "very great strength among young people -- particularly under 20." 2022239148-9333 at 9149-9153, 9155, 9163 (US 20358).

2719. An October 7, 1953 letter from George Weissman, Vice President of Philip Morris, discussed the August 1953 Roper report, and stated that "industry figures indicate that 47% of the population, fifteen years and older, smokes cigarettes" and that "we have our greatest strength in the 15-24 age group." Weissman stated:

> An interesting aspect of the market is that in the age grouping, Lucky Strike is twice as popular among the fifteen to seventeen year olds as the next leading brand, and therefore, has the potential basis to reverse its present trend in a few years. Encouragingly enough, we have our greatest strength in the fifteen to twenty-four age group, as against Camel and Chesterfield, which are proportionally stronger among older age groups.

2022239142-9147 at 9142, 9144 (US 22931).

2720. A document, titled "Teen-Age Cigarette Purchasing and Smoking Habits in the U.S.A. 1963," discussed a nationwide study of thirteen to eighteen year olds which examined the extent of teenage smoking, the volume of cigarettes smoked by teenagers, where teenagers obtained cigarettes, the extent to which minors purchased cigarettes from vending machines, and possible factors motivating teenagers to smoke. Morgan PD, Minnesota v. Philip Morris, 9/4/97, 133:10-14.

2721. The "1969 Survey of Cigarette Smoking Behavior and Attitudes" performed by Eastman Chemical Products for Philip Morris, contained a detailed analysis of beginning smokers, including interviews with twelve to fourteen year olds. This report stated that sixteen to twenty is a critical age group for smoking initiation and explained that "at age 14, 60% of the boys who were to become smokers had smoked their first cigarette." The report included information on why these teenagers smoked their first cigarette and whether they liked it. 81560431-0496 at 0454 (US 85200).

2722. In a May 23, 1969 internal memorandum, Myron E. Johnston, Senior Economist for Research and Development at Philip Morris, wrote to Robert S. Seligman, Vice President for Tobacco Science and Research, regarding "Marlboro Market Penetration by Age and Sex." Attached to the memorandum was a chart showing, "by sex and individual years of age, the percent of . . . smokers . . . who smoke Marlboro," which included data on fifteen year olds. 1000306237-6239 at 6237, 6238 (US 20091).

2723. In a June 12, 1970 memorandum, "Suggestions for Research to Answer Questions Raised on Philip Morris Benchmark Study," Steve Fountaine, a Philip Morris employee, discussed the discrepancy between the reported results on a market share survey and Marlboro's actual sales share. Fountaine stated that this discrepancy was "due to the fact that Marlboro has such a high percentage of its smokers among the types of young people our survey misses of necessity (on campus college students, those in the military and those under 18 years of age.)" This memorandum set forth a detailed proposal for research into the smoking habits of young people aged fourteen to seventeen:

> To get a reading on the smoker percentage and Marlboro share among teenagers not covered in the Benchmark study we recommend interviewing young people at summer recreation centers (at beaches

> public pools, lakes, etc.). . . . In our opinion, this suggested approach will provide a good reading on the Marlboro share among very young smokers, as well as adding information on college student smoking habits.

2026234664-4669 at 4664, 4665-4667 (US 20424). Since 1968, Marlboro's share of the youngest demographic group has always been substantially higher than Marlboro's overall market share. Morgan PT, Minnesota v. Philip Morris, 4/24/98, 13907:12-19.

2724. In an August 17, 1970 internal memorandum to Wakeham from William L. Dunn, Senior Scientist at Philip Morris, titled "Considerations Pertinent to the Proposed FTC (Federal Trade Commission) Requirement of Published Numbers," Dunn argued that Philip Morris did not need to attempt to block FTC regulations requiring disclosure of tar and nicotine levels in all cigarette advertising, because a survey of twelve to eighteen year olds indicated that youth smoking initiation would not be influenced by such FTC action. Dunn stated:

> We have . . . evidence that the will to smoke is remarkably impervious to concerted, dissuasive pressures: a) Horn's recent survey data of teenagers revealing a higher percentage of smokers among 12-18 year olds in the USA than ever before recorded.

1002375102-5107 at 5102 (US 20135).

2725. A "Marketing Planning Guide" written in approximately 1972 to provide a template to Philip Morris employees for creating yearly marketing plans, included a section titled "Industry Trends," which stated: "Although the total population will increase by 3.4% during the 1973-1978 period, the fifteen to nineteen year old age group from which many new smokers are gained, will only increase by 1.9%, while undergoing actual decreases in 1977 and 1978." The document included smoking incidence figures for twelve to seventeen year olds, as well as population numbers for smokers "under 15 years"of age. 2041400206-0236 at 0223 (US 20439).

2726. A May 18, 1973 memorandum, titled "Incidence of Smoking Cigarettes," sent by Neil Holbert, Philip Morris Marketing Research Department, to numerous Philip Morris employees, discussed findings from a survey conducted by the Opinion Research Corporation of smoking incidence among 452 twelve to seventeen year olds and those age eighteen and older. The survey found that 13% of the twelve to seventeen year olds polled smoked at least a pack a week. 2041761791-1801 at 1791, 1795 (US 21493).

2727. Philip Morris's "U.S.A. Tobacco Marketing Five Year Plan" dated June 1973 discussed the concern that a decline in "the 15-19 year old age group from which many new smokers are gained" would cause a loss of cigarette sales volume:

> the new-smoker age group (15-19) will increase only 1.9% over the total period and will actually decline in 1977 and 1978. A decline of 7.8% for this period in the under 15 age group indicates that this trend will continue in the following years. . . . However, more than offsetting the loss of cigarette volume from the declining trend in the "new-smoker: age group (15-19), are substantial increases in those two population segments which have the highest smoking incidences, the 20-29 year olds (+14.8%) and the 30-39 year olds (+19.1%). . . . In summary, then, the total industry volume will increase at an average annual rate of about 1.9% through 1976 on the strength of increases in the three key population segments -- the 15-19 group which represents the primary source of new smokers, and the 20-29 and 30-39 groups which are characterized by high smoking incidences.

1005159031-9168 at 9034, 9043-9044 (US 26207).

2728. A July 1974 Philip Morris Marketing Research memorandum titled "The New Competition for Marlboro's Franchise Smokers" stated, "for the past year, Marlboro's growth in share of market has slowed down considerably. . . . [T]his problem is especially clear among the most important segment of the Marlboro franchise, smokers aged 18 to 24." In response to this trend, the

memorandum reported that the "Roper Organization was commissioned to undertake [a] study . . . with the intention of probing the dynamics of the market among smokers below the age of 24. (This was not the 'usual' sample of age 18-24; in this study, no lower age limit was set.)" Roper conducted 1050 interviews for this study. Comparing Roper's results and Philip Morris's own National Tracking Study, the document reported that the results were not significantly different, but "[t]he somewhat larger share for Marlboro smokers found in the Roper Study (33% Vs. 27% found in Tracking) may be accounted for by the popularity of this brand among those under age eighteen who are not interviewed in Tracking," but who were interviewed by Roper. The Roper Study determined that "Marlboro is still the most frequent 'first regular brand'" and stated, "[t]he ideal situation would be to have lots of people choosing our brand as their first (which we do)." According to the Roper Study:

> The most important reason these young smokers give for settling on their first regular brand is what we might call peer pressure. . . . This tendency to "go with the leader" feeds on itself. As a brand increases in popularity, it is more likely to be adopted as "the" brand to smoke.

2022245802-5823 at 5803, 5804, 5807, 5808, 5809 (US 26748).

2729. The study referenced above prepared by the Roper Organization in July 1974 for Philip Morris was titled "A Study of Smoking Habits Among Young Smokers," and found that "Marlboro is the starting brand for young whites, and Kool is the starting brand for young blacks." The study questionnaire asked respondents when they started smoking and included a category for fourteen and under. The study report also stated:

> We are not sure that anything can be done to halt a major exodus if one gets going among the young. This group follows the crowd, and we don't pretend to know what gets them going for one thing or

> another. Certainly [Philip] Morris should continue efforts for Marlboro in the youth market.

1002646151-6185 at 6152, 6154-6157 (US 20140).

2730. A Philip Morris March 3, 1975 internal document, titled "Economic Forecast 1975-1980," written by Myron E. Johnston, Senior Economist for Research and Development, stated:

> The most recent surveys have shown an increase in the proportion of teenagers (particularly girls) who are beginning to smoke cigarettes. Thus, even though there will be a decline in the absolute number of teenagers from 1975 to 1980, the number of teenage smokers will remain constant. From 1969 to 1974, by contrast, the number of teenage smokers increased at an average rate of 2.2%. . . . During the last ten years Marlboro has benefitted from the rapid increase in the number of people 15 to 19 years old, the ages at which most smokers begin smoking.

Johnston also predicted that, because of the declining number of fifteen to nineteen year olds:

> Marlboro will be deprived of one source of its growth and, increasingly, will have to rely for growth more on switchers from other brands and on maintaining the brand loyalty of Marlboro smokers. Because of this decline in the number of 15-19 year olds, Marlboro sales will increase at a decreasing rate.

1000739883-9907 at 9903, 9905, 9907 (US 21601).

2731. Johnston sent an inter-office memorandum dated May 21, 1975 to Robert B. Seligman, Director of Commercial Development, Tobacco Products, with the subject "The Decline in the Rate of Growth of Marlboro Red." Johnston discussed four factors contributing to the Marlboro Red growth slowdown: slower growth in the number of fifteen to nineteen year olds, the recession, increasing cigarette prices, and the "changing brand preferences of younger smokers." Johnston stated:

> It has been well established . . . [by studies] that Marlboro has for many years had its highest market penetration among younger smokers. Most of these studies have been restricted to 18 and over, but my own data, which includes younger teenagers, shows even higher Marlboro market penetration among 15-17 year olds.

1003285497-5502 at 5497 (US 20160).

2732. An April 8, 1976 Philip Morris inter-office memorandum from Myron Johnston and Frank Ryan, Senior Associate Scientist for Philip Morris, to William Dunn, Senior Scientist, titled "Teenage Smoking," reported on the "upsurge" of smoking among young teenage girls, and hypothesized that the increase in teenage girls' smoking may be connected to the teenage boys' smoking habits and the fact that "teenage boys typically date girls who are their own age or a year or two younger." This document included information on males age twelve to seventeen and females age ten to fifteen, and observed that the thirteen year old age group "shows the most dramatic increase in proportion of smokers." 1000743958-3959 at 3958 (US 20105).

2733. A May 1976 study prepared for Philip Morris by the Roper Organization, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar Cigarettes," stated that:

> [a]s usual, in the studies we conduct for Philip Morris, we undermeasure Marlboro's share since we do not interview people under the age of 18, and Marlboro is strong with teen-age smokers. Marlboro continues to be a young smoker's brand, with one-quarter of those 18 to twenty-one reporting they smoke Marlboro Red most often.

2024921314-1612 at 1374 (US 20403).

2734. A June 2, 1976 Philip Morris memorandum from Alfred Udow of the Philip Morris Consumer Research Department to James Morgan, titled "Why People Start To Smoke," stated:

"most smokers appear to have begun smoking between the ages of 10 and 18." The memorandum identified the "factors involved in the initiation of smoking," explaining:

> In general, the studies suggest that youngsters beginning to smoke is related to: a) curiosity about smoking; b) conformity pressures among adolescents; c) need for status among peers, including self-perceived failure to achieve peer-group status of satisfaction; d) the need for self-assurance; and e) striving for adult status.

With respect to high school students, the memorandum stated:

> The smoking pattern is established relatively early. Before 12 years of age, less than 5% of boys and 1% of girls smoke, but soon thereafter a steady increase begins. In the 12th grade, from 40-to-55% of children are smokers, and by the age of 25 years about 60% of men and 36% of women have acquired the habit.

Udow indicated that he consulted both external, independent research and internal Philip Morris research on youth smoking: "Information on the motivation that leads to a continuation of smoking comes from a special study done for Philip Morris (Brand, 1971)." 1000744089-4096 at 4089, 4092, 4095-4096 (US 20106).

2735. In a 1978 document titled, "The Assets," Philip Morris reported that "the percentage of smokers in the 17-24 year old age group is up, and the amount smoked per day per young smoker is also up." 1003058994-9017 at 8999 (US 20151).

2736. In a July 1978 document, titled "Estimated Number of US Smokers," Philip Morris tracked smoking incidence among the population starting at age twelve. 2042521997-2001 at 1997, 2001 (US 20445).

2737. A March 1979 study prepared by the Roper Organization for Philip Morris, titled "A Study of Smokers' Habits and Attitudes With Special Emphasis on Low Tar and Menthol Cigarettes," stated: "While we do not interview below age 18, we would guess the trend towards

doing almost everything at a younger age applies to cigarette smoking as well, and is a further factor in enlarging the market." 2049455309-5318 at 5313 (US 22218).

2738. A March 29, 1979 memorandum on Philip Morris USA letterhead, titled "Marlboro," stated: "Marlboro dominates in the 17 and younger age category, capturing over 50% of this market" and itemized various special promotions, including "summer sampling" and the Marlboro Cup. 20483828174-8176 at 8174-8175 (US 21517).

2739. A March 31, 1981 report conducted by the Philip Morris Research Center, titled "Young Smokers Prevalence, Trends, Implications, and Related Demographic Trends" stated that

> Today's teenager is tomorrow's potential regular customer, and the overwhelming majority of smokers first begin to smoke while still in their teens. . . . The smoking patterns of teenagers are particularly important to Philip Morris: Of the eleven packings of which the median age of smokers is under age 30, seven are Philip Morris packings. . . . [I]t is during the teenage years that the initial brand choice is made.

The report indicated Philip Morris's concern over demographic and social trends that were creating a downturn in teenage smoking rate: "Because of our high share of the market among the youngest smokers, Philip Morris will suffer more than other companies from the decline in the number of teenage smokers." 1000390803-0855 at 0808-0809 (US 22334).

2740. In a document dated May 7, 1981, Myron Johnston, Senior Economist for Research and Development at Philip Morris, stated that 33.2%, 32.6% and 32.2% of people seventeen and over were current regular smokers for the years 1978, 1979, and 1980, respectively. 1000792013-2013 (US 20108).

2741. In a January 19, 1983 inter-office memorandum to Jon Zoler, titled "The Ages at Which People Start Smoking," Myron Johnston set out the smoking initiation ages for demographic

groups, finding that the largest percentage (20 to 35%) began smoking before age eighteen, some (18 to 20%) began between the ages of eighteen and twenty-one, and a few (5 to 10%) began between the ages of twenty-one and twenty-five. He asserted:

> Conventional Wisdom has long held that anyone who has not started smoking by age 18 is unlikely to become a smoker. . . . Clearly, Conventional Wisdom has to be rephrased to read: "Anyone who has not become a smoker by age 25 is unlikely to become a smoker." It is interesting to note that the younger cohorts of white females, but not males, are beginning to smoke at progressively younger ages.

1003478157-8159 at 8157 (US 35772) (emphasis in original).

2742. In inter-office correspondence dated February 18, 1983, from Johnston to Alfred Udow, Philip Morris Consumer Research and Marketing Department, titled "Still More on Trends in Cigarette Smoking Prevalence," Johnston discussed "the encouraging upward trend in smoking prevalence among 18-29 year-olds -- encouraging because of the importance of these younger smokers to Philip Morris." 1003285174-5178 at 5174 (US 20157).

2743. An internal document, titled "Product Testing Short Course," dated January 23, 1984, prepared by the Philip Morris Research and Development Department, explained how Marlboro succeeded by attracting new teen smokers:

> Marlboro floundered for 8 years and then hit a responsive chord among the post-war baby-boom teenagers with the theme from the 'Magnificent Seven' and an image uncalculatedly right for the wave of teenagers coming of smoking age.

2028817401-7576 at 7504 (US 20016).

2744. A July 9, 1984 Philip Morris memorandum drafted by Myron Johnston to Leo Meyer on the subject of "The Changing Geography of Menthol and the Threat Posed by Newport" recognized the success of Lorillard's Newport brand and stated:

> The fact that Newport smokers are very young gives further indication that Newport's growth is disproportionately at the expense of Marlboro. (Their median age as derived from the Tracking Study data is 23.2, and that does not take into consideration those under the age of 18.)

Johnston further stated:

> Lorillard has clearly recognized that menthol smokers are disproportionately black and disproportionately young -- groups that have relatively low newspaper and magazine readership and that tend to be pack buyers rather than carton buyers. Hence Newport relies heavily on point-of-purchase and outdoor advertising -- 63 percent of Newport's 1983 advertising expenditures were for outdoor.

2040280951-0977 at 0954-0955 (US 37496).

2745. A December 12, 1984 Philip Morris special report, titled "Cigarette Market History and Interpretation," prepared by John E. Tindall, Senior Scientist at Philip Morris, and broadly distributed within Philip Morris, traced the history of the cigarette market from 1938 to 1984 and analyzed brand shares and relative performance in terms of the demographics of the smoking population and the turnover in the smoking population. The report explained the rise of Marlboro, Kool, and Newport: "New smokers entering the market were disproportionately attracted to those brands." The report stated:

> [I]f the domestic cigarette market is to survive long-term, it must have a constant influx of new smokers. In the past, the psychology of brand choice for new smokers has been an area to which we have had to give little attention since our brands have been among the major beneficiaries of new smokers' brand choices. There are reasons to believe we may not be so fortunate in the future.

The report further stated:

> Marlboro's growth and, presumably, its position as the brand of choice among new smokers, coincided with the Marlboro Country campaign. That was certainly a remarkable campaign and one that

> probably did appeal to young people, but not one that marketers would have been likely to have composed to attract young people in the 1960s.

2001265000-5045 at 5012, 5030 (US 20299).

2746. An August 15, 1985 report, titled "Trends in Smoking Among High School Seniors," authored by Johnston and addressed to Jon Zoler, Director of Marketing Research, stated that "about half of all people, in all age cohorts, who ever smoked have been smokers at age 18. Thus by studying trends in smoking among 18-year-olds we might gain some insight as to what to expect in the future." The report provided extensive data on the smoking habits of high school seniors. Zoler commented that this study was "the most comprehensive study I've seen on the subject." 2040282066-2092 at 2066 (US 20437).

2747. A 1987 Philip Morris document, titled "Parliament Brand Plan Executive Summary," recommended a shift of focus to a younger demographic target because

> strategically, if Parliament is to stabilize and grow over the long term, we must pick up younger smokers. Fortunately, we have reason to be optimistic about our ability to appeal to younger smokers. . . . To target the 18-24 males and females, our retail focus will be on pack outlets (52% of smokers in this age group buy the pack compared to 30% of all smokers) and will be trial/conversion oriented. This younger age group is more likely to make decisions based on peer pressure. To convey the idea that everyone is smoking Parliament, the brand should have continuous high levels of visibility in as many pack outlets as possible.

2045287048-7092 at 7061, 7063, 7064 (US 38407).

2748. An August 19, 1987 inter-office memorandum from Nancy E. Brennan (now Lund), current Senior Vice President for Marketing at Philip Morris, to David E.R. Dangoor, Executive Vice President at Philip Morris, summarized "Key Marlboro Issues." According to Brennan:

> The life blood of the Red franchise is new, young (male) smokers. In this regard, several demographic and industry factors are working against us: 1) a shrinking population of young adults, 2) a lower incidence of smoking among young adults and, 3) an increasing percentage of new smokers entering the market with a low tar cigarette.

In order to maximize share, Marlboro should

> [s]eek ways to display Marlboro continually in the convenience stores to fully capitalize on new smoker trial and reduce temporary "defection. . . . ." For Marlboro, the most critical retail visibility is displayed product. Currently, the Brand does not have continuous leadership display presence in pack or carton outlets. This should be our first priority. We are missing trial opportunities.

2045305938-5942 at 5938, 5939, 5941 (US 26948).

2749. Roy Anise, a manager in the Philip Morris Market Research Department, drafted a February 1, 1988 report addressed to Jon Zoler which noted that Philip Morris had reviewed the decreasing smoking incidence among high school seniors to determine if it was a cause of declining smoking rates of military personnel. Anise's report cited Myron E. Johnston's 1985 report, titled "Source Trends in Smoking Among High School Seniors," which stated that "[h]istorically about half of all people . . . who ever smoked have been smokers by the age of 18." 2042078401-8405 at 8404 (US 20442); 2022214369-4395 at 4369 (US 20357).

2750. Myron Johnston wrote a March 17, 1988 memorandum addressed to Jon Zoler, titled "Smoking Among High School Seniors," in which he stated: "I am even more confident than before that we can use the data on high school seniors to predict trends in smoking among young adults." 2042329558-9566 at 9561 (US 20443).

2751. An April 5, 1988 letter from Elizabeth H. Reiman, a Leo Burnett (Philip Morris's advertising agency) employee, addressed to Nancy Brennan Lund, now Senior Vice President for

Marketing at Philip Morris, provided "details regarding the upcoming Camel qualitative study" and stated that "[r]ecent strong Camel performance, especially among the young male target, has resulted in an effort to explain that success and determine the potential threat to Marlboro." The letter indicated that respondents for this study were to be "recruited among 18-24 year old smokers." 2045471014-1015 at 1014 (US 20461).

2752. A September 26, 1988 inter-office memorandum written by Carolyn Levy, then Philip Morris Assistant Director of Consumer Research, to David Dangoor, Executive Vice President, outlined issues to research in 1989, including: "Can we gain a better understanding of young smokers? What are their personality traits, beliefs, values, lifestyles? What are the marketing implications of these findings?" 2080009511-9515 at 9511 (US 20535); see also 20080009516-9522 (US 88155); 20080009523-9529 (US 88156).

2753. The "Philip Morris USA R&D Strategic Plan, 1991-1995," written in 1990, stated:

> A review of Marlboro demographics is also a review of the 18-25 year old age group. . . . [I]n 1989, Marlboro's share of that smoker group was in excess of 60%. The brand's strength since 1977 has been in that age group. . . . [T]he continued success of this brand depends on keeping its age profile young. This fact then would say that we do not want Marlboro or the Marlboro image to be old. Its success through the years has been its ability to attract the entry smoker.

2026230097-0713 at 0211 (US 20423).

2754. A report dated August 7, 1990, titled "New Brand Opportunities in the Cigarette Industry," was written for Philip Morris by Gibbons, Voyer & Associates. The report found that seventeen to nineteen year olds comprise 18.9% of smokers. It stated: "Marlboro dominates young adult smoker market: initial exposure, peer pressure, meets image wants." It recommended that any

marketing approach "insure that Philip [Morris] has a brand entry to meet the various wants of young adult smokers: image, product, price." 2049397333-7369 at 7343, 7348, 7350 (US 20486).

2755. Philip Morris's "Marlboro Brand Review" dated April 12, 1992 analyzed Marlboro's past share growth and predicted future patterns. The document stated that, while Marlboro Red King Size and Marlboro Lights King Size had shown steady growth from 1989 to 1992, this growth "has not however compensated for the loss from the Red parent brand" which showed declining sales. The document discussed marketing strategies aimed at a key type of Marlboro consumer, the CHIMP, defined as eighteen to twenty-four year olds who are "young, self-confident, socially-active." 2501081089-1104 at 1093, 1094 (US 20560*).

2756. A document, titled "PM USA Business Update," dated October 8, 1992 stated that Philip Morris "faces two significant negative trends. The growth in discount cigarettes is reducing our premium sales and we are not obtaining our historic share of entry-level adult smokers." In order to "[a]ssure PM USA's long term prospects by obtaining our historic share amongst entry-level adult smokers," Philip Morris must:

> Contemporize all Marlboro creative with more arresting promotional advertising like Adventure Team and racing; Develop the Marlboro Adventure Team and similar high quality continuity programs into long term affordable promotion in C-stores [convenience stores]; Reinvigorate Marlboro Medium with stronger and more relevant advertising; Develop an alternate mainline campaign to Marlboro Country/Cowboy; [and] Relaunch Bucks, including a lower priced box, with an irreverent advertising campaign meaningful to the young adult smoker.

2046569728-9731 at 9728, 9729-9730 (US 20471).

2757. According to the "Philip Morris USA 1994-1998 Plan Overview," Marlboro had approximately a 60% market share among young adult smokers in 1993, and Philip Morris

understood that "Marlboro's favorable demographics are the key to long term growth." This share of young smokers was disproportionate to Marlboro's overall market share of 42%. 2071032180-2206 at 2181, 2185, 2187 (US 21964).

2758. During a March 26, 1993 speech, Michael Szymanczyk, then Senior Vice President of Sales at Philip Morris, stated: "The fact that there is not a clear discount brand leader among 18 to 24 year old smokers suggests that whoever catches these smokers may be able to retain them over a longer period of time." Szymanczyk further stated that "we have to maintain our 60 [sic] share of young adult smokers, since we know that they are our future." 2023771556-1604 at 1587-1588, 1603 (US 20395).

2759. A document, titled "Worldwide Marlboro Monitor: Five Year Trends 1988-1992," written in April 1993 and produced from the files of Philip Morris's Marketing Research Department, stated:

> In markets where Marlboro Red's share of young adult smokers has declined, share of starters was also down. Thus, the ability to attract new smokers and develop them into a young adult franchise is key to brand development. . . . Longer-term brand development depends more on a growing share of starters translating into a strong franchise of young adult smokers. . . . If the young adult smoker franchise is not growing, the brand profile ages over time, which means a smaller proportion of its smokers are in the prime target. As a result, the brand is less visible and impactful among our target smokers and their peer group.

2044895379-5484 at 5389 (US 85185).

2760. Szymanczyk stated in a speech to Equipment Manufacturers in October 1993:

> Marlboro's age profile reveals a brand that has a higher share among each successively younger adult age group. Its share of adult smokers under age 25 is greater than the combined share of all other brands, premium or discount.

2062331315-1324 at 1322 (US 20510).

2761. The Philip Morris Continuous Consumer Tracking Survey (also called "Continuous Tracking Survey") is a telephone survey commissioned by Philip Morris and performed by its various market research suppliers. It is an ongoing survey that Philip Morris has conducted since approximately 1980. Until 1988, the survey was conducted twice per year. In approximately 1988, on the recommendation of Carolyn Levy, director of the department handling the survey, the data collection methodology was modified to become a "continuous" study in order to avoid "gaps" in information. The method of calling is a "random digit dialing" procedure, where questioners call people who claim to be adult smokers and ask them questions about their cigarette brand preferences and their buying behavior. According to Levy:

> historically, and we continue to this day, our method is to go for the youngest male who is at home. So the idea was you select the youngest male adult smoker in the household who's home at the time. . . . We try to go to the hardest to find first [the youngest male] if they are there.

Questions asked include: the promotions they may have seen or purchased; the cigarette brands they have purchased in the last week; the type of store at which they purchase cigarettes; whether they are saving Marlboro Miles; their knowledge of certain brand images; promotion and advertising awareness; and the number and ages of all smokers in the household. Levy PD, California v. Philip Morris, 6/23/98, 18:18-30:12; Levy WD, 17:18-20:15, 27:2-28:19, 41:7-43:18, 48:4-51:21.

2762. Philip Morris has conducted extensive consumer research to help inform and shape marketing campaigns that appeal to their youngest potential smokers. For example, by using its continuous smoker tracking survey, in November 1994: (1) Philip Morris determined that Marlboro and Camel are the leading non-menthol brands for male smokers ages eighteen through twenty-four;

(2) Philip Morris examined the lifestyles and attitudes of eighteen to twenty-four year old male smokers to explain their brand choices, including their leisure time activities (e.g., hanging out with friends, keeping car looking good, talking on the phone with friends, going to bars or rock concerts), social circles, attitudes about smoking, brand image, and their aspirations and objectives; (3) Philip Morris profiled male Marlboro smokers between the ages of eighteen and twenty-four and compared them with the profiles of Camel male smokers of the same age; (4) Philip Morris determined that the Marlboro Brand image among eighteen to twenty-four year old males included: cool, outgoing, popular, outdoorsy, adventurous, and independent; (5) Philip Morris's profile of an eighteen to twenty-four year old male Marlboro smoker was a relaxed smoker who feels unpressured; (6) Philip Morris determined that, unlike Marlboro smokers, Camel smokers were attracted by the individuality of their brand (and the advertising packaging); (7) Philip Morris researched the size of its smoker base and determined that Marlboro male smokers age eighteen to twenty-four made a disproportionately high contribution to Marlboro's total volume comprising seven million smokers, and accounting for one in five of Philip Morris's total smokers; and (8) Philip Morris determined that smokers eighteen to nineteen shared a similar racial make-up and that 86% were white males who smoked Marlboro Red. 2048735500-5604 at 5501, 5505, 5508, 5518, 5531-5541, 5543, 5547, 5555 (US 21971).

2763. On November 29, 1994, Shari Teitelbaum, Director of Marketing and Sales Decision Support for Philip Morris, wrote an internal draft memorandum to Karen Chaikin, Manager of Trade and Business Programs, that summarized and attached the research results of the "Ohio Retailers Study":

> It appears that minors attempting to buy cigarettes happen [sic] on a fairly regular basis. Approximately 85 percent of retailers say that minors under the age of 18 attempt to purchase cigarettes in their store at least once a day. Of these, more than half say this happens at least three to four times a day, including 16 percent saying this happens ten times a day.

This conclusion and the corresponding table were omitted from the final version of the memorandum and attachment, which were sent on December 9, 1994. 2046828693-8693 (US 21802); 2046828694-8697 (US 21803); 2046828612-8615 at 8612 (US 20479) (emphasis in original).

2764. In 1995 Philip Morris tracked the smoking preferences of college students through an analysis of College Scan 1995, a telephone study conducted among 3,000 full time college students over eighteen years of age. The Philip Morris analysis stated that "Marlboro's share reached an all-time high (61.4%) in 1995, Camel's share continued to decline, and college smoking incidence . . . historically low, appeared to be stabilizing at about 14%." The analysis also concluded:

> Philip Morris's share of adult college smokers (69.3%) is up in 1995 (+5.3%). The gain is traceable mainly to Marlboro and Parliament. . . . Among full time college students, RJR's share has been declining since the price reduction of Marlboro Friday in 1993. . . . Together, Marlboro and Camel comprise 80.2% of the college market. . . . Marlboro's growth has come largely at the expense of Camel and Salem. . . . Marlboro has reached all time highs among . . . 18-19 and 20-23 year old adult full time college students. . . . Camel has declined among . . . 18-19 and 20-23 year old full-time college students.

2040171445-1455 at 1445, 1446 (US 37478*).

2765. A February 1, 1995 letter on Leo Burnett letterhead from Esther Terrell Franklin, then researcher for Leo Burnett, addressed to Susan Norris, Marlboro Brand Manager from 1995-1999, delivered an attached study titled "Insight: A Look at Today's Young Adults." In the letter, Franklin wrote:

> InSight is part of a larger project, Young Adult Trend Track, initiated by the Philip Morris research group. The purpose of this project is to keep the entire Philip Morris team abreast of the current lifestyles of young adult consumers.

Under the heading "Notes from the Editor," Franklin, listed as Editor-In-Chief, explained the purpose of the project:

> This booklet (and the editions which will follow) will help you gain a clearer understanding of [Generation X], by giving you a sense of their hearts, their minds, their souls. And by beginning to better comprehend the young adult mindset, advertising to this segment can be truly inviting, impactful and influential.

Half of the study's participants were non-smokers. 2041601887-1931 at 1888, 1889, 1891 (US 38213); Norris PD, United States v. Philip Morris, 7/31/03, 238:25-250:6.

2766. According to Shari Teitelbaum, Philip Morris Director of Marketing and Sales Decision Support, Philip Morris has used the term "herd smoker" to refer to smokers of the most popular cigarette brands, like Marlboro, Camel, and Newport, because these brands attract the largest share of young adult smokers. Herd brands are "the most popular, it's for smokers that would be likely to kind of follow the herd, kind of more of a group mentality type of thing." Teitelbaum PD, United States v. Philip Morris, 4/16/02, 77:22-78:25.

2767. In 1995, Philip Morris decided to attempt to expand its Virginia Slims target audience, previously age twenty-five to forty-four to include younger women age eighteen and older. As the series of research reports discussed below demonstrates, Philip Morris conducted marketing research itself and also contracted with third parties for research on women eighteen and older. The "Regional Analysis of 18-29 Year Old Women," conducted by Roper Starch for Philip Morris, described the new target group as having the "psychographics" of being in transition to becoming

independent, getting their first real job, moving away from home, finishing school, and establishing themselves as individuals. 2045812333-2387 (US 38490). Focus group research on women age eighteen to twenty-four conducted for Philip Morris explored whether an attitude of independence would appeal to these women. 2063684453-4480 (US 39819). A Roper Starch report prepared for Philip Morris USA dated June 1995, titled "You've Come A Long Way Baby, But Where Are You Going Now?" analyzed the behavior and attitudes of eighteen to twenty-nine year old females. 2045812333-2387 (US 38490). To effectively reach these smokers, Philip Morris conducted qualitative research

> to understand the attitudes that are relevant to switching from a . . . herd brand to a non-herd brand and to . . . explore both product and imagery associated with those two categories of brands and to provide input on new product concepts that might be available for Virginia Slims.

LeVan PD, United States v. Philip Morris, 6/25/02 148:12-18; see also 2063684338-4340 (US 39817).

2768. Philip Morris designed a new campaign called "It's a Woman Thing" and a series of corresponding events at bars aimed at women age eighteen and older; this campaign was launched after June 1995 and successfully increased Virginia Slims's share of women ages eighteen to twenty-four. 2070672027-2027 (US 85189).

2769. A July 5, 1995 Philip Morris internal memorandum from Jay Schwartz, a senior analyst in Philip Morris's Consumer Research Department, regarding "College Scan - Spring 1995" was sent to various Philip Morris employees, among them Suzanne LeVan, Vice President of Marlboro. The memorandum stated that College Scan, a nationally projectable telephone study of college students age eighteen and over regarding their smoking habits, incidence rates, and brand

choices, was conducted during April and May of 1995. 2040171445-1455 at 1445 (US 37478*), 1/10/05 (LeVan). With regard to the "College Scan" document, LeVan agreed with the statement: "Marlboro scores by far and away the highest in terms of brand usage and smoking incidence . . ." among eighteen year olds. LeVan PD, United States v. Philip Morris, 6/25/02, 185:19-22.

2770. Philip Morris solicited research proposals for national consumer research to profile the demographics, lifestyle, world view and culture, and entertainment and media consumption of young people between the ages of eighteen and twenty-four living in urban areas. 2045592699-2709 (US 38434).

2771. A Special Roper Reports Analysis dated January 1996, titled "'Talkin' About My Generation:' An Examination of Generation X," discussed the Roper organization's study of the purchasing behavior of Generation X, those born between 1966 and 1985, i.e., eleven to thirty year olds. The analysis was prepared for Philip Morris and presented to a group of Philip Morris Brand and Consumer Research employees. 2047130104-0170 (US 38583).

2772. In a May 22, 1996 "CPC New Products" speech, Bob Mikulay, Senior Vice President for Marketing at Philip Morris, stated:

> The final area for review today is the young adult smoker. While these 18-24 year old smokers currently represent only 13.9% of all smokers and 11.1% of industry volume, they are absolutely critical to our future. Because brand loyalty in the industry is high and adult smokers tend to retain their brand as they age, the ability to attract and retain these smokers signals the industry's leaders in future years. Marlboro is the clear segment leader with a young adult smoker share of over 62% . . . . Newport is the #2 YAS brand, with a smoker share of 13.1%. Camel is #3, at a 10% share of YAS. Because of the segment's importance, we will aggressively defend Marlboro's position as the competition's future is dependent on penetrating this category.

2041518797-8956 at 8819-8820 (US 23907).

2773. Philip Morris focused its efforts on retail visibility -- making its brands highly visible at convenience stores -- because its own consumer research indicated that most young people visit and purchase their cigarettes at convenience stores. The 1998 "Generation X/C-Store Study" conducted by Philip Morris explored eighteen to twenty-five year olds' "Attitudes about Convenience Stores . . . Behaviors related to Convenience Stores . . . [and] How they perceive the Convenience Store visit." The study determined that: "[m]ost of these young adult smokers routinely visit and purchase cigarettes almost exclusively at C-Stores." It also found that "[f]ew among these young adult smokers are carton buyers, and most do not want to be carton buyers." 2082512930-2986 at 2931, 2935, 2986 (US 45497).

2774. In 1998, Philip Morris USA became concerned that its share of so-called "young adult smokers" was declining. In order to counteract this trend, Philip Morris launched new Retail Visibility and Bar Event Programs, as well as related magazine and newspaper advertisements with the purpose of increasing Marlboro's "perceived popularity." In a June 1998 "Metro YAS Tracking Study-Pre Wave" Philip Morris stated:

> To counteract the softness in Marlboro's share among young adult smokers, retail visibility promotion programs and bar event programs were launched in selected areas beginning in May 1998. The programs were implemented to increase Marlboro's top-of-mind awareness and perceived popularity. In addition, they are designed to improve the brand's relevance by increasing its association with YAS' lifestyles and self images in these Metro areas.

Additionally, the document noted that "[p]oint of purchase is the key source of brand visibility." 2071693599-3614 at 3600, 3608 (US 24574).

2775. Philip Morris tracking found that its summer 1998 Retail Visibility and Bar Event Programs successfully increased the perceived popularity of Marlboro. A September 1998 "Metro YAS Spending Study -- Post-Wave I" stated that:

> Awareness levels for Marlboro promotions noticeably increased after the Retail Visibility Program was implemented. . . . All smokers report seeing more Marlboro advertising in bars and Marlboro smokers are seeing more advertising in local publications. . . . In the medium spending markets, the Brand's programs succeeded in bumping up Marlboro's perceived vitality . . . [and] Young Adult Smokers perceptions were strongly affected [in the perceived increase in popularity of Marlboro].

LB0170038-0053 at 0038, 0042, 0044, 0050 (US 25906).

2776. Philip Morris's 1999 "Marlboro Marketing Mix Monitor" compared "the profiles of 7 key marketing equities: Advertising . . . In-Store Advertising . . . ROP/Bar Nights . . . Party at the Ranch . . . Racing School . . . Marlboro Menthol . . . [and] New ways to use Miles." The report concluded that "Marlboro's core product imagery remains rooted in quality, popularity and flavor. The brand's personality is popular, outdoorsy, adventurous, active and a leader. . . . Female smokers think of Marlboro as popular and sociable." 2073970989-1050 at 0991, 1049, 1050 (US 24685).

2777. An April 14, 2000 memorandum from Michael M. Cassidy, a Philip Morris employee, to various other Philip Morris employees, titled "YAM Scan II-Final Presentation Summary," discussed "[w]hat is happening with young adult males." The memorandum indicated that, based on a series of focus groups conducted with males aged nineteen to twenty-four, young adult males choose a cigarette by considering a brand's imagery and the associations attached to a brand, and pick the brand to match the image they want to portray at that moment. 2080985436-5438 at 5436 (US 45363).

2778. As of 2002, it was the view of Shari Teitelbaum, Director of Marketing and Sales Decision Support at Philip Morris, that Philip Morris markets its products to smokers eighteen years old and older and continues to conduct extensive research into the preferences of young smokers beginning at age eighteen, in focus groups, triads, and in-depth one-on-one interviews. Teitelbaum PD, United States v. Philip Morris, 4/16/02, 21:10-17, 23:14-25:19, 77:21-78:25.

2779. As of 2002, it was the view of Michael Mahan, Vice President of Marketing and Sales of the Asia-Pacific Region for Philip Morris, that Marlboro's "prime target" is young adult smokers. He described Philip Morris's communication strategy for Marlboro as using high-quality visuals and focusing advertising on the core elements of the campaign, which are "Come to where the flavor is" and "Marlboro country." Mahan PD, United States v. Philip Morris, 5/31/02, 76-77, 84-85, 186-194, 120:20-122:2.

2780. According to a report, titled "Adult Smoker Watch, December Report 2003," Philip Morris continues to monitor and track the brand choices, brand loyalty, smoking behavior and smoking incidence of young people of "legal age," i.e., over eighteen in most states (separately from its tracking of "Total Adults") by interviewing 4,000 young people every month on a continuous basis including people eighteen years of age in most states and nineteen years of age in Utah, Alabama, and Massachusetts. PM3002956620-6692 at 6624, 6692 (US 88650) (Confidential).

(2) Lorillard

2781. A July 24, 1963 letter from Shirley Young of Grey Advertising to Richard F. Kieling, Director of Market Research at Lorillard, discussed a Lorillard study which sampled the smoking behavior of students as young as sixteen years of age. 89834681-4684 at 4681 (US 21108).

2782. On June 2, 1966 Lorillard sent a letter authorizing Grey Advertising to conduct a "Penetration/Usage/Image" study designed to examine the success of Kent and True marketing. The letter indicated that the study's results "will be tabulated out for the age cell of 16 thru 20 years, in order that we may analyze this group separately." 89834271-4271 (US 20943).

2783. In 1966 and 1969, Lorillard hired Eastman Chemical Products, a subsidiary of the Eastman Kodak Company, to conduct extensive surveys of cigarette smoking behavior and attitudes. The introduction to the first volume of Eastman's 1969 study noted:

> In the 1966 survey group interviews, only adults aged 18 and over were included. . . . However in 1969 a better insight into the habits and attitudes of the younger age groups was needed. . . . So this [group interview] phase of the survey was concentrated on young people ranging in age from 12 to 24 years.

81560431-0496 at 0438 (US 85200). In the first volume of Eastman's 1969 study of cigarette smoking behavior and attitudes, Eastman looked closely at smoking initiation behavior of individuals ages seven to twenty-one. Eastman found that over thirty percent of young males obtained their first cigarette, not from parents, friends or relatives, but from buying it (over 10%), stealing it (over 15%), or making it (nearly 10%). Both boys and girls reported about equally that their first cigarette made them feel grown-up. Among the subset of interviewees sixteen to twenty-four years of age, nearly 20% of males and over 10% of females reported feeling "big," while nearly 20% of both sexes mentioned confidence and security as reasons why they started smoking. The study also examined regular smoking among youth ages thirteen and up. Id. at 0454-0455, 0458, 0460, 0465-0471. The second volume of Eastman's 1969 study of cigarette smoking behavior and attitudes included a survey of the literature published between 1967 and 1969 on the smoking behavior of children as young as eleven, as well as teenagers. 81560497-0541 at 0500-0508 (US 85201).

2784. F.B. Satterthwaite, a Lorillard employee, wrote a June 7, 1973 memorandum to Lorillard President Curtis H. Judge, regarding Lorillard's analysis of its own and its competitors' brand shares by age. Satterthwaite stated:

> The company analysis, based on cumulative brand shares by age group, though correct as far as it goes, is misleading. The favorable trends toward youth for RJR, Philip Morris and Brown and Williamson are completely explained by three brands -- Winston, Marlboro and Kool, respectively. Without these three brands these companies present an older age pattern similar to the other two companies. The exclusion of Newport from their most recent period is detrimental to the overall Lorillard pattern.

91270029-0030 at 0029 (US 21109).

2785. A report, titled "A Special Presentation for Lorillard . . . Cigarette Advertising 1974-1975," by Gallup gauged the effectiveness of advertising in particular magazines, including in the category of "Glamour (Age 15-34)" magazines such as, among others, Seventeen and Teen. 03496228-6630 (US 20057).

2786. An August 22, 1975 memorandum, titled "Progress Report - Zack Filter and Menthol," from R.E. Ritchie to A.J. Bass at Lorillard reported that

> retailers continue to comment that the majority of consumers are younger people between 14 to 25 years of age. Sales from types of accounts like convenience stores continue to support these comments. I feel another sample program is needed with emphasis placed in the suburban areas where the younger people can be reached, and this to be done with outside samplers.

91529112-9114 at 9112 (US 21110).

2787. At a March 27, 1978 Lorillard field sales representatives' seminar, several marketing ideas for Newport cigarettes were discussed. Discussion subjects included: sponsoring youth sports teams; advertising featuring black athletes; tie-ins with professional sports teams; sports posters and

bumper stickers; give-away sweat bands; tie-ins with record companies; scholarships for underprivileged youth; "Tie-in with any company who help black -- We help them, they help us. Target group age 16+"; and sponsoring Miss Black Teenager contests. Also specifically discussed was "[h]ow to reach Younger Smokers: P.O.S. material, sampling, Black inner-city newspapers, [and] Tee-shirt give aways." 85530255-0264 at 0262-0263 (US 31998) (emphasis in original).

2788. In a June 9, 1978 Lorillard memorandum, titled "Black Marketing Research-Findings and Recommended Actions to Date," to J.R. Ave, Senior Vice President of Marketing, and T.H. Mau, G. Flinn, J. Rowe, J. Greene, and E. Ricci, Newport Assistant Brand Manager Robert Davis stated that Newport was "definitely a starter brand . . . . Newport is identified as an 'entry' brand." Under the heading "Demographics," Davis stated: "Black Newport and Kool smokers are even younger than the switching data would indicate." The memorandum characterized the Newport brand profile as being "Age 18-30." Davis also indicated in his memorandum that Newport appealed to high school as well as college students, in competition with Kool, "the dominant entry brand in the inner city." 85530255-0264 at 0255-0256, 0258-0260 (US 31998).

2789. An August 30, 1978 Lorillard memorandum from Ted Achey, Lorillard's Director of Sales in the Midwest, to company President Curtis H. Judge regarding "Product Information," demonstrates that Lorillard recognized the significance of the underage market to the company:

> The success of NEWPORT has been fantastic during the past few years. Our profile taken locally shows this brand being purchased by black people (all ages), young adults (usually college age), but the base of our business is the high school student. NEWPORT in the 1970's is turning into the Marlboro of the 60's and 70's. It is the "In" brand to smoke if you want to be one of the group. Our problem is the younger consumer that does not desire a menthol cigarette. If that person desires a non-menthol, but wants to be part of the "In" group, he goes to Marlboro . . . . I think the time is right to develop a

> NEWPORT NATURAL (non-menthol) cigarette to attract the young adult consumer desiring a non-menthol product. . . . A good test area might be the Camden, New Jersey Division.

03537131-32 (US 22357).

2790. An August 11, 1981 memorandum from Tom A. Mau to various Lorillard employees, 01110991-0992 (JE 021604), attached a document, titled "Replies to 5-year Plan Questionnaire," which stated that "the easiest [brand] to keep riding is Newport. However, I think we must continually keep in mind that Newport is being heavily supported by blacks and the under 18 smokers. We are on somewhat thin ice should either of these two groups decide to shift their smoking habits." 01110993-1032 at 1030 (US 20031).

2791. An October 1981 report prepared for Lorillard by the research firm Shoi Balaban Dickinson Research, titled "An Exploratory Study for Newport Smoking and Purchase Behavior of Young Adults," stated:

> One-half of these respondents began to smoke at ages 10 to 13 years, with most of the remainder starting to smoke between 14 to 17 years of age, with the pattern precisely equal between male and female respondents. Among these participants, it was rare to start smoking at an age older than 18 years. Marlboro and Newport were mentioned far more often than any other brands as the initial brand smoked. . . . Almost all of the respondents report current friends who smoke the same brand as the respondent, and there is a ready awareness of the brands their friends smoke. . . . One of the most striking findings is the very limited number of brands mentioned either as used by their friends or associated with smokers their own age.

The report further stated: "Both the male and female respondents thought of the typical Newport smoker as 'young,' and both cited Newport as a brand used by those who are just starting to smoke." 84411662-1689 at 1669,1680 (US 55999); 83896981-7009 at 6989, 7000 (US 55927).

2792. An August 2, 1982 Lorillard memorandum from Florian Perini, Senior Research Chemist, to M.A. Sudholt, Manager of Analytical Development, on the subject of "Idea Session July 27, 1982 of the Tobacco Science Group" contained a proposal that "Video Game Imagery [be] incorporated in pack design (youth appeal)." It detailed:

> the widespread video game craze has certain fundamental features which we could be the first to exploit. Names such as PAC MAN, SPACE INVADERS, TRON and their imagery can imaginatively show up on cigarette packs with repeat motifs . . . and patterns, and their bright imagery can have lasting appeal. Can extend concept to SPACE IMAGERY (Galaxy, Cosmos, Universe).

96509517-9519 at 9519 (US 56890).

2793. Laurie R. Moroz, Manager of General Marketing Research at Lorillard, stated in a September 2, 1983 memorandum to Curtis H. Judge, President of Lorillard, that "because the number of teenagers is declining rapidly, even a stable smoking incidence would mean a declining number of entering smokers." 03922854-2854 (US 21755).

2794. In February and March 1984, Lorillard conducted focus groups of young menthol smokers ages eighteen to twenty-four. A February 20, 1984 Lorillard document titled "Topic Guide -- Young Menthol Smokers" provided ways for an interviewer to gather information about young smokers. This document included a list of questions to ask young adults, including:

> How many packs do you usually buy at a time? . . . When you buy cigarettes in a store, do you notice it if some brand has a special display? . . . Sometimes you might get a small free sample pack of a brand. Have you ever bought the brand later based on trying the sample? . . . How do you think of the cost of cigarettes compared to other things you buy -- expensive, cheap, or what? . . . Quite often there are brands on display that are being promoted at a lower price than other brands. When you see that type of offer do you ever take advantage of the lower price? . . . What do you think of the idea of being able to buy cigarettes in packs of 10 cigarettes, which would be

> priced at half of what you now pay for a pack? Under what circumstances can you imagine yourself buying a 10-pack?

85377724-7729 at 7725-7727 (US 21078). In a March 8, 1984 memorandum, titled "Young Menthol Smoker Focus Groups," to S.T. Jones, Lorillard Director of Product Development and Marketing Research, Laurie Moroz discussed "observations and hypotheses" from these focus groups and stated: "the females in the 18 to 24 year old age group are more experimental and open to new brands than males." 85377682-7682 (US 87806); 85377680-7681 at 7680 (US 87807).

2795. Lorillard's September 1988 "Newport Image Study" concluded that "[i]n all areas Newport smokers were viewed as party-goers, those that do their own thing and [are] fun-loving" and "[i]n all areas Newport smokers were viewed younger and more fun-loving than Kool and Salem smokers." 89579737-9797 at 9784 (US 67673); 89576893-6936 at 6935 (US 67669).

2796. A document setting out strategies for Newport's Van and Music Truck Programs, Club Event Nights, Race Car Program, and other promotional events for 1991 and 1992 stated that the programs "maximize Newport's exposure to our target audience, where they live, and where they have fun." For example, the Newport Van Program sent out vans which acted as "mobile billboards," for the purpose of "developing new business." The document explained that "[y]oung adult smokers, especially in inner-city areas, will tend to emulate those adults that are already smoking. . . . The targeted age factor plays a major role in selecting sampling locations." Regarding Newport's Special Events programs at music festivals and street fairs with "exceptionally large crowds," the document stated: "The promotional effectiveness of getting potential smokers to touch, hear, taste and see the activities we provide . . . must have the desirable impact in generating trial and positive recall for Newport." 93374749-4761 at 4756, 4757, 4761 (US 85204).

2797. In a November 2, 1993 memorandum sent to Lorillard employees on the subject of "Special Promotions -- POW! 'Pleasure on Wheels,'" Richard DiDonato wrote:

> POW is a promotional program that utilizes Newport vans, operated by agency personnel, to distribute promotional items to Newport purchasers. The objective of the POW program is two fold:
>
> -- Generate incremental volume thru [sic] impulse purchase and long term conversion
>
> -- Reinforce Newport's image as the 'peer brand' among young adult smokers.

92092650-2651 at 2650 (US 57159).

2798. Newport's 1994 Brand Plan, dated November 16, 1993, stated that "Newport's creative product must strengthen Newport's competitive edge as the 'peer' brand among younger adult smokers," and that Newport is "positioned to appeal primarily to general market/urban center adult smokers ages 18-24." 91945017-5124 at 5033, 5045 (US 21113); 92002948-3012 (US 87808); 92003013-3021 (US 87809).

2799. A January 1994 document, titled "Final Report on Eight Focus Groups with Black and White Users of Newport, Salem, and Kool Cigarettes on Issues Related to Newport Cigarettes and its Advertising Campaign," was prepared by RIVA Market Research for Lorillard. In the "Executive Summary," the report stated that "Black Newport smokers perceive Newport as the 'in' cigarette, or cigarette of choice among themselves and their peers. They view it as a <u>popular</u> cigarette which fits with their lifestyle." The report continued:

> White Newport Smokers (men) really enjoy the taste of Newport cigarettes, yet feel they are "<u>out of the mainstream</u>" because most of their friends smoke Marlboro Lights. The women feel they are smoking a "cool" cigarette that people with happy, active, and upbeat lifestyles smoke, as Newport ads project.

This report also stated that "Lorillard's Newport brand recognizes younger adult smokers as an important consumer base for this cigarette. This market is defined as a 'twenty-something' market; adults ages 18-29." 91950191-0242 at 0193, 0195 (US 74423) (emphasis in original).

2800. According to George Telford, Vice President of Brand Marketing at Lorillard, as part of Lorillard's direct marketing efforts, the company collects demographic information about smokers' age, gender, and race, which is then used by Lorillard to focus its marketing efforts, including its advertising for different brands based on the particular demographic profile of those brands. Because Newport advertisements are targeted at the younger segment of the adult smoking population, Lorillard advertises Newport in publications like Sports Illustrated, Playboy, and Penthouse, all of which have substantial youth readership. Telford PD, United States v. Philip Morris, 6/26/02, 59:22-62:2, 63:20-64:3.

(3) American Tobacco, BATCo, and Brown & Williamson

2801. An April 6, 1960 American Tobacco memorandum from James R. Huott of the Filing Department to Karl W. Schullinger, Assistant to the Advertising Manager, stated that "the largest potential market for Lucky Strike is in the younger age groups," and that "Bonanza" would be a better television venue for Lucky Strike than "Lawrence Welk" because "Bonanza" was viewed by a greater number of people in the "younger age groups." An attached chart showed that three times as many "Teen-Agers (boys and girls 13-17)" watch "Bonanza" as watch "Lawrence Welk." ATX030308900-8901 at 8900 (US 20583).

2802. An August 1962 proposal to the Tobacco Manufacturers' Standing Committee ("TMSC"), later renamed the Tobacco Research Council, by Market Investigations, Ltd. summarized "a large scale survey of smoking by children" that had already been performed for the British

cigarette manufacturers (including BATCo) in 1961, and recommended that the TMSC fund further studies of "the trend in smoking by children and young adults" including "[t]he change in smoking habits as children grown older; particularly in the three or four years before the age of fifteen." Like CTR in the United States, TMSC was an organization that funded industry-sponsored research in the United Kingdom; BATCo officers sat on the TMSC Board. The 1962 proposal from Market Investigations Ltd., titled "Smoking by Children and Adolescents, Memorandum on Further Research to the Tobacco Manufacturers' Standing Committee," suggested interviews of "ten and eleven year olds." The proposal stated:

> Children in their teens present a dilemma for the tobacco manufacturer. On the one hand you want to discourage children from smoking. . . . On the other hand, it is difficult for you to lend your weight to a campaign against smoking by young people without running the risk of discouraging them from taking up smoking altogether.

105408812-8815 at 8812-8813 (US 26273).

2803. American Tobacco continued to study the impact of certain advertising on children ages sixteen and above after it adopted the 1964 Advertising Code, despite the fact that the Code banned such advertising. American Tobacco determined that its advertising was reaching the sixteen to twenty year old market. Gesell PD, Minnesota v. Philip Morris, 9/18/97, 54:19-55:11, 57:1-59:2.

2804. A July 1968 document "[p]repared for the American Tobacco Company," titled "The Position of Brighton in the St. Louis Market," stated:

> The purpose of the study is to provide American Tobacco with consumer feedback on the impact of the Brighton brand. Such feedback, beyond the customary sales information that is presently available, would greatly aid the company in realistically assessing the sales performance -- not only of Brighton -- but of other new brands in test markets, and would aid the company in instituting changes in

> strategy (advertising, packaging, etc.) to maximize the success of new brands.

The researchers telephoned approximately 4,500 individuals in the age groups of sixteen to twenty, twenty-one to thirty-four, thirty-five to forty-nine, and fifty and over. In addition, "Age and sex quotas were assigned so as to yield the correct proportions of teen-age contacts and adult male and female contacts." MNAT00405881-5912 at 5883-5585 (US 88157).

2805. On August 2, 1968, William Scholz of Ted Bates & Company Advertising provided an analysis of brand switching studies to Anthony Mercer, a marketing employee at B&W. The analysis found that "Kool attracts more in the 16-25 age group than it loses." In addition, the analysis included an "Index of Starters – Menthol Brands" that included data on individuals ages sixteen to twenty-five. 170051478-1481 (US 26590); 170051490-1490 (US 26599); 170051499-1499 (US 26608).

2806. A report dated April 3, 1970 discussed a "1969 Survey of Cigarette Smoking Behavior and Attitudes" that was written by Eastman Chemical Products for American Tobacco Company. The survey, which included those aged sixteen and over, stated, "At age 14 60% of the boys who were to become smokers, had smoked their first cigarette." The survey further concluded, "The age at which people start to smoke regularly is an important factor in assessing the future markets for cigarettes." 650340129-0193 at 0151, 0156, 0162 (US 20948).

2807. A 1973 B&W report titled "New Product Concepts" described the company's strategy to reach a "Direct Target Group: 6.3 million 16-25 year old smokers." The strategy plan was to "[t]o improve B&W's position in attracting young male smokers by making as direct an appeal as possible in product, packaging, and advertising to young males." Possible names for a cigarette appealing

to this segment included Laredo, Lancer, Durango, Champion, and Voyager. 670186789-6824 at 6811, 6815-6816 (US 21431).

2808. A February 21, 1973 internal B&W memorandum from R.L. Johnson, an employee of B&W's Advertising Department, to R.A. Pittman, a B&W Vice President, regarding Kool sales recommended that B&W should focus its media spending on the magazines that teenagers read:

> Kool's stake in the 16-25 year old population segment is such that the value of this audience should be accurately weighted and reflected in current media programs. As a result, all magazines will be reviewed to see how efficiently they reach this group and other groups as well.

680135996-6002 at 5996-5997, 5998 (US 20989). Johnson explained the reason for its targeted approach:

> Kool has shown little-or-no-growth in share of users in the 26+ age group. Growth is from 16-25 year olds. At the present rate, a smoker in the 16-25 year age group will soon be three times as important to Kool as a prospect in any other broad age category.

Id. (emphasis in original).

2809. A September 1974 report written by Kenyon & Eckhardt for B&W's New Ventures Project, titled "The 'New' Smoker," detailed Kenyon's focus group research conducted on behalf of the company, as reflected by the report above. Focus groups were conducted with regular smokers under age twenty-two, and data was tabulated for smokers age sixteen and older. The research identified the typical smoking initiation process occurring before age ten, and continuing into the junior high school or the early high school years. Influences on initiation included the desire to belong to a group and to rebel against parents. The research found that smoking initiation was prompted by psychological factors:

> [O]vercoming the unpleasant physical reaction became a strongly motivated goal. The psychological rewards for "conquering" smoking seemed to center on proving manliness and strength to themselves and others and, for the most part, they seemed to feel it was worth the effort.

The study concluded that "the younger smoker is of pre-eminent importance." 779217759-7833 at 7760, 7763-7768, 7827 (US 21054); 779217758-7793 at 7760, 7768 (US 85211).

2810. Tracking data purchased by B&W on individuals as young as sixteen was used by the company's marketing department in the 1970s. Smith TT, 1/7/05, 9249:22-9250:20. For example, a September 23, 1974 B&W Five Year Plan for all B&W brands, written or approved by Richard L. Johnson in B&W's Advertising and Marketing Planning Department (which he subsequently managed), stressed the importance of effective marketing to young "starters" for the continued profitability of the company. The plan stated that, although B&W's share of smokers under twenty-five was greater than the rest of the industry, this was due entirely to Kool: "[w]ithout Kool's influence, the Company's profile is female, old and getting older . . . a relatively undesirable situation." The document anticipated a coming battle over the shrinking pool of sixteen to twenty-five year old potential smokers:

> [T]he younger smokers' importance cannot be denied. They have distinct brand choices and association appears to exist between growth brands and segments, and the younger smoker. Industry switchers and starters are predominantly found in this under-25 year old category -- especially among women. If the pool of starters and switchers shrinks, as it is expected to, even more effort could be waged against under-25 year olds in the battle for remaining new users.

The plan indicated that youth smokers were the market's growth: "among under 25 year olds, users have almost doubled. Kool's growth in this market is the greatest of any brand. It is also the fastest

growing cigarette in the total market." The plan recommended that "[n]ew ways to selectively reach younger smokers and females entering the market should be found. . . ." 682823798-3801 at 3801 (US 21032); 680500903-1076 at 0918, 0930, 0942, 0945 (US 21607).

2811. B&W has stated that it tracked marketing data on sixteen and seventeen year olds only because it purchased syndicated data from third party vendors and had no choice over age ranges that began at age sixteen. However, the company paid additional amounts for syndicated data on sixteen and seventeen year olds as part of a larger age range, and paid additional amounts to disaggregate and analyze the specific data relating to sixteen and seventeen year olds. A September 26, 1974 document written by C.S. Muije, B&W Manager of Market Research, stated

> a $3,000 exploratory study of brand switching among young smokers as they age was authorized . . . if the pilot study is successful, we estimate that another 12 to $15,000 will be needed to exhaustively track and table switching as younger smokers age. For example, we should be able to tell initial switching experiences as 16 to 17-year-olds start smoking and then track them up to age 21.

027887-7887 (US 34185); Smith TT, 1/7/05, 9247:1-9248:7.

2812. A December 12, 1974 B&W report, titled "Target Audience Appendix," concluded that the target audience for Kool was a "pool of switching smokers" including 2.5 million people ages sixteen to twenty-five. 680106344-6350 at 6349 (US 20985).

2813. A B&W document from 1975-1976, titled "Viceroy Agency Orientations Outline," was written to "prepare agencies for the creative and positioning assignments on Viceroy." The outline stated that Viceroy's target audience was "males 16-35, primarily." The document also stated that the "'Racing Campaign' . . . clearly positioned the brand as a young, exciting, full-flavored, satisfying cigarette." 680116947-6968 at 6947, 6959-6961 (US 21877).

2814. A 1975 B&W marketing presentation, titled "Cigarette Brand Switching Studies," stated that "Kool has a young age profile. The largest proportion of Kool's smokers are between 16 and 25 years of age," and that "Kool's young age profile contrasts with the older age profile of the other major menthol brand -- Salem and is more similar to that of Marlboro." The presentation also stated that starters made up 15% of smokers ages sixteen to twenty-five, and that "Kool attracts a high level of starting smokers[,] especially 16-25 year old starters." 665076894-6916 at 6899, 6904, 6916 (US 20958).

2815. A 1976 B&W summary report, titled "Starters," recorded data and tracked starting smokers as a percentage of all smokers from 1969 to 1976, by gender and by age group. One of the age groups was "16-25." The report concluded that, "[t]he 16-25 age group has consistently accounted for the highest level of starters." 170040333-0333 (US 22359).

2816. An August 10, 1976 document, written by Robert G. Yizar, B&W Assistant Brand Manager, about the Pontiac Kool Jazz Festival, stated: "Audience composition covered the age spectrum with a slight skew toward the 16-25 age group." 666011286-1287 at 1286 (US 20960).

2817. A B&W report, titled "Situation Analysis," dated June 23, 1977, forecasted Kool's performance among teens: "Population data indicate that the 16-20 year old segment will be diminishing in size -- the historical stronghold of Kool smokers and starter smokers." The "Demographic Profile for Media Selection" for the "Kool Kings & Box" style of cigarettes was described as "[y]oung adult males, 16-25, young blacks (both sexes), 16-25, and some females 16-25." The document also included a chart on consumer awareness of Kool which contained data on the thirteen to twenty-four age group. 666022186-2223 at 2193, 2200, 2219 (US 30803).

2818. An October 18, 1977 report prepared for Imperial Tobacco, a member of the BAT group of companies, by Kwechansky Marketing Research stated:

> Since how the beginning smoker feels today has implications for the future of the industry, it follows that a study of this area would be of much interest. Project 16 was designed to do exactly that -- learn everything there is to learn about how smoking begins, how high school students feel about being smokers, and how they forsee [sic] their use of tobacco in the future.

The "recruiting qualifications" for the study were respondents "aged 16 or 17, attending high school, and smokers of 5 cigarettes or more per day." 566627826-7935 at 7839, 7840 (US 20939).

2819. An August 1978 B&W document, titled "Kool Family Utopian Objectives 1979-1985," discussed strategies for Kool to replace Winston "as the No. 2 cigarette in the country by 1985." The author wrote that to accomplish this goal, "Kool must achieve a user image that is acceptable to the majority of young adult and starter smokers." A section of the document titled "Demographic Objectives" included the statement:

> Return the starter index to 11% by 1982 and maintain this level as the highest starter index in the industry . . . [t]he starter index has been the historical pillar of Kool strength and to return it to 11% will be to build longevity into the franchise.

Strategies to achieve this objective included "advertising pressure against high filtration styles in young adult skewed publications" and to "[d]ominate specific young adult publications with a particular style." 680559149-9162 at 9149, 9152-9154 (US 54048).

2820. An internal B&W document dated September 21, 1979 from Robert Chambers, a B&W Brand Manager, attached a report, titled "The Growth of Menthols, 1963 to 1977," describing Kool's growth phase from 1963-1977. The report stated:

> Salem had created a vast market potential for menthol, and Kool had retained its taste, while brands in the 'tar' derby had dropped "tar" and taste. This put Kool in a good position to capitalize on two emerging markets -- the blacks and college-aged marijuana users. The post-war baby boom had, by this time, swelled the population of young and black; and Kool was positioned to take advantage. Kool increased its advertising and promotion to blacks and youth, who were both heavy pot users and heavy menthol smokers.

660110384-0386 (US 20954).

2821. An October 1979 B&W document, titled "History and Key Trends in the U.S. Cigarette Market," contained several reports prepared for the company describing market trends occurring in the United States in previous decades. One of the reports described "Kool's growth phase" between 1963-1974:

> Use of marijuana by young people was growing . . . according to a . . . consumer survey, 52% of marijuana users aged 12-17 also smoked cigarettes compared with only 11% of non-users. No hard data are available on the brands of cigarettes used by smokers of pot but menthols would appear to hold an above average share among such smokers. This would be consistent with Kool's position as the favored cigarette of young smokers.

The report on menthols also tracked Kool's share of smokers ages sixteen to twenty-five and specifically noted Kool's share of black male smokers ages sixteen to thirty-four. 670624932-5364 at 4932, 5008-5009, 5013-5014 (US 53869).

2822. B&W did not institute a company policy prohibiting research on youth marketing and smoking behavior for those under twenty-one until the "late 1970s or early 1980s." Prior to the early 1980s, B&W conducted marketing research on individuals as young as sixteen, specifically on the switching behaviors of individuals between the age of sixteen and twenty-five. Brookes PD, United States v. Philip Morris, 5/2/02, 134:24-136:23, 146:18-147:18, 148:2-148:19.

2823. Another B&W document, titled "Kool Switching History," tracked demographic data and smoking incidence of people aged sixteen and older from 1966 to 1980. 542011811-1812 (US 20934).

2824. Kwechansky Marketing Research wrote a report dated May 7, 1982 for Imperial Tobacco Limited, titled "Project Plus/Minus," that focused on two age groups: sixteen to eighteen year olds, and nineteen to twenty-four year olds. The report built on "Project 16," an earlier study which examined "why do young people start smoking, and how do they feel about being smokers?" The report stated that a smoker's first brand choice comes from "peer example," and that "Imperial Tobacco's brands have the apparent lions [sic] share of this [youth] market." The study stated that "the age of brand independence and of cessation of peer brand judgment seems to be getting lower," and concluded with an analysis of brand choice of cigarettes by young people. The report stated: "Juvenile dabblings with smoking take place mostly for reasons of seeking to sample forbidden fruit." 566627751-7824 at 7753, 7755, 7812, 7813, 7816 (US 20938).

2825. A September 14, 1983 B&W document, titled "Belair 1984 Media Plan," recommended a media target audience for Belair that included males and females ages sixteen to twenty-nine. 676025033-5033 (US 53922).

2826. An October 1983 document, titled "Market Dynamics," reported research conducted by B&W to determine trends in starting smoking and switching brands. The document stated that "[s]tarters are concentrated in the youngest age groups," and included a chart indicating that smokers age sixteen to twenty-five compromise 15.2% of former smokers and 34.0% of starters. The document further stated that "Kool's ability to attract starters has been because of high development among young smokers," and provided a table of "Kool Starters: Male smokers 16-25" with data

from 1979 to 1982. Concluding that "starters are concentrated in the younger age groups" and "starters are influenced by their peer group," the authors recommended that "to increase Kool's share of starters, it will be necessary to increase Kool's share among young smokers." 670585199-5216 at 5211-5212, 5214 (US 20972).

2827. An October 26, 1983 report produced by the Information Center for B&W on the "starting age of all smokers on the switching study" shows starting ages ranging from one to eighty-six, with most smokers starting between the ages of twelve to eighteen. 670579884-9946 at 9888, 9891, 9896 (US 25429).

2828. A January 1984 report, titled "Additional Analysis: The National Brand Switching Studies," prepared by Market Facts for B&W concluded that "[b]y age group, incidence among 16-25 year olds rose" and that "[f]irst time starters are a great deal younger, and smoke considerably less than the other categories of smokers." 670579702-9724 at 9705, 9723 (US 20971).

2829. A July 30, 1984 Imperial Tobacco Limited document, titled "Proceedings of the Smoking Behaviour-Marketing Conference, Montreal, Quebec, July 9th-12th, 1984, Session 1," stated that "our future business depends on the size of [the] starter population," and asked, "Can we develop models of how smoking careers unfold?" The document indicated that Wayne Knox, Marketing Manager, Imperial Tobacco Limited, had "pointed out that the failure to develop new smokers may have more detrimental impact on the industry in [the] future than losses due to quitting." 536000000-0090 at 0016, 0017, 0027 (US 22338).

2830. A March 6, 1985 B&W memorandum from Brand Assistant A.G. Forsythe to R.D. Sharp, a B&W Group Product Director, posed the question: "How did Marlboro and Newport become the in-brands?" With respect to Newport, the response was

> Newport was a regional brand that depended primarily on local programs targeted to young adults (beach events, sampling, vans, etc.) supported primarily by outdoor. Like Marlboro, Newport has maintained creative consistency since the early 70's. The Newport campaign has been tightly targeted to young adults. During this time, Kool either had no user image campaigns or was depicting older models. As a result "Ports" [Newports] has become the in-brand among young Black adults while Kool has declined significantly among this group.

This document also stated that "Kool must aggressively seek to re-establish itself among young adults with aggressive programs" such as music events and outdoor advertising. 554000052-0060 at 0053 (US 20937).

2831. An internal April 29, 1985 document analyzing the success of the Marlboro brand, titled "Resolve Brand Marketing Strategies," stated that B&W's market weaknesses were among starters and switchers, largely due to the company's "failure to meet needs of young smokers." The author also stated that Kool needs to "focus on young adults." 528000268-0279 at 0269, 0275 (US 20924).

2832. A July 9, 1985 B&W document, titled "Beta M National Theoretical Media Plan," stated that the "target audience for B&W's BETA-M cigarette" was "[w]omen [s]mokers 18-34 years of age," and recommended placing advertising in Ms. magazine "because its special editorial directed to young women ranks high with women smokers 18-34." It further recommended placing advertising in Rolling Stone, Record, and Spin, all described as "young targeted music books." 670661599-1665 at 1627, 1628 (US 23054).

2833. A February 17, 1987 memorandum, titled "Kool Isn't Getting the Starters," from D.V. Cantrell at B&W to I.D. Macdonald, B&W Marketing Vice President, addressed "the fact that Kool is no longer attracting new smokers (further referred to as starters)." The memorandum explained

that "Menthol brands have been said to be good starter products because new smokers appear to know that menthol covers up some of the tobacco taste, and they already know what the menthol tastes like, vis-a-vis candy." 621079918-9921at 9918, 1920 (US 30792).

2834. A November 1993 report, titled "The Psychology of Significant Moments and Peak Experiences in Cigarette Smoking, The Motivations and Sociological Significance of Smoking," was prepared by Hugh Baines Research for BATCo. One section of the report focused on children's motivations to begin smoking, finding that:

> Children's reasons for experimenting with smoking: Children start to experiment with smoking for a variety of reasons. Observing adults smoking, children from a very early age often use substitute objects as "pretend cigarettes" in play, mimicking the actions adults make when smoking.

500287512-7596 at 7532 (US 20624).

2835. An August 2, 1994 letter from Laura Moorhead at Campbell Mithun & Esty, an advertising and marketing communications firm, to Donnar Sengalaub, a B&W Marketing Financial Analyst, showed that in 1994, B&W was placing its media and sale promotion dollars behind Kool rather than its other brands such as Viceroy and Capri. An August 25, 1994 invoice from Campbell Mithun & Esty indicated that in 1994 B&W placed Kool advertisements in magazines with a substantial youth readership, such as Sporting News and Sports Illustrated. According to MRI data, nearly 28% of readers of Sporting News, and nearly 18% of readers of Sports Illustrated were between the ages of twelve to seventeen in 1994. 671443677-3677 (US 20974); 461301164-1167 at 1166 (US 21994); Krugman WD, 116:3-122:7.

2836. Sharon Smith, when she was Director of Creative Services and Director of Lucky Strike, attended meetings annually in London with individuals from other BAT group companies

where information and research was shared concerning Lucky Strike advertising. The BAT global policy is that it markets to and conducts market research on persons ages eighteen and above. BAT group companies conducted consumer research on Lucky Strike which included individuals as young as eighteen that was shared with individuals at B&W. Smith WD, 37:23-39:6; 500049909-9912 (US 20618); 283000783-0789 at 0783-0784 (US 87810).

2837. On January 11, 1995 Tim Rutter, a Creative Alliance (marketing firm) employee, sent a document, titled "Growing the Kool Franchise," to Robert John Dunham, Kool Brand Manager, which included "initial, topline ideas for enhancing the growth of Kool." Rutter stated that "[t]he Kool franchise continues to age, attracting fewer and fewer new customers each year." Suggestions for "growth" included vending machines and Kool signage inside jukeboxes in bars and nightclubs. 291001508-1508 (US 67743); 291001509-1515 at 1509, 1513 (US 22992).

2838. The "B Kool" campaign grew out of "Project Look." "Project Look" was an effort in the mid 1990's by B&W to re-position Kool as a brand for so-called "young adult smokers" when market research showed that Kool received low ratings for "leading brand," "kept up with times," and "for a younger adult." Kool was B&W's most profitable brand and the success of B&W depended on the success of Kool. As discussed in an April 28, 1998 Business Briefing video featuring Senior Market Analyst Nick Wilkerson, the purpose of "Project Look" -- which included the new Kool soft and box packs, the "Team Kool Green" Indy car, and "B Kool" advertising campaign -- was to reestablish the Kool brand among younger adults. Wilkerson stated in the video that B&W wanted to launch these campaigns at the beginning of 1998, before the marketing environment became more restricted. Smith WD, 7:11-18, 10:11-15; 582302425-2436 at 2426 (US 20942); USX1640103-0104 (US 47668); DXA1100054-0054 (US 87811).

2839. A 1996 B&W study of the Kool brand reported that "Young Adult Smokers (YAS) represent approximately 11% of total smokers in the U.S." and that "[b]uilding a strong position in the YAS segment is critical to achieving long-term sustainable growth in the U.S. market." The document further stated that B&W "Continues to Significantly Underperform" in this important segment. 314002773-2792 at 2776 (US 21835).

2840. In a 1996 BATCo memorandum, titled "Brand Portfolio Strategy Development," Bob Miller, BATCo's Head of Marketing Information, stated that "[g]aining young adult smokers is critical for the future growth of our brands and business (ergo, YAUS [young adult urban smokers] target audiences across many key brands)." 780011787-1790 at 1787 (US 22197).

2841. A 1997 BATCo report, titled "Marketing Strategy for British American Tobacco," stated that "[t]he ASU segment is important in and of itself . . . and may represent a critical element in building more profitable premium brands." The report emphasized the importance of ASU 30 [Adult Smoker Under 30] smokers: "[t]hey are more likely to smoke the more profitable Premium brands and . . . we need brands that can attract and maintain ASU 30's to participate. . . . ASU 30 is the key smoker group and is relevant to all brands from which growth is expected." 325335439-5468 at 5443, 5445, 5451 (US 24093) (Confidential).

2842. A December 8, 1998 TMG Worldwide proposal to B&W for the development of a Kool brand loyalty program contained a situation analysis that provided information on the growth of the age eighteen and older "smoker universe." The report detailed the growth of the Marlboro, Newport, and Camel brands from 1994 to 1998 among this population in contrast to the decrease in the number of Kool smokers among the same population. 318034354-4406 at 4360-61 (US 22215).

2843. As recently as 2001, B&W conducted focus group research with individuals as young as eighteen. A January 16, 2001 email from Kevin Korte, B&W Senior Manager, Process Innovation and Recon Development, to a BATCo employee, indicates that he attended focus group research in Philadelphia on Project Baltec. According to his email, the research took place in January 2001. Korte stated in his email that he "attended the female 18-23 and the female 28-35 groups." 271101190-1121 at 1194-1195 (US 22210) (Confidential).

(4) R.J. Reynolds

2844. RJR requested and obtained a proposal dated March 14, 1958 from George MacGovern of the William Esty Company to study high school students' attitudes toward cigarette smoking. 501113763-3764 (US 22361). One of the conclusions reached in that study was that, "[p]reference-wise, CAMEL and WINSTON are shown as holding their shares substantially constant while SALEM increased its share, especially among high school students." 501113723-3730 at 3723 (US 22366).

2845. The December 1958 report prepared at RJR's request was titled "Summary of Findings" of "The Youth Research Institute Study Regarding Cigarette Smoking Among 8,112 High School and College Students in 82 Cities Throughout the United States, October-November, 1958." The report included data and conclusions on smoking incidence, smoking volume, and brand preferences of 3,052 high school students, 58% of whom were smokers, and 5,060 college students, 73% of whom were smokers. Both the high school and the college categories were further broken down into "freshman-sophomore" and "junior-senior" classes. 501113743-3749 at 3744 (US 22362).

2846. A lengthy February 1964 report prepared for RJR by the William Esty Company summarizing a national report on smoking trends included further information on smoking incidence,

smoking volume, and brand preferences for 8,863 families who participated in the National Family Opinion ("NFO") panel. Information in this report was collected on smokers as young as sixteen. 500396569-6607 at 6572 (US 20632); see also 517145828-5830 at 5828 (US 80621).

2847. In a March 12, 1964 letter from W.A. Sugg at RJR to William S. Smith of the Tobacco Institute Advertising Committee, Sugg attached the February 1964 study and stated:

> We [RJR] put a similar survey in the field about February 10. . . . This and later studies will help us in evaluating changes in incidence of smoking, volume of smoking, and brand switching resulting from the report of the Surgeon General's committee and subsequent developments. . . . The most interesting finding in the study is the great strength of WINSTON among young smokers, the brand having its highest preference share with teen-agers, its next highest with young adults, and its lowest popularity with smokers 50 years of age and older.

501795141-5141 (US 20687).

2848. In an April 9, 1968 memorandum, titled "Teenage and Adult Smoking Attitudes," T.P. Haller, Marketing and Research Department at RJR, recommended that RJR conduct semi-annual studies of teenagers (both smokers and non-smokers) in order to "forecast our future requirements in leaf buying, plant facilities, manpower, etc." Among other benefits, Haller stated that the study "will put light on the very vital teenage sector of the market." 517142447-2448 (US 21659).

2849. As early as 1964, as set forth above, and during the 1970s, RJR gathered and interpreted data on the smoking habits of fourteen to seventeen year olds from the National Family Opinion ("NFO") survey results. National Family Opinion data could be used to determine how underage smokers perceived certain aspects of certain brands. During the 1970s, information from publicly available sources could be used to determine why people under eighteen started smoking.

In the mid-1970s, RJR became aware by using various consumer research methods that their "share of market among younger people [was] much lower than it had to be in order to maximize [their] volume." Tredennick PD, United States v. Philip Morris, 5/13/02, 42:16-46:20, 104:3-105:05, 148:22-149:09, 144:05-22, 171:07-24. The data on "teenage smokers" (fourteen to seventeen) from the NFO included: the relative share of RJR in capturing this market; the share of each of the company's competitors in this age group; RJR's share among this age group among its own key brands; the share of the company's competitors in this age group by key cigarette brands, the share of the total market broken down by age and gender, and the number of cigarettes smoked per day in this age group broken down by gender. 501443912-3921 at 3913-3915 (US 20681).

2850. At an April 7, 1971 meeting between representatives of the RJR's Marketing Research Department and the William Esty Company, RJR decided to include and count smokers ages thirteen and under and to begin profiling fourteen to twenty year olds in future National Family Opinion surveys. 500347108-7111 (US 20628).

2851. A July 2, 1971 letter from William Esty Company to Jerry Clawson, an RJR Marketing Research Department employee, reported the preliminary findings of a study requested by RJR regarding "smoking incidence and preference shares, by age, among those aged fourteen to twenty responding to the new questionnaire" during the National Family Opinion survey. 506052583-2584 (US 20751).

2852. A November 29, 1971 report issued by RJR's Marketing Research Department, titled "Marketing Research Report on NFO [National Family Opinion] Profiles for Camel Regular and Filter [Cigarettes]," concluded that "there are indications of progress in expanding our franchise

among younger adult smokers." Attached to this report was a chart, titled "Younger Smokers -- Ages 14-20." 501426066-6095 at 6067, 6095 (US 20679).

2853. Dr. Claude Teague, an RJR Research & Development employee, wrote an April 14, 1972 report, titled "Research Planning Memorandum on the Nature of the Tobacco Business and the Crucial Role of Nicotine Therein." On the topic of smoking initiation, Teague wrote that a smoker

> appears to start to smoke for purely psychological reasons -- to emulate a valued image, to conform, to experiment, to defy, to be daring, to have something to do with his hands, and the like. Only after experiencing smoking for some period of time do the physiological "satisfactions" and habituation become apparent and needed. Indeed, the first smoking experiences are often unpleasant until a tolerance for nicotine has been developed.

500915683-5691 at 5686-5687 (US 20659). Teague repeated these statements, almost verbatim, in a 1973 memorandum discussing "factors influencing pre-smokers to try smoking, learn to smoke and become confirmed smokers." 502987407-7418 at 7408 (US 20708).

2854. A September 26, 1972 memorandum, titled "Share of Smokers: By Age -- Top Ten Brand Items," from J.H. Sherrill to W.S. Smith included tables tracking brand share among teenagers ages fourteen and older based on April 1972 data. In the memorandum, Sherrill stated that "Marlboro King and Kool King have significantly higher shares among younger smokers than among the population in general." 500810043-0046 at 0043 (US 21456).

2855. In a February 2, 1973 RJR research planning memorandum, titled "Some Thoughts About New Brands of Cigarettes for the Youth Market," Teague addressed a dramatic decline in RJR market share due to Marlboro's success in attracting new teenage smokers. Teague addressed the significance of the underage market in these terms:

> At the outset it should be said that we are presently, and I believe unfairly, constrained from directly promoting cigarettes to the youth market; that is, to those in the approximately twenty-one year old and under group. Statistics show, however, that large, perhaps even increasing, numbers in that group are becoming smokers each year, despite bans on promotion of cigarettes to them. If this be so, there is certainly nothing immoral or unethical about our Company attempting to attract those smokers to our products. We should not in any way influence non-smokers to start smoking; rather we should simply recognize that many or most of the "21 and under" group will inevitably become smokers, and offer them an opportunity to use our brands. Realistically, if our Company is to survive and prosper, over the long term, we must get our share of the youth market. In my opinion this will require new brands tailored to the youth market. . . . Thus we need new brands designed to be particularly attractive to the young smoker, while ideally at the same time being appealing to all smokers. Several things will go to make up any such new "youth" brands. . . . What image? and What quality? Perhaps these questions may best be approached by consideration of factors influencing pre-smokers to try smoking, learn to smoke and become confirmed smokers.

502987407-502987418 at 7408 (US 20708).

2856. John McCain of the William Esty advertising firm sent a March 8, 1973 letter to Jack Watson at RJR concerning National Family Opinion preference share data for fourteen to twenty year old Marlboro and Winston smokers. McCain wrote that

> [m]any manufacturers have "studied" the 14-20 market in hopes of uncovering the "secret" of the instant popularity some brands enjoy. . . . Creating a "fad" in this market can be a great bonanza. To date, success, if it comes, has often been a function more of luck than of prior marketing perception.

508453918-3920 at 3919 (US 20812).

2857. A May 4, 1973 proposal, titled "Meet the Turk," was presented to RJR management "to expose Management to the opportunity to aggressively position Camel Filter against the young adult market (male)." The proposal stated that males aged fourteen to thirty-four "represent

approximately 35% of 85 mm [length] NFF [non-filter full flavor] smokers." 500723696-3718 at 3697, 3699 (US 20647).

2858. The November 1973 RJR Winston Box Marketing Plan recommended increasing marketing efforts to support the Winston box franchise because "[b]oth Winston and Marlboro enjoy their strongest franchise among the under 25 year old smoker and especially the young male smoker" and "[w]hile only 7.2% of all adult smokers (18 and over) smoke a cigarette in a Box, 24.4% of those 14-20 yrs . . . smoke a Box cigarette." 500724265-4313 at 4272, 4273 (US 20648).

2859. A December 4, 1973 inter-office memorandum, titled "Cigarette Concept to Assure RJR a Larger Segment of the Youth Market," from Frank G. Colby, Associate Director of Scientific Information at RJR, to R.A. Bleyins stated that to succeed in the youth market, the company should "develop a new RJR youth-appeal brand" that "delivered more 'enjoyment' or 'kicks.'" The memorandum stated:

> it should be easy to develop, within a relatively few weeks, these new youth-appeal cigarettes for market testing for which the following advertising claims could be unequivocally proven: They will deliver more flavor, more enjoyment, and more puffs for the money than any large selling cigarette on the market, or for that matter, than any other cigarette now on the market.

501166152-6153 (US 23051).

2860. In 1974, Donald Tredennick, Manager of Consumer Research for RJR, was directed by a supervisor to determine what caused smokers to select their first brand of cigarettes. In response to this direction, Tredennick sent a July 3, 1974 memorandum to F. Hudnall Christopher, Director of Marketing Research for RJR. Using publicly available sources and consumer surveys of people

over eighteen, Tredennick found that "most smokers begin smoking regularly and select a usual brand at or before the age of 18." Tredennick further stated:

> If a person is going to smoke cigarettes, he generally starts during his teens, primarily to conform with a close friend or friends, to give himself greater confidence in stress situation [sic], or to avail himself or [sic] the physical enjoyment smoking offers . . . . The main causes of initial brand selection; i.e., the influence of friends, the user image a brand projects and differentiated product characteristics, are logically related to the reasons a young person begins to smoke.

A table titled "Age Started Smoking," which included a category for "12 & Under," was appended to this memorandum. 501899346-9359 at 9346, 9351, 9352 (US 20688).

2861. Joan F. Stuart, an RJR marketing research employee, sent a March 15, 1974 letter to National Family Opinion. In the letter, RJR requested that, when National Family Opinion conducted its consumer surveys, it continued to question fourteen to eighteen year olds. The letter also requested different types of reports from National Family Opinion, including those titled "Product Testing Availabilities," "Smoking Incidence and Brand Preference -- ages 14-17," and "Sales Promotion/Special Events." 500487414-7416 (US 21865).

2862. A September 30, 1974 RJR document, titled "1975 Marketing Plans Presentation," (also referred to as "The Hilton Head Report") stated:

> In 1960, this young adult market, the 14-24 age group, represented 21% of the population. . . . [T]hey will represent 27% of the population in 1975. They represent tomorrow's cigarette business. As this 14-24 age group matures, they will account for a key share of the total cigarette volume -- for at least the next 25 years.

The presentation discussed the importance of youth smokers in reestablishing RJR's share of market growth and setting the marketing strategy that would be implemented to gain market share among youth. 500746950-6976 at 6951 (US 21609). A November 26, 1974 memorandum, titled "R.J.

Reynolds Tobacco Company Domestic Operating Goals," stated: “Winston has 14% of this franchise, while Marlboro has 33% – Salem has 9% – Kool has 17%." The memorandum indicated that RJR "will direct advertising appeal to this young adult group without alienating the brand's current franchise." 500796928-6934 at 6928 (US 22363); 500796976-6983 at 6977 (US 21610).

2863. In a "Secret" memorandum dated January 23, 1975 to RJR President of Marketing Charles Tucker, James F. Hind advised:

> Our attached recommendation to expand nationally the successfully tested “Meet the Turk” ad campaign and new Marlboro-type blend is another step to meet our marketing objective: To increase our young adult franchise. To ensure increased and longer-term growth for Camel Filter, the brand must increase its share penetration among the 14-24 age group which have a new set of more liberal values and which represent tomorrow's cigarette business.

A handwritten cover memorandum to the "Secret" Hind memorandum revealed that Tucker subsequently obtained company approval of the "Turk" recommendation. 505775556-5561 at 5556, 5557 (US 78787).

2864. A document, titled "Smokers Screening -- April 1976 Profile (14-17)," conducted by National Family Opinion for RJR contained 1976 brand preference information for respondents aged fourteen to seventeen. 501376255-6406 (US 20678).

2865. J.M. Wallace, RJR Marketing Research Department employee, wrote an October 30, 1975 product research report, titled "Share of Smokers by Age Group." Wallace's report provided an "annual update of trends in share of smokers by age. Information is drawn from the April NFO [National Family Opinion] panels." Wallace continued:

> Marlboro's traditional source of strength -- younger smokers, though still sizable, is eroding at a rapid rate. Between April, 1974, and April, 1975, Marlboro King showed a five share point loss in the

> 14-17 year old age group and since 1973, Marlboro King's share of market has declined by eight share points in this segment. . . . Winston King did not capitalize on Marlboro's decline, but exhibited some softness itself - especially in the younger age groups (14-17 and 21-24). . . . This growth for Salem occurred at a time when Kool King declined substantially in the 14-17 market and the 18-24 market. Thus, while Salem is beginning to show strength in the younger markets, Kool is showing major signs of weakness in the same markets.

500769032-9036 at 9032 (US 21814).

2866. RJR annually engaged in ten year planning forecasts using youth data. According to a March 15, 1976 report, titled "Planning Assumptions and Forecast for the Period 1977-1986 for R.J. Reynolds Tobacco Company":

> The present large number of people in the 18 to 35 year old age group represents the greatest opportunity for long-term cigarette sales growth. Young people will continue to become smokers at or above the present rate during the projection period. The brands which these beginning smokers accept and use will become the dominant brands in future years. Evidence is now available to indicate that the 14 to 18 year old group is an increasing segment of the smoking population. RJR-T must soon establish a successful new brand in this market if our position in the Industry is to be maintained over the long term.

Leary PD, United States v. Philip Morris, 5/2/02,102:9-105:11; 501630269-0288 at 0283 (US 21605).

2867. Tim Key, an RJR Marketing Research Department employee, wrote an August 12, 1976 memorandum to T.L. Ogburn, titled "Share of Smokers by Age Group," which contained "an annual update of trends." The memorandum stated that Winston King's share among fourteen to seventeen year olds "is off two points for the second year in a row. Current share is 9%. Conversely,

Marlboro King's share among this age group which had shown losses during the past three years was up one point. Current share is 32%." Key stated:

> Salem King appears to have retained most of the share gain seen during 1975 among 14-17 year olds. Current share of 9% is only one point off the previous years [sic] high of 10%. Kool King has a larger share at 15% and was even with the previous year.

Under "Corporate Comparisons," the memorandum stated: "Philip Morris posted a 4 point gain among 14-17 year old smokers (RJR and B&W each lost 2 points)." 500234050-4051 (US 48071).

2868. An October 8, 1976 RJR Marketing Department Report, titled "Marketing Department Key Issues -- Position Papers," observed that adult smokers under age twenty-five would "show a major shift in brand preference" away from Marlboro and that the decline in Marlboro's share of this market would continue to open the market for another dominant brand to emerge from peer group pressures. The basis for this projection was a National Family Opinion study showing that

> Marlboro's acceptance among 14-17 year olds had dropped from 39% to 32%. This pattern has been repeated by three brands with Pall Mall peaking in 1969, total Winston in 1970, and total Marlboro should peak share in 1978.

The report further predicted a "reduction in the number of new smokers" due to "stronger enforcement of laws prohibiting sale of cigarettes to teen-agers," which, according to the report, would have a negative impact on RJR's sales and profits. 500387795-7899 at 7822, 7836 (US 20631).

2869. An October 31, 1977 memorandum to T.L. Ogburn, Jr., written by Jeffrey F. Durgee, RJR Product Design, and copied to J.H. Sherrill, E.N. Monahan, and T.J. Key, regarding "Share of Smokers by Age Group," was "the annual update of trends in share of smokers by age group" with

data "drawn from the April NFO panels" that included fourteen to seventeen year old smokers. The memorandum reported various trends among fourteen to seventeen year olds, including:

> Perhaps because of their higher susceptibility to fads, peer pressure, etc., younger (14-18) smokers show frequent, short-term changes from one brand to another. . . . As a group, younger smokers probably emulate the smoking habits of smokers in the next oldest group, the 18-24 year olds, since trends for younger smokers tend to follow (by 2-3 years) trends for the latter group. . . . Every year, Vantage and Carlton gain slightly among older (over 35) smokers. At the same time, the popularity of these brands seems to filter down to younger and younger age groups. . . . RJR's share of younger (under 18) smokers continues a 3 year decline. In 1975, RJR brands accounted for 28% of the smokers in this category. Today, they account for 25%. Among younger smokers, only Brown and Williamson brands have shown a similar decline. In contrast, Philip Morris has shown steady gains, not only among the younger smokers, but also among the adult (over 18) age groups. If share trends for the past 5 years indicate future share trends, Philip Morris will draw increasing numbers of young smokers (ages 14-35), giving it a decidedly younger franchise.

94681077-1079 at 1077, 1079 (US 32322); 501380878-0982 at 0878-0880 (US 48844).

2870. In 1980, the RJR Marketing Development Department issued a series of internal reports titled "Teenage Smokers (14-17) and New Adult Smokers and Quitters." The reports contained the RJR Marketing Research Department's analysis of the data provided by the National Family Opinion regarding the smoking behavior of fourteen to seventeen year old smokers. 501443912-3921 (US 20681); 501098917-8922 (US 23050); 500768429-8438 (US 20649); 500768427-8428 (US 22341); 501254289-4301 (US 20674); 501254267-4283 (US 22342); 501757367-7384 (US 22343); 500768754-8754 (US 20650); 500794841-4843 (US 20653).

2871. One of the series of "Teenage Smokers (14-17) and New Adult Smokers and Quitters" reports, dated February 1, 1980, written by Stephen R. Perry, an RJR Marketing Research

Department employee, discussed "franchise aging" -- the process of young smokers entering the smoking population as older smokers leave the market, either because they quit or they die. The report stated:

> For example, in 1979 approximately one million smokers became 18 years old while approximately 450,000 older smokers left the market. The extent that each company is affected by this process is determined by the age skew of its franchise.

The report went on: "[m]any adult smokers have already formed consistent smoking patterns by the time they enter the market at age 18." 501443912-3921 at 3912, 3915 (US 20681).

2872. Another in the series of "Teenage Smokers (14-17) and New Adult Smokers and Quitters" reports, dated February 4, 1980, stated:

> In the last five years, share of cigarette volume of the 14-17 year-olds declined by about 36%, from 3.14% in 1975 to 2.00% in 1979. . . . The share of companies of the 14-17 year-olds has changed very significantly in the last five years: RJR's share declined from 29.9% in 1975 to 21.3% in 1979. A large part of the share loss can be traced to Winston.

500768427-8428 at 8427 (US 22341).

2873. Kay Duffy wrote an October 23, 1980 memorandum to L.W. Hall Jr., Vice President of Brands Marketing at RJR, titled "Younger Adult Smokers." Duffy stated "[s]moking behavior of 14-17 year olds is analyzed . . . to improve our ability to forecast future trends." The memorandum stated: "P. Morris continues to gain share among the 14-17 year old age group. . . . P. Morris' large share among 18 year olds has made it the only company to realize substantial share gains due to the aging process." Duffy also stated that "RJR continues to lose share due to . . . a decrease in new smokers and an increase in quitters," that Lorillard and American were also losing share and that Liggett Group, Inc. & Myers had an unchanged share. Finally, Duffy stated that

B&W's share among fourteen to seventeen year olds had declined. 500686301-6313 at 6302, 6303 (US 21566).

2874. An internal July 22, 1980 RJR memorandum from G.H. (Jerry) Long, RJR Executive Vice President, to Edward A. Horrigan, Jr., RJR's CEO, titled "MDD [Marketing Development Department] Report on Teenage Smokers (14-17)," stated:

> Attached is a MDD report covering the aforementioned subject. Last January, a report was issued on this subject that indicated that Philip Morris had a total share of 59 among 14-17 year old smokers, and specifically, Marlboro had a 52 share. This latest report indicates that Philip Morris's corporate share has increased by about 4 points; however, Marlboro remains the same at 52.

This memorandum stated that "RJR continues to gradually decline," and concluded, "[h]opefully, our various planned activities that will be implemented this fall will aid in some way in reducing or correcting these trends." 508453894-3894 (US 20811).

2875. RJR's extensive market research on young people performed during the 1970s revealed that Philip Morris's Marlboro brand was dominating the youth market. By the early 1980s, according to internal documents and an RJR market researcher, Diane S. Burrows, RJR knew through research that the combination of so few young smokers choosing to smoke RJR brands and the tendency of those smokers to be loyal to their first brand of choice would ultimately lead to market share declines for the company if its brands continued to be unpopular with young people. RJR knew, as it stated in its "1975 Marketing Plans Presentation," that teenage smokers were "tomorrow's cigarette business" and accounted for "a key share of the total cigarette volume -- for at least the next 25 years." 500746950-6976 at 6951 (US 21609); Burrows PD, United States v. Philip Morris, 6/27/01, 15:19-16:4.

2876. RJR also knew at this time that it was unlikely to be able to win the teenage market with a new, unknown brand, and that it would be wiser for RJR to revise an existing brand's image to make it more appealing to teenagers. In a September 29, 1980 RJR memorandum to Gerald Long, Executive Vice President of Marketing and Sales, titled "Younger Adult Smoker Opportunity Analysis -- New Brands," L.W. Hall stated about young smokers:

> Socially insecure, they gain reinforcement by smoking the brands their friends are smoking, just like they copy their friends' dress, hairstyle, and other conspicuous things. To smoke a brand no one has heard of -- which all new brand names are -- brings one the risk of ostracism. It's simply not the "in" thing to do. If this theory is correct, it would be extremely difficult to achieve success with a new brand name who's [sic] primary thrust was against younger adult smokers. Certainly, there have been many attempts -- "Maverick," "Zack," "Luke," and "Redford" come immediately to mind -- and all have failed. . . . My thinking is that to maximize our success among this important group, we should place our efforts and our resources behind our established brand names, keeping them young and contemporary through advertising, promotion, and line extension strategies and executions.

501340949-0950 (US 20677).

2877. In 1981, RJR developed a system called "AGEMIX," to determine smoking incidence and rates across demographic categories of sex and age. In a July 8, 1982 letter to Data Resources regarding the development of AGEMIX, Diane Burrows wrote that AGEMIX allowed RJR to determine smoking incidence and smoking rates for individuals age twelve and over, as the AGEMIX system included age breakdowns of twelve to seventeen, eighteen to twenty-four, etc. Burrows stated: "Since few people start smoking after age 24, we will assume that incidence remains fixed as a group ages past 24." 502661958-1963 (US 20704); 501291100-1101 (US 85234); 503011402-1403 (US 50279).

2878. A January 28, 1982 letter from Thomas A. Trumbull at National Family Opinion to Linda Mabee in the RJR Marketing Development Department confirmed that the January wave of the Mass Smokers Screening study produced for the company would include "the name, address, telephone number, and age and sex of each family member 17 years and older." Midge Barnes, of the RJR Marketing Development Department, had previously written to Paul J. Cousino at National Family Opinion on July 28, 1981, with respect to the same study to express Reynolds's desire "to address . . . any recommendations you have for introducing 17 year old smokers to the panel as they age into 18+." 502992729-2730 at 2729 (US 50276); 503425601-5608 at 5602 (US 50372).

2879. In a 1984 RJR report, titled "Strategic Research Report Market Overview and Key Trends/Issues," Richard Nordine provided a "broad overview of the cigarette market" spanning the preceding thirty years. Nordine stated: "[T]here are clear differences between growing and declining brands. Those which have younger adult profiles are growing and those which show older are declining (except Generics)." 517142223-2257 at 2224, 2230 (US 21764).

2880. On February 2, 1984, R.J. Harden of the RJR Marketing Development Department wrote a memorandum to A.M. Curry, titled "A Perspective on Appealing to Younger Adult Smokers" which stated: "A cigarette brand's (and the associated company's) long-term vitality is strongly influenced by its ability to attract young adult smokers." 502034940-4943 at 4940 (US 20695).

2881. In a January 28, 1986 document regarding Camel, titled "State of the Brand Report," Frances V. Creighton, an RJR market researcher, stated that "[t]he trend among 18-24 year old males has exhibited growth throughout 1985 reflecting targeting promotional activities throughout most

of the year. . . . [S]hare among the 18-24 old male smokers is currently 5.7%, up +1.3% versus November [a] year ago." 505736433-6454 at 6435 (US 20745).

2882. An October 15, 1987 memorandum, titled "Project LF Potential Year 1 Marketing Strategy," from J.H. Miller to Emily C. Etzel and Ann E. Biswell, and copied to H.T. William C. Parks, discussed

> introducing Project LF in 13 priority regions. . . . Project LF is a wider circumference non-menthol cigarette targeted at younger adult male smoker (primarily 13-24 year old male Marlboro smokers). . . . [W]e are assuming $100MM for a national launch and $70MM for a regional introduction.

Miller attached a table showing "Priority Regions" and "Remaining Regions" by brand: Marlboro, Winston and Camel. This document was contained in a file titled "Youth Target." 505936377-6378 (US 50876).

2883. A 1988 RJR document, titled "Strategic Overview," discussed Marlboro's success and advised that, in order to meet the goal of increasing RJR's market share, the company must target the "young adult" market. To meet this goal, "[s]everal research programs have been completed to increase understanding of YAS." 521895685-5732 at 5723 (US 20903).

2884. An RJR document dated June 21, 1990, titled "US Cigarette Market in the 1990s," stated that the "majority [of smokers] become regular smokers before age 18. . . ." 507798137-8230 at 8142 (US 20789*).

2885. An October 24, 1996 email from RJR employee Diana Martin to fellow employee Gus Lejano attached a document discussing the repositioning of the Winston brand. Martin's email attachments indicated that "[s]ustained growth [is] driven only by younger adult smokers" and contained data on Winston's share among eighteen to twenty-four year olds. Martin also advised:

"[s]uccessful repositioning [of Winston] requires young adult smokers." 700186251-6251 (US 54461); 700186252-6252 (US 54462); 700186253-6253 (US 54463); 700186254-6255 (US 54464); 700186256-6256 (US 54465).

2886. In a March 14, 1997 memorandum sent by Daniel Murphy at Diagnostic Research International to L.G. Dube, an RJR employee, Murphy indicated that his company was evaluating Salem's market share among eighteen to thirty-four year old smokers in various markets. Similarly, the M/A/R/C Group performed research in 1997 on behalf of RJR to evaluate the awareness of the "SALEM MVP Proposition" and whether it "improves overall brand perceptions and positively impacts brand buyer dynamics" on smokers as young as eighteen. 519941785-1786 (US 85239); 516949904-9907 at 9905-9906 (US 85240).

2887. A 1997 memorandum from Regena Pasterczyk, Senior Brand Research Manager for Winston and Senior Information Manager in RJR's Business Unit Research Department, to Lynn Beasley, Vice President of the Winston business unit, summarized the findings among respondent groups that included eighteen to twenty year olds: "no additives, no artificial ingredients, and a 'no bull' brand is clearly coming across among the critical 18-34 NM competitive prospect group." "No Bull" was the slogan that RJR used to launch its repositioned Winston in 1997. 519588649-8659 at 8649 (US 22465).

2888. A September 4, 1997 Tracking Research Report, titled "Winston 1997 Hispanic Tracker Pre-Wave Results," published by the Business Information and Analysis Department at RJR revealed that following the introduction of its Winston "No Bull" advertising campaign in August 1997, RJR developed "a comprehensive national tracking plan . . . to monitor the awareness and penetration of the launch among [Hispanic] smokers 18+." 520650706-0727 at 0706 (US 52621);

518090228-0255 at 0233, 0242, 0244-0249, 0251 (US 52152); 518090256-0268 at 0260-0265, 0267 (US 52153).

2889. RJR's CEO Andrew Schindler admitted that 1997 Winston Launch plans for the "No Bull" campaign included quantitative information obtained from a survey of eighteen to thirty-four year olds, and that such quantitative information could inform the company with respect to the marketing of its products. Schindler TT, 1/25/05, 10942:8-10947:16; 520601649-1699 (US 22116).

2890. In the "Winston 'No Bull' National Launch Tracking Report IV- November" dated January 8, 1998 from A. Phillips, a RJR employee, to E. Leary, Director of Winston Brand, RJR tracked the total number of smokers ages eighteen and older who had ever tried and ever purchased Winstons since the brand's national launch. It concluded that "new business to the brand is coming primarily from younger adult smokers, 18-34, where purchase . . . and repeat purchase . . . have doubled since [the Launch]." 519921955-1983 at 1958 (US 22467).

2891. As recently as 2002, Frances Creighton, RJR Senior Vice President for Marketing, admitted that RJR tracks brand performance and brand perception among smokers as young as eighteen. Creighton PD, United States v. Philip Morris, 6/20/02, 54:5-57:7.

b. Defendants' Marketing Employs Themes Which Resonate with Youth

2892. As the following evidence demonstrates, Defendants have utilized the vast amount of research and tracking data they accumulated on youth smoking initiation, tastes and preferences by employing themes which resonate with youth in their marketing campaigns. Krugman WD, 85:11-92:18. Defendants have focused their attention on young people under the age of twenty-one in order to recruit replacement smokers and have emphasized the popularity, physical attractiveness,

and "coolness" of their youth brands. Above all, Defendants have burnished the image of their youth brands to convey rugged independence, rebelliousness, love of life, adventurousness, confidence, self-assurance, and belonging to the "in" crowd.

(1) Philip Morris

2893. In 1968, Philip Morris began a nationwide Virginia Slims newspaper and magazine advertising campaign. The advertisements usually depicted slim, independent, well-dressed attractive women smoking cigarettes. ADV0281229-1231 (US 10511); see also (no bates) (US 12983); (no bates) (US 12527); (no bates) (US 12453).

2894. Helmut Wakeham, Vice President for Corporate Research and Development at Philip Morris, made a November 26, 1969 presentation to the Philip Morris Board of Directors titled "Smoker Psychology Research." His report stated that, although "the primary motivation for smoking is to obtain the pharmacological effects of nicotine," it is psycho-social motivations and not nicotine that are responsible for the initiation, as opposed to the continuation, of smoking:

> We are not suggesting that the effect of nicotine is responsible for the initiation of the habit. To the contrary, the first cigarette is a noxious experience to the novitiate. To account for the fact that the beginning smoker will tolerate the unpleasantness we must invoke a psycho-social motive. Smoking a cigarette for the beginner is a symbolic act . . . a symbolic declaration of personal identity.

The report further stated: "The 16 to 20 year-old begins smoking for psychosocial reasons. The act of smoking is symbolic; it signifies adulthood, he smokes to enhance his image in the eyes of his peers." The document concluded: "As the force from the psycho-social symbolism subsides, the pharmacological effect takes over to sustain the habit, augmented by the secondary gratifications."

1000273741-3771 at 3749 (US 26080); 1003287880-7890 (US 20163); 1003287836-7848 at 7836, 7838-39 (US 22848).

2895. In the July 15, 1970 Philip Morris "R&D Strategic Plan: 1971-1975," Wakeham stated: "Without an effective counter-effort by cigaret [sic] makers, there is likely to be an erosion of the social acceptability of smoking. Whereas smoking has traditionally been viewed by adolescents and young adults as sophisticated adult behavior to be emulated, it is in danger of being regarded generally as undesirable behavior to be avoided." 1000837808-7813 at 7809 (US 20110); 2022163543-3555 at 3544 (US 20353).

2896. Metacorp, a marketing development corporation, prepared a March 1984 document, titled "1984 Marlboro Spring Resort Field Marketing Opportunities," for Philip Morris. Metacorp outlined various venues and events occurring during Spring Break, among them the 2nd Annual New Music Showcase, featuring Duran Duran, a band popular with teenagers. 2044390059-0073 at 0061, 0064 (US 20453).

2897. A March 20, 1984 Philip Morris document, titled "The Cigarette Consumer," stated that "[p]eople begin smoking 1) [because of] peer pressure, 2) to rebel/assert independence, 3) to appear grown up, [and] 4) to experiment," and that "products targeted to younger end of spectrum [are] most viable." 2500002189-2207 at 2203, 2205 (US 21460).

2898. In a December 12, 1984 Philip Morris report, titled "Cigarette Market History and Interpretation," John E. Tindall, Senior Scientist at Philip Morris, stated that, in order to discover why certain brands have captured the young smokers,

> [w]e need not try to understand why young people have a herd instinct. From their choices of food, clothes, transportation, entertainment, heros [sic], friends, hangouts, etc., it is clear that they

> do. More important to us (and probably to many other product categories) is why they make certain choices instead of others.

2001265000-5045 at 5030 (US 20299).

2899. An October 7, 1987 internal Philip Morris document containing plans for marketing Parliament in 1988 and 1989 stated:

> To target the 18-24 males and females, our retail focus will be on pack outlets . . . and will be trial/conversion oriented. This younger age group is more likely to make decisions based on peer pressure. To convey the idea that everyone is smoking Parliament, the brand should have continuous high levels of visibility in as many pack outlets as possible.

2045287059-7067 at 7063 (US 38408).

2900. Philip Morris's marketing for its youth brand, Marlboro, is expressly designed to appeal to young smokers' desire for peer acceptance by emphasizing Marlboro's popularity and status as the "number one" brand. Camisa PD, United States v. Philip Morris, 6/28/02, 107:6-109:22, 111-113, 158:7-159:8; 2071230813-0888 at 0820-0821, 0830-0832, 0838-0839, 0850, 0856, 0862, 0864 (US 20521*); 2080499829-9896 at 9859 (US 20536).

2901. A document apparently drafted after 1986, titled "Impact of Marlboro Sponsorship in CART Racing: Are We on Track?" discussed Marlboro car racing promotions. The document stated that 14% of eighteen to twenty-four year olds were racing fans and that racing was perceived as "[m]asculine" and "dangerous" because racing "is like grabbing Death by the gonzos and saying 'Ha!'" 2040750492-0510 at 0495, 0496 (US 20438).

2902. A May 12, 1989 Philip Morris document, titled "Marlboro Brand Review," contained a discussion of Marlboro issues, performance, and strategy:

> Major strategic shifts are not recommended for Marlboro. Our plans, in fact, have become even more focused on appealing to the core young adult male user and reinforcing our strong male, full flavor brand image. Further, Marlboro's position against competitive threats will be offensive not defensive.

Regarding the threat of Camel, the document stated:

> Camel has perhaps the strongest flavor, most male image of any cigarette in the industry. This equity is being effectively leveraged with the bold, young "smokin' Joe" advertising and promotion effort, an effort which taps directly into the young male headset -- have fun, get wild, and be macho. The campaign limitation may be that it can't support the franchise as it ages because the message is so young.

To meet Camel's threat, the document discussed a potential new advertising campaign, in addition to the traditional Marlboro advertisements, which would be "designed to appeal specifically to the young, adult male; ads which are strong in subject and tonality thereby reinforcing our core position." 2025871433-1506 at 1434, 1438, 1440 (US 22054).

2903. Jeanne Bonhomme, Manager of Consumer Research at Philip Morris, and Karen Eisen, a marketing researcher at Philip Morris, wrote a February 6, 1991 memorandum to James Taylor, Brand Manager, New Products at Philip Morris, titled "Marlboro/Camel Consumer Research," which discussed research comparing the advertising and images of Camel and Marlboro among eighteen to twenty-four year old male Marlboro and Camel smokers. Respondents were asked whether various descriptive statements fit the Marlboro Man and Joe Camel, including whether these characters were "[r]ugged and [m]acho," "independent," "rebellious," "cool/hip," and whether they were someone that "I'd be friends with." When asked what the Marlboro slogan "Come to Marlboro Country" means, most respondents responded that it meant to "smoke/try/switch" to Marlboro. 2045732054-2074 at 2054, 2057-2058 (US 20465).

2904. Handwritten notes taken by Carolyn Levy dated May 2, 1991 related to a Philip Morris project researching consumers' thoughts about cigarettes. Levy's notes stated:

> Smoking is a social ritual which enables us to express and reaffirm our self-image by reactivating the initiation into adulthood. This taboo is for you, Playing with fire, Forbidden fruit, U.B.U., Badge of honor, It hurts so good, Dare to be me, The rite to be me.

2062145828-5833 at 5828, 5833 (US 85184). As Levy acknowledged, "Philip Morris knows that cigarettes are one of the things that adolescents use in their transition from childhood to adulthood," based both on this research and on published literature. Levy WD, 50:2-51:21.

2905. In an April 1992 presentation to the Board of Directors, David Dangoor, Senior Vice President of Marketing at Philip Morris International, explained how the race car drivers pictured in Marlboro advertisements represented a "contemporized" and "relevant" Marlboro man:

> We are in constant search for more contemporary ways to convey the "west" with more appeal to young adult smokers. Auto racing is one such avenue. Our drivers symbolize the modern day cowboy and the advertising support creates more relevance for today's consumer. . . . Marlboro's positioning remains strong and relevant. Its advertising whilst effective, needs careful attention to maintain its appeal to young adult smokers. We must continue to compete effectively at retail with more image enhancing promotions.

2045068451-8470 at 8456, 8460 (US 23931).

2906. "The Viability of the Marlboro Man Among the 18-24 Segment" dated March 1992, prepared by Bruce Eckman, Inc. for Philip Morris, made recommendations for Marlboro advertising in light of Camel's success. Eckman recommended that

> to reduce the effectiveness of the Camel advertising with the 18-24 segment, Marlboro should consider: a) capitalizing on the strength of being the number one brand; make the users feel that they belong to a special group of smokers through point of sale which reinforces being number one; b) increasing the breadth and variety of the

> Marlboro Man advertising campaign without sacrificing the strength of his integrity[:] 1) show him not only at work, but also at leisure, . . . 2) show him enjoying the benefits of his chosen path, . . . 3) show him in charge . . . and desirable in magazines where he could be pictured with a woman, . . . 4) consider using a copy line to direct the visuals, [and] . . . make him more accessible and less removed.

2045060177-0203 at 0178, 0180 (US 20459).

2907. On March 19, 1994, advertising agency Leo Burnett held an internal meeting called "Camp Marlboro" to discuss Leo Burnett's performance on Philip Morris and Philip Morris International business. Geoffrey Bible, Altria's CEO, gave a speech at Camp Marlboro in which he told Leo Burnett that they were the "guardians of Marlboro, working with PM senior management." At Camp Marlboro, Bible indicated that Leo Burnett should "Leverage core values which are attractive to YAMS by portraiting [sic] the full breath [sic] of Marlboro country: Masculinity, Freedom, Limitless Opportunity, Self-sufficiency, Mastery of destiny, Harmony with Nature." After Camp Marlboro, Karen Green, Leo Burnett Planning Director and Senior Team Member, wrote a "Summary of Findings" which indicated that the "Marlboro brand strengths" included "No. 1 brand among starters/YAS, Brazil, Latin America, USA." As noted earlier, "starters" is a term used for those who are starting to smoke, who are most often underage. Dudreck PD, United States v. Philip Morris, 6/21/02, 83:9-107:19; LB0058147-8186 at 8176, 8185 (US 22070).

2908. The March 24, 1994 plan for Philip Morris's Chesterfield brand prepared by Young & Rubicam stated: "Smoking enthusiasm is firmly grounded in the emotional connection . . . [t]he emotional connection -- adventure, living on the edge -- is the deep basis for category attraction . . . [l]ater, more rational issues may counterbalance this attraction." Moreover, the plan stated: "Significant choice moments in cigarette smoking tend to coincide with critical transition stages in

life. . . . Choice of a 'starter' brand [coincides with] [y]outhful conformity/rebellion." 2500086977-7024 at 6983, 6984 (US 27908).

2909. With its continuous smoker tracking survey, laid out in a November 1994 document, titled "Profile of the Young Adult Marlboro Smoker Part 1: Males, 18 to 24 Years Old," Philip Morris found that eighteen to twenty-four year old males cite Marlboro's popularity with friends ("brand I grew up with," "an 'in' brand") and availability as factors driving their initial choice of a regular brand. The document also stated that a male Marlboro smoker eighteen to twenty-four years old is most likely to consider his brand to be "popular" and "well established." 2048735500-5604 at 5544, 5546 (US 21971).

2910. A document titled "Proposed Script for Marlboro Story," apparently drafted in 1995, traced the development of Marlboro advertising themes from the Marlboro Man to the Marlboro Racing Team and Marlboro Adventure Team. The document indicated that the Marlboro Man represented rugged independence, whereas the promotional events Marlboro Racing Team and the Marlboro Adventure Team used themes of freedom and adventure. As discussed above, the Marlboro Adventure Team promotion was one marketing tool recommended in the October 8, 1992 "PM USA Business Update" to obtain Philip Morris's "historic share amongst entry-level adult smokers." 2071349278-9281 (US 20526); 2046569728-9731 at 9728-9729 (US 20471); see also (no bates) (US 3567); (no bates) (US 8131); (no bates) (US 9062); (no bates) (US 13920); (no bates) (US 47303); (no bates) (US 7509); (no bates) (US 47307); (no bates) (US 9296).

2911. Philip Morris collected information on whether smokers perceive particular brands to be "popular" brands as part of its continuous consumer tracking survey in order to help it to "understand if the brand is remaining new and relevant and growing in the marketplace or whether

the consumers think that this brand [] is washed up." This information was considered important in marketing Marlboro because "at least what we know about young adult smokers, for some of them, the fact that Marlboro is a popular brand may be a factor in why they choose Marlboro." Lund PD, United States v. Philip Morris, 6/27/02, 137:17-140:13, 197:24-199:11.

2912. In a June 23, 1995 memorandum from Philip Morris research analyst Marian Wood to Lund, Wood discussed the results of a qualitative market research study concerning the Marlboro Lights brand. This study, conducted by Marketing Perceptions, a market research contractor for Philip Morris, found that "most of the Lights smokers [in that study] chose Marlboro because of the brand's popularity. However, once they were in the franchise, many of these smokers identified with the independent image the brand conveyed." 2071580565-0566 at 0566 (US 20528).

2913. In a February 21, 1996 memorandum, Natalie Ellis, Marlboro Research Manager at Philip Morris USA, remarked upon the "critical role brand popularity plays in the Marlboro core image." 2040837079-7080 at 7079 (US 23898).

2914. A 1996 telephone study produced by Philip Morris USA surveyed 850 smokers on "the appeal of racing in key demos in order to assess its viability as a national marketing equity." The study concluded that "[r]acing imagery and Marlboro 'fit' on a number of levels" because racing

> [o]verlaps core imagery of confidence, determination, masculinity, independence and control. . . . Reinforces Marlboro's status as a popular, worldwide brand. . . . Lends an upbeat tone of excitement, competitiveness, dynamism, challenge and 'edginess' to brand image [and] Provides relevant, aspirational but obtainable images.

Additionally, "traits associated with the drivers are consistent with those often mentioned for the cowboy -- masculinity, confidence, strength, determination, independence and skill." In sum,

> [r]acing as a communication vehicle (i.e. calendar, newsletter, advertising) has strong national potential, particularly among YAS by communicat[ing] values of masculinity, independence and strength . . . excitement . . . color and cutting edge modernism to the base image.

2072475100-5149 at 5102, 5122, 5123, 5148 (US 85191).

2915. A November 1998 document titled "Marlboro Worldwide Creative Brief," written by the Leo Burnett Agency, analyzed the marketplace dynamics affecting Marlboro's volume and share performance and recommended ways to market Marlboro to "young adult male smokers" who "continue to be of primary importance for the growth of Marlboro." The report opened by discussing "Key Consumer Insights," including:

> Friends/peers are more important than before. Given increased pressure from a rapidly changing world around them, there is a growing need for "connectedness" with this group. Young Adult Smokers today communicate with each other differently -- they care more about relationships with others.

After discussing the "core values of Marlboro Country" -- "Masculinity, Freedom, Adventure, Limitless Opportunities, Self-Sufficiency, Mastery of Destiny, Harmony with Nature" -- the report addressed Marlboro's "Advertising Challenge":

> With more than 30 years of experience behind the Marlboro Country campaign idea, we are confident that its timeless, universal appeal will continue to build the brand's image, awareness and sales well into the future. Nevertheless, our key advertising challenge is to keep the Brand Essence and Core Values of Marlboro Country relevant and impactful in the context of changing young adult smokers and marketplace dynamics. As an evolutionary process, the advertising approach must continue to link to the historical advertising theme, while keeping the communication fresh and vital.

The report continued by addressing, under the heading of "Creative Direction," Marlboro's "Advertising Objectives":

> We need to deliver well-targeted advertising that: 1. Builds/maintains brand and advertising awareness. 2. Reinforces Marlboro's position as the world's #1 cigarette . . . .As part of these objectives we want to: Reinforce Marlboro as the brand of choice and build loyalty among Young Adult Male Smokers (YAMS). . . . Bonding/Camaraderie[:] Images that capture aspects of camaraderie and sociability. . . .This content area is the place to reveal the social, more approachable side of the Cowboy.

LB0092389-2414 at 2391-2394, 2396 (US 33235) (emphasis in original); 2085298486-8512 at 8488-8491, 8493 (US 22906).

2916. A new Marlboro promotion called "Cowboy's Place," created by Leo Burnett, acknowledged in a February 2, 1999 document that Marlboro's traditional advertising image "plays on the 'approaching adulthood' side . . . [featuring] independence," and compared that to the "competition" -- specifically, Camel and Newport -- whose advertising "plays on the 'being young (adult)' side . . . [featuring] sociability, nightlife, partying, fun-loving, experiencing the moment." Leo Burnett recommended that the "Cowboy's Place" promotion feature the themes of sociability, spontaneity, and partying usually featured by Camel and Newport. Leo Burnett promised that "Cowboy's Place" would provide the "[o]pportunity for Marlboro to own 'the road to adulthood.'" LB0090212-0230 at 0216, 0217, 0218 (US 33211).

2917. A Leo Burnett document, titled "Virginia Slims -- Stuck in the Seventies," establishes that Philip Morris initiated the "Find Your Voice" campaign in 1999 to make Virginia Slims more appealing to younger women. The advertisements were slated to begin running in December 1999 publications and Leo Burnett predicted subsequent "volume growth" for Virginia Slims cigarettes. LB0131023-1026 at 1023, 1026 (US 33402*); see also (no bates) (US 14326).

(2) Lorillard

2918. On August 13, 1970, Philip Gaberman, creative director for Robert Brian Associates, was involved in creating a new package design for Lorillard's Kicks cigarette brand. Gaberman wrote a letter to Professor Charles Seide of Cooper Union, a New York City art college, proposing the use of Seide's students for creating the Kicks package design. The letter stated:

> We're adults. You've got a group of talented kids. Hence this letter. We have been asked by our client to come up with a package design . . . a design that is attractive to kids . . . (young adults). We were wondering if this project might serve as a challenging assignment for your package design class(es). . . . Note: While this cigarette is geared to the youth market, no attempt (obvious) can be made to encourage persons under twenty-one to smoke. The package design should be geared to attract the youthful eye . . . not the ever-watchful eye of the Federal Government.

92352889-2890 (US 21725).

2919. Lorillard's September 23, 1991 "Harley-Davidson Year I Strategic Marketing Plan" stated:

> Harley-Davidson cigarettes are positioned to appeal to young adult male smokers, 18-24 years of age with high school educations, generally blue collar occupations as a brand which offers a unique smoking experience by virtue of its association with Harley-Davidson motorcycle imagery.

94258098-8143 at 8105 (US 85206).

2920. In two letters, one dated August 17, 1993, and the other dated August 27, 1993, Timothy K. Hoelter, Harley Davidson Vice President and General Counsel, wrote to Ronald Goldbrenner, Lorillard Associate General Counsel, expressing Harley Davidson's concern that Lorillard's proposed upcoming cigarette advertising campaign to introduce its new Harley Davidson brand, especially when combined with the low price of the brand, would "recruit underage smokers."

Hoelter indicated that Harley Davidson had hired a market research firm specializing in child research to evaluate the Lorillard advertising campaign, and that this firm had concluded that "the campaign will appeal to underaged children." 91384161-4162 (US 54404); 92670418-0419 at 0419 (US 21760).

2921. By letter dated August 30, 1993, Goldbrenner responded to Hoelter's August 27 letter with a warning to Harley-Davidson:

> In your letter you refer to market research which Harley-Davidson has conducted. As you know, Lorillard's 'American Quality' campaign is an important trade secret, as are the timing and details of virtually all new products and advertising campaigns. Your letter raises serious concern on our part for the basic protection of very important Lorillard trade secrets. . . . Furthermore, if such research has been improperly conducted or analyzed, it may be very damaging to the reputation and business of Lorillard's disclosure, whether or not trade secrets are involved. . . . We would further appreciate your forwarding to us an immediate copy of the test results and methodology so that we will be better able to discuss this matter with you. We cannot impress upon you too strongly your obligation to maintain these materials in confidence and to permit us to review and validate the market research you describe so that we may properly assess this matter.

92670436-0437 (US 57194).

2922. Despite Hoelter's letters protesting the appeal of Harley-Davidson cigarettes to underage persons, Lorillard proceeded to introduce the brand and marketed the cigarettes until 1996 when Lorillard replaced Harley-Davidson which had "fail[ed] to make sales goals" with another brand called Maverick. 94917017-7017 (US 88152); 92715334-5457 at 5440-5442 (US 87927).

2923. Lorillard's "Newport '95 Promotional Platform Preliminary Presentation" dated November 30, 1994 stated that one objective was "[t]o develop a comprehensive Newport Promotion

Program which . . . Enhances image as one of the 'cool' brands." 91945211-5218 at 5216 (US 85208).

2924. A November 11, 1993 presentation by McCracken Brooks for Lorillard, titled "Newport Promotional Concepts," stated that one of the "objectives" was to "[s]trengthen Newport's competitive edge as the peer brand among young adult smokers." 91949806-9831 at 9808 (US 57155).

2925. Newport's 1994 Brand Plan stated that "Newport is the leading menthol cigarette brand among younger adult smokers in the freshness segment, positioned to appeal primarily to general market/urban center adult smokers ages 18-24" and that "Newport's creative product must strengthen Newport's competitive edge as the 'peer' brand among younger adult smokers." 91945017-5124 at 5033, 5045 (US 21113).

2926. A July 1994 report, titled "An Evaluation of the Newport 'Pleasure on Wheels' Promotion Tiers 1 and 2," prepared for Lorillard by Meyers Research Center stated that one of the "primary marketing objectives" of this promotion was to "[r]einforce Newport's image as the 'peer brand' among young adult smokers." This report was attached to a July 26, 1994 memorandum titled "Final Report: Newport P.O.W. Promotion Evaluation in Tiers I and II – MPID #5543/394" from Scott Benson, Lorillard Manager of Consumer Research, to Victor Lindsley, Lorillard Senior Group Brand Director. 91840214-0311 at 0218 (US 74415); 94291134-1139 at 1134 (US 21119).

2927. A July 15, 1996 memorandum from Dick Westwood at Strategy & Tactics, Ltd. to Scott Benson, Group Manager of Marketing Research at Lorillard, regarding "The Menthol Market Study Reanalysis," concluded:

> Brand imagery should be pursued as the primary lever Lorillard can deploy in acting against the menthol market. Some Image Segments are, indeed, taste-based (for example, the Taste/Sensation segment with its focus on mintiness and iciness), and it is appropriate to pursue such segments through a taste-centered strategy. But other market segments -- including the Social Acceptance segment which is Newport's primary strength -- are defined by more subjective aspects of imagery and, for these, taste profiles need to be subsumed to fitting the image that the Company is seeking to create. . . . From a taste perspective, Newport . . . competes primarily with Kool. However, the two brands play in different Image Segments -- Social Acceptance and Strength respectively, and thus do not interact as directly as taste alone would suggest. Thus, for example, although both brands skew to males and African Americans, Newport has been able to attract a considerably younger adult smoker as its user base.

96290861-0869 at 0869 (US 85209*).

2928. In approximately 1998, Lorillard undertook a nationwide advertising campaign for Newport cigarettes captioned "Pleasure! Fire It Up!" in newspapers and magazines. Among several treatments, "Pleasure! Fire It Up!" advertising depicted attractive young men and young women smoking cigarettes, often in circumstances involving sports and other physical activities. (no bates) (US 11209); (no bates) (US 11247); (no bates) (US 11257); (no bates) (US 11283); (no bates) (US 14767); (no bates) (US 14637); (no bates) (US 12477).

2929. A March 27, 1998 letter to Collett Thatch, the Senior Brand Manager for Newport, from Dorothy Straub at Saatchi & Saatchi, provided information on competitive print advertising campaigns. The letter described Lucky Strike as "making a concerted effort to reposition themselves as a contemporary retro cigarette (see inside visual of a James Dean look-a-like leaning on a 60's convertible coupe)." At the bottom of the advertisement was a toll-free number to call which provided information on upcoming "trendy bars/special promotions and money saving coupons." 86165773-5775A at 5775 (US 22207).

2930. The Newport campaign uses the same themes known to be attractive to youth, including socialization, having fun with friends, and risky independent outdoors activities. Telford PD, United States v. Philip Morris, 6/26/02, 85:13-88:14 (Confidential); see also (no bates) (US 4873); (no bates) (US 11183); (no bates) (US 11283); (no bates) (US 11590); (no bates) (US 4685); (no bates) (US 9360); (no bates) (US 12074).

2931. The "Newport 2000 Strategic Plan Overview," dated October 8, 1999, stated that "[t]he Newport Family as Lorillard's core power volume brand must contribute significant volume and share growth. . . ." A "Key Issue" was Newport's need to strengthen its marketing programs:

> Newport's marketing programs have not been strong enough in a substantially changed marketplace to protect the brand's core business base, significantly improve volume and share trends, or defend against Marlboro Menthol's aggressive marketing initiatives.

The "Creative Strategy" to increase volume and gain long term growth was:

> Develop creative executions that continue to strengthen and refresh Newport's competitive advantage as the peer brand of choice among younger adult smokers by reinforcing the perception that Newport delivers smoking pleasure in social settings relative to their lifestyles. . . . Continue to leverage the Pleasure campaign equity to reinforce the brand's fun, spontaneous, upbeat image through a variety of settings portraying social interaction, spontaneous fun, refreshment and smoking situations.

98196660-6681 at 6661, 6665, 6671 (US 56953). The "Newport 2001 Strategic Plan Overview," dated June 9, 2000, set forth "Marketing Objectives" identical to the year 2000 plan. 99310880-0893 at 0884-0885 (US 57656) (Confidential).

2932. Lorillard CEO Martin Orlowsky acknowledged that "[p]eer acceptance is an important business issue in terms of brand selection, because it is a factor affecting brand choice among younger adult smokers." Orlowsky WD, 58:3-4.

(3) Brown & Williamson

2933. A 1974 B&W report, titled "Young Adult Smoker Life Styles and Attitudes," recorded that "as part of [B&W's] investigation of the 'new' smoker, a program of consumer research was undertaken." The purpose of the research was "to gain insight into the perceptions, attitudes and behavior of younger, recently-starting smokers regarding initial product usage, current smoking and health concerns." Included in the findings was the statement that smoking starts with younger people for four reasons:

> The first factor is the desire of young people to look older than they really are. The second is peer pressure and doing what friends and authority figures do. The third reason is to rebel against parents with only modest risk. The fourth reason identified had to do with physical reaction. This physical reaction was described as a "high" or as a challenge to be strong enough to smoke without getting sick.

B&W designed its marketing campaigns around themes that would exploit these attitudes. 170040977-1001 at 0977 (US 20289); see also (no bates) (US 8013); (no bates) (US 1094); (no bates) (US 10443).

2934. A May 26, 1975 report, titled "What Have We Learned From People? A Conceptual Summarization of 18 Focus Groups Interviews on the Subject of Smoking," was prepared for B&W by the Ted Bates Agency. A section of the report titled "How Can We Introduce Starters and Switchers to our Brands," stated: "With only very few exceptions, young people start to smoke because of their peer group." The document also stated that

> an attempt to reach young smokers, starters should be based . . . on the following parameters: [p]resent the cigarette as one of a few initiations into the adult world. Present the cigarette as part of the illicit pleasure category of products and activities. . . . Consider a sampling technique to allow the young starters to actually try your brand . . . . In your ads create a situation taken from the day-to-day

> life of the young smoker but in an elegant manner have this situation touch on the basic symbols of the growing-up, maturity process. To the best of your ability (considering some legal constraints) relate the cigarette to "pot," wine, beer, sex, etc.

680092632- 2668 at 2664-2665 (US 21693); 170043558-3593 at 3581-3582 (US 20293); 679018003-8278 (US 87928).

2935. An August 4, 1976 letter to Frank McKeown at B&W from Jeffrey Clinaman at Zimmer-McClaskey-Lewis, an advertising firm, recommended a Kool Basketball Premium for Kool's 1977 Promotion Program: "Basketball is a major source of recreation among young, black males. We would capitalize on this interest by offering a basketball premium, perhaps even green and white to tie in with Kool." The plan also advised that

> Since Kool is heavily oriented toward the young and the brand's starter index is 10, it will benefit us long-term to develop promotion events that involve the young and especially, to convince the starter group to smoke Kool.

777080491-0522 at 0491, 0500, 0508 (US 31585).

2936. On November 15, 1977, B.L. Broeker, a B&W Senior Brand Manager, wrote to Phil Weinseimer at the Ted Bates Agency attaching "exploratory advertising strategies, 'Exhilaration' and 'Confidence.'" The "Key Fact" under the Exhilaration advertising strategy was that "Kool is losing smokers to menthol competition and not attracting enough starter and switcher smokers to affect this loss." The 'Confidence' advertising was designed to address the problem that Kool "lacks an upbeat, exciting image to reinforce its youthful franchise and attract new smokers." The "Promise" of the Confidence creative strategy was "Smokers who try Kool will derive a sense of confidence and preeminence among their peers via association with this superior product." 686032807-2811 at 2808, 2810 (US 31034).

2937. B&W recognizes the importance of imagery and packaging to make its products attractive to teenagers. An April 20, 1978 B&W document, titled "Implications for Cigarette Industry," stated that "[i]magery will continue to be important in brand selection for teenagers" and "[p]ackaging will become more important if not the most important advertising vehicle." 667007711-7714 at 7711, 7712 (US 20961).

2938. A B&W document apparently drafted in 1983, titled "Kool Advertising," stated as a "Problem" that "[o]ur campaign does not currently appeal to young adults of all races (<25)," because it was weakest with young people. As the solution, the document recommended that Kool advertising "go for the fantasy" and "go for cool." 675159252-9253 (US 21730).

2939. A B&W 1985 Strategic Marketing Plan discussed the marketing strategy for Kool: "concentrate efforts on young adult, male prime prospects. . . . Advertising should symbolize both the best cigarette (quality) and a contemporary image of masculinity, self-assurance, confidence and control (cool)." 670146621-6701 at 6626, 6637, 6638 (US 30805).

2940. The 1997 Media Plan for Kool cigarettes listed the following among its objectives" "Communicate 'Up-to-Date', 'Leading Brand', 'Quality', and Popular.'" The 1997 preliminary list of magazines in which Kool advertisements were placed included publications such as Spin and Sport, each of which had a youth readership (readers between the ages of twelve to seventeen) of over 30%. 462205141-5145 at 5141 (JD 011795).

2941. The 1997 Creative Plan For Kool cigarettes included a section on the development of creative images to be used in advertisements, in POS [point of sale], and in communications to support the Kool Indy car sponsorship. The plan stated that the images should "[r]eflect masculinity, popularity, and young adult imagery in a manner that differentiates Kool from Newport and

Marlboro Menthol through a contemporary exploitation of the Kool Indy car program." 176020757-0775 at 0773 (US 23344).

2942. In 1997 B&W sponsored the H.O.R.D.E. (Horizons of Rock Developing Everywhere) Festival, an annual all-day music festival staged in twenty-eight cities across the United States over the summer. Prior to the H.O.R.D.E. Festival, B&W sponsored the "Extremely Kool Band-to-Band Combat" competitions in ten United States cities "with the grand prize being the opening act on the Second Stage at three H.O.R.D.E. shows." The objectives for the "Extremely Kool Band-to-Band Combat" competitions included "[i]mprov[ing] perceptions of Kool as a popular, up-to-date, leading brand" and capturing names for B&W's smoker database. 306014279-4279 (US 22102).

2943. Other internal documents confirm that B&W sought to "update the image of its Kool brand" with its "B Kool" advertising in the late 1990s. Advertising awareness for Kool increased between 1997, when the "B Kool" campaign was initiated, and 1999. Adult smokers under thirty who were aware of the advertising were more likely to associate Kool with "key imagery measures" that included popularity and sophistication. The "B Kool" campaign communicated an image of the Kool smoker as independent, masculine, popular, and confident, all themes that appeal to youth. 462110343-0376 at 0344 (US 22490); 309031048-1071 at 1051 (US 22660); 315022030-2207 at 2041 (US 22496); Biglan WD, 36-95; Krugman WD, 94:1-99:23; Smith WD, 16:20-17:6; see also (no bates) (US 10880); (no bates) (US 14557); (no bates) (US 14170); (no bates) (US 13277).

2944. A February 12, 1997 agreement between B&W and Gateway Motorsports Corporation made Kool the "Official and Exclusive Tobacco Sponsor" of the 1997-1998 CART World Series event at Gateway International Raceway. B&W received the right to display Kool banners and signage around the racetrack, as well as point of sale signage "in and around all

concession areas." The agreement also included provisions guaranteeing that Kool would receive six P.A. announcements each day of the event, and provisions authorizing B&W to conduct a direct mail promotion in connection with the event. 323011515-1519 at 1515-1516, 1517 (US 47068); see also (no bates) (US 2320).

2945. A May 30, 1997 BATCo plan titled "Lucky Strike -- Strategic Development of Get Lucky Campaign" demonstrated that B&W had access to and reviewed BATCo marketing research using smokers under twenty-one. The plan discussed Lucky Strike's "[e]xtremely successful sales results . . . achieved in the two key test markets," and indicated that the principal target group of the Lucky Strike campaign was male young adult urban smokers ages eighteen to twenty-five who were "opinion leaders and trend setters." The document described Lucky Strike as: "James Dean -- an archetypal Luckies smoker," "a legendary marque of teenage rebellion and rock 'n' roll heroes of the 1950's." It stated:

> Lucky Strike is one of the greatest "badges" of all time. . . . Cigarette consumers crave this sort of "badge"; it is more important to them than anything else. This sort of authenticity is rare and invaluable since it demonstrates to peer groups that you are "in the know."

844002422-2437 at 2432, 2434, 2437 (US 21921).

2946. Numerous public officials, including the then-Governor of Florida and several state Attorneys General, have expressed their dismay at B&W's "B Kool" advertising campaign because of its appeal to youth. On October 22, 1997, Governor Lawton Chiles of Florida wrote to B&W stating:

> I am very disturbed by B&W's most recent advertising campaign for Kool menthol cigarettes. This so-called "B Kool" campaign appears to be yet another flagrant attempt by Big Tobacco to hook another generation of teens. In addition, it clearly violates the spirit of the

> settlement agreement reached between the State of Florida and Big Tobacco.

The letter criticized the use of a young female model in the campaign who "looks like a teenager from head to toe" and the use of billboards. The Governor concluded his letter by requesting that B&W remove "these offensive billboards immediately . . . and immediately halt this campaign." 282208267-8267 (US 22099).

2947. On October 22, 1999, Indiana Attorney General Jeffrey Modisett wrote to B&W summarizing his impressions of a meeting he attended with the company on October 4, 1999. In response to representations made at the meeting that B&W only intended to target smokers between the ages of twenty-one and thirty with its "B Kool" campaign, Attorney General Modisett stated: "While your intentions have been clearly stated, to outside observers it is hard to believe that your company does not use advertising to entice non-smokers to begin smoking your products." He also stated:

> I find it amazing that no one would agree that kids age 10-14 are more interested in "being cool" than the older, more mature 21-30 age group. So, while your intentions with the "B Kool" advertising campaign seem clear internally, you have a long way to go to convince outside observers that this advertising campaign does not have an undesired impact on both younger smoking and non-smoking teens.

282204359-4361 at 4359-4360 (US 22211).

2948. On December 3, 1999, the Oklahoma Attorney General, Drew Edmonson, wrote to B&W on behalf of the NAAG Tobacco Enforcement Committee to express the Committee's concerns about the content of the "B Kool" advertising campaign and the placement of "B Kool" advertisements in magazines with significant youth readership according to data contained in the

1999 MRI Twelve Plus Study. B&W had placed "B Kool" advertisements in such magazines as Vibe and Sport, which had youth readership (readers between the ages of twelve and seventeen) above 35% based on the 1999 MRI Twelve Plus Study. Edmonson wrote that:

> [t]he placement of ads in magazines with a significant youth readership is especially problematic because the content of the B Kool ads has such high youth appeal. Research over many years has shown that adolescents emulate youth adults who strongly desire to be seen as "cool" in the eyes of their peers.

He noted that "[s]ome of the ads include visual cues, e.g. tattoos which are currently in vogue among teens. This imagery is likely to appeal to male adolescents." Edmonson also stated that the "B Kool" slogan was more likely to "resonate" with young adolescents than with smokers twenty-one to thirty years old. In response to B&W's contention that the advertising campaign was intended to target twenty-one to thirty year olds, Edmonson stated

> it is foreseeable and inevitable that a marketing strategy directed at young adults which employs themes with particular appeal to adolescents (e.g. independence, desire to appear older, desire to be cool), . . . will, in fact, both appeal to and reach a large number of youth.

B&W did not change the content of the B Kool campaign in response to the concerns expressed by National Association of Attorneys General ("NAAG"). 282300205-0207 at 0205-0206 (US 20574); Smith WD, 32:20-33:8.

2949. In May 2000, B&W launched a new advertising campaign for Kool known as the "House of Menthol" campaign. B&W sought to market to youth through its "House of Menthol" advertising theme. Richard Newman, executive vice president and worldwide account director at BATES USA, stated that one of the meanings associated with "House" is house music, a type of music that is popular with teenagers. 700500191-0193 at 0193 (US 85223).

2950. In March 2004, B&W issued a press release announcing the launch of the Kool Mixx campaign. As part of the campaign, a series of "Kool Mixx" advertisements appeared in the April 2004 edition of Rolling Stone magazine sent to subscribers over twenty-one. The advertisements featured cartoon-like images of DJs spinning CDs and young people dancing. The text of the advertisements included statements that

> Kool recognizes DJs as the center of Hip Hop, inspired by the real feel and energy of the streets . . . DJ's are the Masters of the Hip Hop like Kool is the Master of Menthol. Kool Mixx special Edition Packs are our mark of respect for these Hip Hop Players.

The special edition packs referenced in the advertisements featured the same images of DJs and young people dancing. Also included in the April 2004 edition of Rolling Stone was a Kool Mixx CD/CD-Rom, described in the advertisements as "Your way to experience the sights and sounds of the Soundtrack to the Streets." The CD-Rom contained, among other things, soundtracks by various hip-hop artists, interviews with DJs, and a link to the website www.houseofmenthol.com, which the press release described as a "comprehensive, age-verified website for adult smokers" created as part of the KOOL Mixx campaign. Ivey WD, 28:4- 29:27, 33:1-34:20; ADV1150001-0117 (US 88094); Krugman WD, 116:3-122:7; USX5420003-0008 (US 89164). See http://www.trinketsandtrash.org/featured/koolcampaign.htm.

2951. Public heath organizations and Attorneys General of several states criticized B&W's Kool Mixx campaign for targeting youth. The African American Tobacco Prevention Network issued a statement "denounc[ing] a plan by Kool brand cigarettes to escalate its targeting of black youth and urban hip-hop culture by sponsoring a nationwide Hip-Hop DJ Competition, and creating a special cigarette package to market that event which by design appeals to youth." G. Steven Rowe,

Maine Attorney General and Chair of the Tobacco Enforcement Committee, in a March 25, 2004 letter to Neil Mellon, wrote, "[t]he advertising images used in this campaign [hip-hop artists, DJ's, art, and culture] appear to us to hold particular appeal for teenagers." It was also brought to B&W's attention that individuals were able to gain access to www.houseofmenthol.com, its supposedly "age-verified" website, by providing false information.

2952. The Attorneys General of New York, Illinois, and Maryland filed lawsuits against B&W alleging that the Kool Mixx campaign violated the Master Settlement Agreement's provision against youth targeting. An affidavit filed in the New York litigation by Dr. Michael Kamins, Associate Professor of marketing at the Marshall School of Business, concluded that "the Kool Mixx Campaign targets youth, particularly African/American youth." On October 5, 2004, B&W and RJR reached a settlement with the state Attorneys General resolving these lawsuits. As part of the settlement, B&W and RJR agreed to pay $1.46 million to the Center for Disease Control Foundation, the National African American Tobacco Prevention Network, the American Lung Association of Metropolitan Chicago, and the Bobby E. Wright Community Health center to support youth smoking reduction and prevention programs. In addition, RJR agreed to no longer distribute Kool Mixx CDs or other Kool Mixx promotional items in magazines and to no longer sell Kool Mixx packs in retail stores. However, RJR can and does continue to use the Kool Mixx campaign. Ivey WD, 35:13-41:11; Ivey TT, 11/16/04, 6153:11-6168:1; TLT1050314-0316 (US 86683); USX5430001-0004 (US 89167); USX5430005-0006 (US 89168); USX5430007-0008 (US 89169); USX5560025-0026 (US 90057); USX5560018-0024 (US 90056); USX5560031-0034 (US 90059); USX5560095-0114 (US 92037); USX5560035-0050 (US 90061).

(4) R.J. Reynolds

2953. In a February 2, 1973 RJR document, titled "Research Planning Memorandum On Some Thoughts About New Brands Of Cigarettes For The Youth Market," Claude E. Teague, Jr., Assistant Director of Research at RJR, set forth the following strategy for appealing to young people's desires to smoke popular and peer-approved brands:

> A. Group Identification -- Pre-smokers learn to smoke to identify with and participate in shared experiences of a group of associates. If the majority of one's closest associates smoke [sic] cigarettes, then there is strong psychological pressure, particularly on the young person, to identify with the group, follow the crowd, and avoid being out of phase with the group's value system even though, paradoxically, the group value system may esteem individuality. This provides a large incentive to begin smoking. If this be true, then the same effect strongly influences the brand chosen, it likely being the popular, "in" brand used by ones [sic] close associates. Thus a new brand aimed at the young smoker must somehow become the "in" brand and its promotion should emphasize togetherness, belonging and group acceptance, while at the same time emphasizing individuality and "doing ones [sic] own thing."

502987407-502987418 at 7413 (US 20708).

2954. A March 22, 1982 document, titled "Export Family Strategy," discussed marketing strategy for Export cigarettes, RJR's leading Canadian brand:

> It is hypothesized that very young starter smokers choose Export "A" because it provides them with an instant badge of masculinity, appeals to their rebellious nature and establishes their position amongst their peers. . . . It is at this transition point (ages 18-24) that Export "A" is declining in its ability to hold the young adult males as they go through the maturing process, due to its out-dated irrelevant image. . . . Since we cannot direct our media or our creative [campaigns] to starter smokers, the optimal target group is young adult smokers between the ages of 18-24. . . . The key influencing factor to initial brand selection amongst new smokers appears to be conformity to what their friends smoke . . . . While Export "A" appears to be chosen as a first brand based on this key influencing

> factor, we must strive for peer group acceptability throughout the maturing process, for all the Export brands.

800057286-7321 at 7299 at 7302 (US 21057).

2955. A June 29, 1983 report, titled "13-30 Corporation/R.J. Reynolds," summarized a meeting "[t]o develop concepts/options for media vehicle(s) for use in, on, under or around convenience stores which will satisfy the needs of . . . the convenience store customer . . . owner . . . [and] the R.J. Reynolds Company." The report described convenience stores ("Youth Oriented," "Hang-Out" and "Video Games"), convenience store customers ("Younger," "Children With Them," "Late at Night-Younger" and "Kids on Friday Night Buying Evening 6-Packs"), and convenience store purchasers ("Young, Single" and "People with Less Spending Money"). The report listed "beginning ideas" to be implemented at convenience stores to encourage purchase of RJR's cigarette brands, including "activity booklet appealing to young people – things to do," "develop a bike rack for kids with bikes -- create ad space," "hook-up cigarettes with other youth purchases," "have a video game token given away with purchase," "create a music channel that is closed-circuited into C.S. [convenience store] that is on-target to youth market," and "some kind of game or contest . . . via proof of purchase -- with a weekly winner. Could be video game – high school sports quiz." The report considered ways to connect RJR marketing to dating: "facilitate boy meets girl at C.S.," and "how to legitimize the boy/girl encounter -- e.g., movie schedules." 500863242-3272 (US 20654).

2956. In an RJR document dated June 14, 1984, titled "New Brands and Strategic Research Report: Project XG Qualitative Exploratory III MDD Topline Perspective," P.S. Cohen, an RJR employee, stated: "In recognition of the importance of younger adult smokers to RJR growth, Project Planning has been asked to develop a brand which appeals to the image and peer acceptance

wants of 18-24 year old smokers." This effort was code-named "Project XG." Cohen further stated that, to appeal to the younger adult smoker, visuals would convey a sense of: "Adventure/controllable risk, Independence/freedom, Honesty/straightforwardness, 'In control'/ 'street-smart'/urban personality, Spontaneity/lack of inhibitions." 502034890-4895 at 4892, 4893 (US 20694).

2957. A March 12, 1986 memorandum, titled "Camel New Advertising Campaign Development," labeled "RJR Secret," sent to David Iauco, RJR Senior Vice President for Marketing and R.T. Caufield, of the RJR Brand Group, described RJR's plans for developing the Joe Camel campaign: "Overall, CAMEL advertising will be directed toward using peer acceptance/influence to provide the motivation for target smokers to select Camel." 503969238-9242 at 9238 (US 79096).

2958. A 1988 RJR document, titled "Camel Advertising Development White Paper," discussed the importance of younger "adult" smokers and analyzed "[w]hy Camel has an opportunity to target younger adult smokers." The White Paper stated that

> Marlboro's key strength relates to peer acceptability and belonging. . . . Marlboro is perceived by younger adult smokers as a brand which provides a sense of belonging to the peer group. A variety of research studies including the Segment Description Study, the Marlboro Vulnerability Analysis, in-market perception research, as well as in-depth qualitative [research] all show this.

The White Paper then discussed how Camel could reconfigure its market image in order to appeal to the "peer acceptability and belonging" themes so effectively exploited by Marlboro's advertising. 506768775-8784 at 8776, 8781-8784 (US 20764).

2959. An August 1988 report, titled "Permanent Young Adult OOH (Out of Home) Plan," discussed RJR's OOH marketing ("out of home" primarily refers to billboards and other outdoor

advertising) and made recommendations for targeting the younger adult smoker ("YAS") market. The overall plan for RJR's billboard efforts was described as "[c]ontinuous, high impact visibility in the most YAS-oriented media available." The overall objective was to: "Assure continuous OOH presence for highest potential Brands, utilizing locations, units and creative executions that are uniquely and singlemindedly relevant to younger adult smokers." The report recommended placing billboards in the areas most likely to be frequented by young adults, including:

> -- Near venues where rock concerts are regularly held.
>
> -- Along cruising strips/streets with heavy concentrations of fast food restaurants and convenience stores.
>
> -- Near technical colleges, military bases, video game arcades, city basketball courts, motocross tracks, major record stores, etc.

The report stated that, with respect to marketing in such areas, "[t]raditional OOH selection parameters do not necessarily apply! Highly 'daily effective circulation' not critical -- maybe YAS only in area on weekends -- that's OK!" 507286174-6181 at 6175-6576, 6178 (US 22051).

2960. A July 1989 internal RJR document, titled "Soundwaves Program Awareness and Perception Study," declared that the Soundwaves Program was:

> being developed to improve Salem's appeal, relevance, and share among younger adult smokers, the key subgroup fueling the brand's long-term decline. The program is designed to tie the Salem brand name with music, a very important and universal interest among younger adult smokers. The program will focus on the areas of music most meaningful to the 18-24 year old smoker target, new music, via various elements of the program-music magazine, record/tape offer, retail offers, media delivered offers, and local field marketing events -- club nites and talent search.

514347738-7774 at 7738 (US 51850).

2961. In 1989-1990, RJR also sought to develop a cigarette brand, "Uptown," targeted at young adult less well educated African Americans. Project Uptown was part of RJR's "Black Initiative" to increase RJR's share of eighteen to twenty year old black smokers by 2.5 points in 1990. An internal RJR document that pre-dated Project Uptown, "Black Opportunity Analysis," stated that "Black Smokers have been identified as a potential opportunity sector for RJR" and that "[s]everal studies have suggested that Blacks are becoming polarized into an 'elite' and an 'underclass' . . . [it] is the 'underclass' who are smokers." In a section of the document titled "Blacks as People," it states,

> [i]nner city Black smokers are resigned to a future which permits only modest aspirations. . . . Younger adult inner-city black men seem to have fewer goals than the females. . . . From their discussions, it was evident that most of these men had surrendered to their dismal fate rather than actively seeking a solution.

A March 6, 1989 document produced from RJR files, titled "1990 New Marketing Ideas," referenced an "Inner-City Black Targeted Brand" that would be a distinctive cigarette brand targeted at the Inner-city Black smoker" and would "leverage the Black consumers' desire to use products which . . . are more 'potent' (e.g., Blacks drink malt liquor rather than beer)." An October 18, 1989 RJR marketing research report, titled "Project UT [Uptown] Creative Qualitative Research," stated "Project UT is a new brand targeted to younger adult Black smokers," and described the results of focus group testing conducted in Chicago among eighteen to twenty-four year old African American males and females who had "a high school or less education, and a total household income under $20,000 per year." Only after the then-Secretary of HHS, Dr. Lewis Sullivan, gave a speech condemning Uptown did RJR decide not to bring Uptown to market. Schindler TT, 1/25/05, 10952:4-10953:14; Schindler WD, 112:2-22, 121:19-24; 505925251-5295 at 5253, 5263, 5278 (US 89347); 507297419-7442 at 7438 (US 89351); 507318253-8287 at 8254, 8257 (US 89346).

2962. Through smoker research, RJR knows that first brand choice is largely based on brand popularity and "peer pressure," which can be created and intensified by advertising and promotion. According to Edmund Leary,

> Just like any -- any brand that's popular, people tend to pick a popular brand, and that's just the way people act . . . I think advertising and promotion can influence an adult smoker's brand choice, and I think, you know, if it's your first brand choice, if the brand is popular, that has lot to do with it, as well as what your friends smoke.

Leary PD, United States v. Philip Morris, 5/2/02, 60:25-62:23.

Case Study: RJR's Joe Camel Campaign

2963. RJR's Joe Camel is one of the most well-known images employed for cigarette marketing. The development of Joe Camel, described below, highlights Defendants' efforts to market to youth.

2964. In the early 1980s, RJR did not have a successful young "adult" smoker brand that could challenge Marlboro's dominance of the younger smoker market. RJR had already tried, unsuccessfully, to transform Camel into a youth brand with its 1973 to 1978 campaign "Meet the Turk." Burrows PD, United States v. Philip Morris, 6/27/01, 55:9-56:14; Long PD, United States v. Philip Morris, 10/18/01, 66:4- 25.

2965. Between 1979 and 1982, RJR CEO Edward A. Horrigan, Jr. initiated the Joe Camel campaign by asking his marketing department to look at the French "Funny Camel" campaign, which had been very effective with young people in France, to see if RJR could reinvigorate Camel with a similar approach. As a February 7, 1984 memorandum from Dana Blackmar to Rick McReynolds stated: "I think the French advertisement for Camel Filters is a smash. It would work equally well, if not better, for Camel Regular. It's about as young as you can get, and aims right at the young adult

smoker Camel needs to attract." 502303940-3940 (US 22067); Horrigan PD, United States v. Philip Morris, 10/25/01, 25:1-27:8.

2966. In 1984, Frances V. Creighton of the RJR Marketing Research Department prepared an "Established Brands Research Proposal: Camel Younger Adult Campaign Focus Groups," a proposal that sought to "qualitatively explore three creative strategies/campaigns for their appeal, relevance, and fit with Camel among target 18-20 year old smokers." In order to compete with Marlboro, "the Brand is currently developing new advertising creative targeted to younger adult male smokers. Three advertising strategies are being pursued . . . : Freedom and Independence, Interactive Sociability, and Pack Graphics." 521895585-5587 at 5585 (US 20902).

2967. In an October 18, 1984 document, titled "Younger Adult Smoker Perceptions of Camel," Charles A. Martin of the RJR Marketing Development Department discussed how young adults' perceptions of Camel could be used to increase market share, especially among FUBYAS (First Usual Brand Younger Adult Smokers). Martin stated:

> Camel is excellently positioned to appeal to FUBYAS who want to project themselves as being different from the crowd because they seek the ultimate in adventure and excitement. It supports this image through its heritage and mystique. Camel is a brand which differentiates itself from the vast majority of other cigarettes in the market. Camel projects an image of virility that is heroic and "larger than life." And, as it is a brand that's not for everyone, Camel is exciting to smoke.

503561565-1570 at 1567 (US 21704); 502656424-6660 (US 87821).

2968. A February 1, 1985 focus group report written by Martin, titled "Established Brand Research Proposal: Camel Younger Adult Smoker Focus Group," stated that, "[d]ue to the growing

importance of younger adult smokers, Camel has developed a campaign which is directed solely towards this group." Martin summarized the findings of the focus group:

> Overall, many of the male and female respondents held negative user and product perceptions of Camel. In their minds, Camel was thought to be a non-filtered, harsh product smoked by older males. However, exposure to the younger adult ads appear to somewhat improve these attitudes. This improvement stemmed primarily from two characteristics: humor, and relevancy to younger adult smokers. Certain ads did convey the message that Camel was an acceptable choice for younger adult smokers.

Martin also discussed focus group reactions to advertisements featuring the "French Camel," which was the precursor to the Joe Camel campaign:

> These ads were well-received due to the fun/humor aspects of the cartoons. More than any other theme, the "French Camels" appeared to attract the respondents' attention. The main drawbacks of these executions were that: one, they may be more appealing to an even younger age group and two, there is some confusion as to the meaning behind them (some focus group members were hard-pressed to explain the purpose of the ads).

521895554-5555 at 5554 (US 52788); 504585737-5757 at 5738-5739 (US 50628).

2969. RJR continued to work toward launching its Joe Camel campaign, even though another company executive explicitly raised the issue of Joe Camel's appeal to youth. A March 5, 1985 memorandum from J.S. Carpenter, RJR Tobacco International employee, to John Winebrenner about the "Funny French Camel Design" described RJR's use of the "French Camel" campaign to attract young smokers in France. Carpenter wrote:

> I must caution that this design was used in France during a time when an attempt was being made to "youthen" the brand; the entire advertising and promotional campaign used at the time was geared to this end, with the "funny" Camel playing a key role in the advertising. Indeed the design did help to achieve this end.

506768857-8857 (US 20765).

2970. In a March 12, 1986 memorandum, titled "Camel New Advertising Campaign Development," labeled "RJR Secret," R.T. Caufield, of the RJR Brand Group, emphasized appealing advertising as key to repositioning Camel for younger smokers:

> It is recommended that creative efforts reflect a primary focus on developing advertising which is highly relevant, appealing and motivational to 18-24 male smokers. This recommendation is based on consideration of the marketplace dynamics which are perpetuating Marlboro's growth (i.e., brand loyalty and peer influence), and which strongly suggest that repositioning Camel as the relevant brand choice for younger adult smokers will be critical to generating sustained volume growth.

The report indicated that "advertising will be developed with the objective of convincing target smokers that by selecting Camel as their usual brand they will project an image that will enhance their acceptance among their peers." 503969238-9242 at 9238 (US 79096).

2971. In 1988, RJR finally launched the Joe Camel campaign with the "Camel's 75th Birthday Celebration," a year long print and billboard advertising, promotional, and point of sale campaign. During the twenty years preceding the Joe Camel campaign, Camel's share of the overall cigarette market fell by more than 50%, from 9.2% to 4.3%. Camel had only 2.4% of the fourteen to seventeen year old market in 1979, according to internal RJR data. In 1986, Camel's market share among eighteen to twenty-four year olds was 3.2% . By 1993, by virtue of the Joe Camel campaign, Camel had increased its share of the teenage market to an astonishing 13.3%, according to both official government survey data and data from surveys conducted by RJR itself. In contrast, Camel's share of adult smokers only increased from 2.7% to 4% between 1988 and 1993. 506763382-3402 at 3383 (US 22231); Eriksen WD, 1/17/05, 49:7-53:5; VXA1900036-0049 (US 63946).

2972. RJR had extensively planned and researched the 75th Birthday Campaign before its launch in 1988. For example, in an August 21, 1987 RJR memorandum, titled "Camel's 75th Birthday Plan," Yasmin Jones stated that campaign promotional ideas "must appeal to the 18-34 year old mindset," and included an example of a "Party Animal" magazine pop-up insert. 521190415-0418 at 0416 (US 20895); 506885567-5603 (US 87823).

2973. In another example of RJR's testing of its Camel's 75th Birthday Campaign, Frances V. Creighton prepared a November 1987 report, titled "Marketing Research Proposal -- Camel Project Big Brand Perceptions Tracking Study." The report indicated that the planned market testing would "evaluate target smokers' perceptions and attitudes toward Camel before and after the launch of [Camel's] 75th Birthday celebration" among a target audience of eighteen to thirty-four year old males. 521895557-5559 at 5557 (US 20900).

2974. A 1988 RJR document, titled "Camel Advertising Development White Paper" provided the roadmap for RJR's repositioning of Camel with the Joe Camel campaign in order to reduce Marlboro's majority share of the young smoker market: "[O]nly about 5% of all smokers start smoking after the age of 24 . . . . The majority of younger adult smokers will stay loyal to their first brand choice." It stated that Camel's current image, conveyed through advertising, was too "old," and that advertising using younger models and themes that appealed to youth (independence, rebelliousness, etc.) could make Camel's image younger:

> Camel's current existing market image (i.e., brand perceptions, not advertising perceptions) includes aspects that are highly consistent with the wants of younger adult males . . . including: independence, doesn't follow crowd, lives by own set of rules, stands up for beliefs, not afraid to express individuality, enjoys being different, won't settle for ordinary. . . . The major weaknesses in Camel's in-market image is that it is not considered by younger adult smokers to be

> contemporary, and thus is not relevant. Negative perceptions include: . . . a lot older than me. . . . In order to fully target the younger adult market, Camel must displace Marlboro as the younger adult brand. Simply speaking, Marlboro is the younger adult smoker market. . . . Marlboro's key strength relates to peer acceptability and belonging. . . . Marlboro is perceived by younger adult smokers as a brand which provides a sense of belonging to the peer group. . . . The [Camel] advertising should elicit an emotional response to positively motivate target smokers to rethink their brand choice. . . . In order to stimulate [youths] to think about brand alternatives, the advertising and brand personality must "jolt" the target consumer. Since Camel does not have a demonstrably different or unique product (rational) benefit to sell, this jolt needs to be based on an emotional response and is unlikely to be accomplished with advertising which looks conventional or traditional. Studies have shown that the so-called "hot buttons" for younger adults include some of the following themes: Escape into imagination. . . . Excitement/fun is success: Younger adults center their lives on having fun in every way possible and at every time possible. Their definition of success is "enjoying today" which differentiates them from older smokers.

506768775-8784 at 8777, 8779-8783 (US 20764) (emphasis in original).

2975. Advertisements often showed the cartoon character Joe Camel hanging out at bars, visiting casinos, riding motorcycles, or driving cars; Joe Camel was also portrayed as a cool, rebellious, and adventuresome character, all themes with great appeal to teenagers. Biglan WD, 320-340; see also (no bates) (US 8748); (no bates) (US 8815); (no bates) (US 2166); (no bates) (US 8590); (no bates) (US 9271); (no bates) (US 8521); (no bates) (US 8835); (no bates) (US 8905); (no bates) (US 1809).

2976. Francis Creighton prepared a January 27, 1988 "Marketing Research Proposal 'Heroic Camel' Advertising Test" recommending that RJR conduct market research to determine the effectiveness of the "Heroic Camel" advertising campaign, and assure that it was positively received by eighteen to thirty year olds. The "Heroic Camel" campaign showed Joe Camel in a "series of

'heroic' situations drawn from bigger than life fictional characters," including as a fighter pilot, a foreign legionnaire, "Hollywood," and a detective. These advertisements were run in 1989. 521895566-5570 (US 24813*).

2977. An RJR document, titled "Volume Impact of Camel YAS Growth," examined Camel growth among young adult smokers in 1988 after the start of the Joe Camel campaign:

> In 1988, Camel Regular posted a 2.2 point national gain in usual brand share among males 18-24 (the brand's target) and a gain of 1.4 points among total 18-24 (YAS). This was the largest 12-month YAS gain ever recorded on Tracker, for Camel or any other RJR brand.

517161869-1876 at 1869 (US 80669).

2978. In an internal RJR March 20, 1989 memorandum, titled "Camel Performance Analysis," from G.C. Pennell to J. T. Winebrenner and R.M. Sanders, Pennell stated that

> Camel's ability to reach and convert younger adult smokers is significant with the eighteen to twenty year old group driving this growth. Accordingly, the brand should maintain its single-minded focus against this important smoker group.

517161877-1877 (US 80670).

2979. In 1989, RJR utilized "program 900162," which included "buy one, get one free coupons." It also placed the following advertisements in various media: (a) an advertisement with the words "Bored? Lonely? Restless? What you need is . . ." featuring the face of a beautiful woman gazing at the reader; (b) advertisements captioned "Camel Smooth Moves," including "Smooth Move #325 - Foolproof Dating Advice," which advised "[a]lways break the ice by offering her a Camel;" and "Smooth Move #334 - How to impress someone at the beach," which advised that the reader "[r]un into the water, grab someone and drag her back to shore, as if you've saved her from drowning. The more she kicks and screams, the better" and "[a]lways have plenty of Camels ready

when the beach party begins"; and (c) an advertisement captioned "Smooth Move #437 -- How to get a FREE pack even if you don't like to redeem coupons." 513590183-0185 (US 20854).

2980. A September 15, 1989 RJR document, titled "Diez Y Seis Fiesta Event Summary," reported on Camel marketing at the Denver Diez Y Seis Fiesta, a festival that offered "kiddy rides, vendor booths, and live entertainment on both stages." A similar Dallas event included a midway area with carnival rides for the children: "Camel presence, as a major sponsor, was certainly realized by all those at the event. 25 large banners were hung around the perimeter of the park. The Camel 30-ft. inflatable giant pack was situated next to the main stage." A Camel basketball game in a "freestanding booth with banners, flags and giant packs" was located in the midway area with children's carnival rides which achieved "maximum brand impact." The documents indicated that 2,000, 5,000, and 28,000 free samples of cigarettes were distributed at these three events, respectively. 507525019-5023 at 5020, 5022 (US 20778).

2981. A May 4, 1990 RJR report, titled "Camel Brand Promotion Opportunities," discussed a number of promotional items geared directly at "young adult target smokers." The report described the "target smokers" as

> approaching adulthood, hence they are sensitive to peer group perceptions regarding their maturity and masculinity. . . . Young adult target smokers are active, sociable and fun loving in nature. Their key interests include girls, cars, music, sports and dancing -- all of which can include family and friends and can be accomplished on a limited budget.

The promotional items suggested by this report included blank audio tapes with Camel logo, a Camel Walkman case and other "entertainment-oriented incentives." Other suggestions included the

"Camel pocket game," which included chess, checkers, dominoes, or Parcheesi, all using Camel logos, graphics and visuals. 509216033-6056 at 6035-6036, 6041, 6044-6045 (US 20826).

2982. Joe Camel advertisements run in the 1990s used the same themes and techniques which RJR used during Camel's 75th Birthday Campaign advertisements in 1988. The 1990s advertisements continued to portray Joe Camel as cool, rebellious, and adventuresome, showed him engaged in adult activities, and offered "Camel Cash," which could be redeemed for promotional items such as t-shirts, lighters, and mugs. One such advertisement, which RJR placed in various print media in 1992, was captioned "Camel Lights." It depicted Joe Camel wearing sunglasses, a t-shirt, and blue jeans, with a pack of cigarettes rolled up in his sleeve and a lit cigarette hanging from his mouth, while casually leaning against a convertible car. 509131534-1534 (US 21717); 515123613-3634 (US 87828).

2983. An April 1991 RJR Executive Summary, titled "Operating in a Restricted Environment," predicted that greater future restrictions on RJR's marketing and advertising were a virtual certainty, and explored ways to continue marketing RJR's brands if such restrictions were implemented. The summary stated that the Joe Camel cartoon campaign was particularly at risk, and suggested that RJR should "[b]egin now to explore ways to transfer Old Joe's irreverent, fun loving personality to other creative properties which do not rely on models or cartoon depictions." The summary also stated: "Outdoor advertising continues to bear the brunt of anti-smoker criticism as regards unrestricted exposure to youth, and in fact, it is the medium that we are least able to defend in these terms." 507755082-5094 at 5085, 5091 (US 20787).

2984. In an October 1991 research summary, titled "A Qualitative Assessment of Camel Advertising Equity," Ellison Qualitative Research reported to RJR the findings of focus groups of

young adult smokers, ages eighteen to thirty-four which were conducted to measure consumer perceptions of Joe Camel advertising. The research study found that:

> By all indications, the repositioning of the Camel brand seems to be generating a sense of upgraded appeal and relevance among key smoker segments -- particularly adult males 18-24. A principal part of the repositioning -- the 'Smooth Character' advertising and integrated communications programs -- appear to be critical in helping to make the recent Camel effort successful.

507642890-2934 at 2892 (US 22055).

2985. In a March 16, 1992 letter, Thomas C. Griscom, RJR's Executive Vice President, External Relations, forwarded to Preston Kirk a compilation of Camel market data that included data on twelve to seventeen year olds. This data included

> No. [number] of Smokers Underage (12-17). . . . Total Cigarettes Smoked Per Year -- Underage. . . . Percentage of Total Cigarettes Accounted For by Underage Smoker. . . . Camel's Share-of-Market Among Underage Smokers. . . . Total Camels Purchased by Underage Smokers . . . [and] Percentage of Camels Bought by Underage Smokers.

512027239-7240 at 7240 (US 20845).

2986. A November 1993 Roper Starch report on an "Advertising Character and Slogan Survey" was conducted with a "national sample of young persons, age 10 to 17 years" to track awareness of the Joe Camel Campaign. The study found that 86% of the ten to seventeen year olds surveyed recognized Joe Camel. Joe Camel was identified correctly as advertising cigarettes by 95% of the ten to seventeen year olds who claimed awareness of the Joe Camel character. This percentage was higher than the percentage of children who knew that Ronald McDonald advertised McDonald's fast food and within 1% of the number of children who knew that the Keebler elves advertised cookies. The top two responses of ten to seventeen year olds to the open ended question of "How

would you describe Joe Camel?" were (a) he smokes, and (b) he is "really cool/acts cool/ thinks he's cool." 517145060-5108 at 5064, 5082, 5085 (US 20877).

2987. Three cigarette advertisements used by RJR in 1996 included offers of Camel Cash. Two showed Joe Camel wearing sunglasses and a leather jacket and offered $25 savings on Ticketmaster tickets with 100 Camel Cash C-States; in one, Joe said "Wanna see a show?" and in the other, Joe said "Go ahead, it's on me." The third advertisement showed Joe Camel driving a car, saying "Take a Rockin' Road Trip" and included an offer of $25 savings on Ticketmaster tickets for "Camel Cash." 526310001-0015 at 0001, 0004 (US 21979); 509137483-7486 at 7483 (US 21982).

2988. Even after Joe Camel was replaced with "Kamel" and other campaigns for Camel cigarettes in 1998, RJR continued to market the brand to young people, particularly through its media placements. For example, the "Camel 1999 Media Recommendation" recommended that RJR "select and utilize media that provide a sense of change, disruption, and high impact." 522668862-8890 at 8864 (US 20911). The "Camel 1999 Print Selection Rationale" identified magazine titles based on their ability to "[f]ollow the latest music trends and entertainment news, [e]njoy the nightlife, [a]bility to evoke change and disruption." 522669065-9093 at 9068 (US 20913).

2989. The "1999 Camel Media Recommendation Print Categories" recommended that Kamel “Core” Books should be Bikini, Jane, Spin, and others, because of their younger reader profile. 522694030-4038 at 4030, 4307 (US 20914).

2990. The "Camel 1999 Final Media Recommendation" identified as its objective to "[s]olidify awareness of Camel's brand identity among the target audience, adult smokers 21-24 (core

target) . . . described as confident, fun-loving, adventurous, slightly irreverent, and having an individualistic attitude and outlook on life." 522728272-8320 at 8274 (US 21831).

c. Defendants Continue Price Promotions for Premium Brands Which Are Most Popular with Teens

2991. Defendants recognize that youth and young adults are more responsive to increases in cigarette and other tobacco prices, and will not try smoking or continue to smoke if cigarette prices rise. Chaloupka WD, 94:23-124:4. Despite that recognition, Defendants continue to use price-based marketing efforts as a key marketing strategy. As a result, price reductions, initiated by the cigarette company Defendants, such as sharply dropping the wholesale price of cigarettes most popular with young people, have reduced the rate of decline in overall cigarette smoking and contributed to the increases in youth smoking incidence and prevalence observed during much of the 1990s. Chaloupka WD, 86:5-87:13.

2992. A June 1997 article published in the peer-reviewed journal Pediatrics, "The Food and Drug Administration's Rule on Tobacco: Blending Science and Law," contains the data confirming that children and teens are more price sensitive than adults and that pricing has an immediate and direct impact on cigarette sales to minors. HHS1202891-2895 (US 59999).

2993. Defendants' price-related marketing efforts, including coupons, multi-pack discounts, and other retail value added promotions, have partially offset the impact of higher list prices for cigarettes, historically and currently, particularly with regard to young people. Id. at 61:3-6. David Beran, Executive Vice President of Strategy, Communications and Consumer Contact for Philip Morris, has acknowledged that the recently decreasing rate at which the retail price of cigarettes has increased is attributable to price promotions. Beran TT, 4/18/05, 19377:7-10.

2994. Defendants could significantly reduce adolescent smoking by withdrawing their opposition to tax increases and stopping all price related marketing (i.e., discounting and value added offers of cigarettes), especially in convenience stores, where this kind of marketing is concentrated and where young people are more likely to purchase cigarettes. Chaloupka WD, 124:7-136:20; 250025505-5505 (US 25343); 2041787758-7815 at 7795 (US 38236).

2995. A February 1982 National Bureau of Economic Research ("NBER") report, titled "The Potential for Using Excise Taxes to Reduce Smoking," examined the effect of teenagers' price sensitivity on their cigarette purchases and concluded that "price has its greatest effect on the smoking behavior of young males and that it operates primarily on the decision to smoke rather than via adjustments in the quantity of cigarettes smoked." VXA0501915-1917 at 1915 (US 64544).

2996. Defendants used price promotions, in large part, to meet increased competition from discount cigarettes which have been gaining market share since the early 1990s. (no bates) (JD 053268). On April 2, 1993, when the gap between the price of Marlboro and discount cigarettes had grown to 90% and Marlboro had lost two points of market share in one year, Philip Morris decided to lower the price of Marlboro by about $.40 per pack (known as "Marlboro Friday"). These price reductions were quickly matched by other cigarette manufacturers on premium brands. The program worked. Marlboro's share of the market increased 1.1 points in April and May 1993. Beran WD, 134:7-136:11; (no bates) (JD 041431); (no bates) (JD 048635); (no bates) (JD 040639); (no bates) (JD 048637). Given the impact of price on youth initiation, a fact fully recognized by Philip Morris and the other Defendants, there is no question that this enormously successful marketing technique had a significant effect on youth smoking incidence.

2997. Since signing the MSA, Defendants have increased the list price of their cigarettes. At the same time, they have enormously increased their promotions, thereby, in effect, decreasing the real price of cigarettes to consumers. Defendants continue to oppose cigarette taxes that would raise cigarette prices and deny that such tax increases will affect youth initiation. Chaloupka WD, 124:7-136:20.

2998. There has, as noted, been a dramatic increase in Defendants' use of price promotions in recent years. In its Report to Congress for 1999 Pursuant to Federal Cigarette Labeling and Advertising Act, issued in 2001 ("2001 FTC Report"), the FTC reported that in 1999 (the year after the MSA went into effect), $3.54 billion, or 43% of the tobacco industry's advertising and promotion expenditures, were devoted to trade promotions, up from $856 million in 1987. 1900082-0107 (US 60663). According to the 2001 FTC Report, in the year after the MSA was implemented, spending on retail value added offers (e.g., buy one, get one free) rose 64.6% to $2.56 billion. Chaloupka WD, 82-84.

2999. The following examples of internal company documents, testimony, and admissions, demonstrate that although Defendants have long recognized young people's price sensitivity, they still continue to offer lower priced cigarettes which contribute to an increase in youth smoking.

(1) Philip Morris

3000. A September 18, 1956 Philip Morris inter-office memorandum "re: College Survey" from George Weissman, Vice President of Philip Morris, to Dr. R.N. DuPuis, Philip Morris Scientific Research Director, described the results of a 1956 college survey conducted by Elmo Roper for Philip Morris. In a section of his memorandum titled "The Economics of Cigarettes," Weissman stated:

> Sixteen per cent of the students who never smoked gave "too expensive" as a reason. Seventeen per cent who gave it up gave this as a reason. An even larger percentage suggested reduction in price. Again, this brings to mind the possibility of a less expensive unit of sale if such a unit can be controlled and strictly confined to the college market.

2022240073-0075 at 0074 (US 20359).

3001. In a May 21, 1975 memorandum to Robert B. Seligman, Director of Commercial Development, Tobacco Products at Philip Morris, titled "The Decline in the Rate of Growth of Marlboro Red," Philip Morris Senior Economist Myron E. Johnston analyzed data on "younger teenagers," including fifteen to seventeen year olds. Johnston blamed price elasticity and young peoples' price sensitivity for Marlboro's decline in sales in 1974:

> I think price elasticity, like income elasticity, has a greater effect on lower income people than on those with higher incomes. As mentioned above, Marlboro smokers, being younger, tend to have lower incomes. Thus, Marlboro sales are probably more responsive to price changes than are the sales of brands which appeal to older segments of the population.

Johnston postulated that, with any general increase in cigarette prices, "I would expect a disproportionately large number of Marlboro smokers to quit smoking or reduce daily consumption." 1003285497-5502 at 5497, 5500 (US 20160).

3002. In a September 17, 1981 memorandum to Harry Daniel, a Philip Morris Research and Development employee, Johnston discussed the March 1981NBER working paper, titled "The Effect of Government Regulation on Teenage Smoking," which examined "the impact on teenage smoking of: (1) the excise tax on cigarettes, (2) the FCC Fairness Doctrine [which mandated equal-time anti-smoking commercials for all cigarette commercials], and (3) the cigarette advertising ban." Johnston stated that the NBER working paper was:

> the only study I know of that attempts to determine the price elasticity of cigarettes among different groups. Because of the quality of the work, the prestige (and objectivity) of the NBER . . . I think we need to take seriously their statement that if future reductions in youth smoking are desired, an increase in the Federal excise tax is a potent policy to accomplish this goal. . . . Most researchers, myself included, have concluded that the best estimate of the price elasticity of cigarettes is about -0.4, i.e. that a ten percent increase in the retail price of cigarettes will cause a decline of about four percent in cigarette sales; . . . that the price increases would have less impact on the . . . older and therefore more habituated smokers, than on other smokers.

1003478193-8196 at 8193-8194 (US 20175).

3003. In Johnson's September 17, 1981 memorandum, he discussed findings by the NBER that teens and young adults are up to three times more sensitive to price increases and the inflationary loss of purchase power than are older smokers, stating that "it is clear that price has a pronounced effect on the smoking prevalence of teenagers." Anticipating a higher excise tax, Johnston predicted: "[G]iven the evidence that individuals are considerably less likely to initiate smoking after age 25, it is quite possible the cohort . . . who never begin to smoke as a result of the tax increase would never become regular smokers." 1003478193-8196 at 8195, 8196 (US 20175).

3004. In a January 5, 1982 memorandum to Harry Daniel, titled "Cigarette Price Elasticities and the Implications for [Philip] Morris," Johnston again analyzed the effect of excise tax increases on demand for cigarettes, especially among teenagers, and concluded that "any increase in the price of cigarettes will have its greatest effect on the young, and, in particular, on young males." 1003478185-8191 at 8189 (US 35774); 2049456635-6650 at 6639 (US 20487).

3005. A December 6, 1982 Philip Morris report, titled "Price Elasticities, Excise Taxes, and Cigarette Sales," outlined Philip Morris's opposition to raising excise taxes on cigarettes despite

studies showing that raising cigarette prices was the most effective way to reduce youth initiation and youth smoking. The report reflected Philip Morris's knowledge that "[t]he main effect of an excise tax increase will be to reduce the number of young people who begin to smoke." Nonetheless, Philip Morris continued to vigorously oppose all cigarette excise tax proposals. 2049456670-6694 at 6684 (US 20489).

3006. In a September 3, 1987 Philip Morris memorandum to Jon Zoler and others titled "Handling an Excise Tax Increase," Johnston stated that:

> You may recall . . . that Jeffrey Harris of MIT calculated on the basis of the Lewin and Coate data, that the 1982-83 round of price increases caused two million adults to quit smoking and prevented 600,000 teenagers from starting to smoke . . . this means that 700,000 of those adult quitters had been PM smokers and 420,000 of the non-starters would have been PM smokers. Thus, if Harris is right, we were hit disproportionately hard. We don't need to have that happen again.

2022216179-6180 (US 76177).

3007. In a 1994 speech, Philip Morris's Tina Walls congratulated company employees for defeating twenty-seven of thirty-seven government attempts to increase price through excise taxes, stating: "Your batting average on state excise taxes has been outstanding." 2024252441-2562 at 2441 (US 21984).

3008. On September 4, 1997, James J. Morgan, President and Chief Executive Officer of Philip Morris USA, testified that

> I believe that . . . higher prices in the industry, whether by excise tax or manufacturer's price increases . . . affect industry consumption, and . . . they lower industry consumption. And I believe that there are two groups of people who are . . . impacted the most by higher prices . . . and . . . both [groups have] the least disposable income. One is what I would call young adult smokers . . . people who smoke who are

> arguably strapped of . . . cash, and the other [group] would be older people on fixed incomes who are also strapped of cash.

Morgan PD, Minnesota v. Philip Morris, 9/4/97, 219:23-220:15.

3009. A November 1994 report, titled "Profile of the Young Adult Marlboro Smoker Part 1: Males, 18 to 24 Years Old," shows that, through its continuous smoker tracking survey, Philip Morris researched the price sensitivity of Marlboro male smokers age eighteen to twenty-four by analyzing their sensitivity to promotions such as coupons and "continuity" items (gifts such as t-shirts). The report recognized that the biggest threat to Marlboro Red's dominance of the eighteen to twenty-four year old category was possibly discount brands which offered lower priced cigarettes than Marlboro. The report recommended that, in order to counter this threat, Philip Morris should provide coupons and continuity items to these smokers to keep them from switching or, presumably, from quitting smoking. 2048735500-5604 at 5561 (US 21971).

3010. Philip Morris relied much more heavily on retail promotions in the late 1990s than it did during the mid-1980s because of the increase in the price of cigarettes and the increased presence of discount brand cigarettes. Mikulay PD, United States v. Philip Morris, 7/1/02, 145:13-146:19.

3011. Carolyn Levy, Senior Vice-President and Director of the Youth Smoking Prevention Department from its inception in April 1998 to approximately March 2002, admitted that Philip Morris was aware that "the price of cigarettes for some kids appears to be an important variable in preventing them from smoking." She also acknowledged that "Philip Morris was aware that youth smoking behavior was price sensitive as a result of data in the Philip Morris TABS [Teenage Attitudes and Behavior Study] survey," which concluded that "[f]or children who do not smoke, the

percentage of 11 to 14 year olds who agree that smoking is expensive is around 33 percent." Levy WD, 95:15-17.

3012. When she was head of Philip Morris's Youth Smoking Prevention department, Carolyn Levy took the position that the company should not oppose taxes on cigarettes because tax increases reduced teenage smoking, due to of the price-sensitivity of teenagers. Further, although Levy "told Mike Szymanczyk [Philip Morris CEO] that [she] thought that Philip Morris should stop fighting excise tax increases or take a neutral position," she claimed she did not know if Philip Morris took "any action as a result of [her] recommendation." Levy WD, 96:1-97:23. As noted earlier, it did not.

3013. Philip Morris Companies' CEO Geoffrey Bible said that he "assumes that young people are sensitive to prices," so smoking incidence would decrease due to price increases. Bible PD, United States v. Philip Morris, 8/22/02, 245:8-20.

(2) Liggett

3014. Liggett's President of the Northern Strategic Business Unit stated that Liggett is aware that price affects consumption. Petch PD, United States v. Philip Morris, 10/12/01, 101:25-102:21.

3015. Liggett spent $113 million on promotional programs for its discount brands, including point of sale materials, buy downs, marketing accruals and coupons. Id. at 65:12-66:16.

(3) Lorillard

3016. A March 20, 1992 Lorillard memorandum from S.R. Benson to S.T. Jones, Director of Product Development and Marketing Research, regarding "Price Sensitivity By Age" stated that

> there is some evidence that the younger adult smokers currently smoking a full price brand may be demonstrating a sensitivity towards price . . . it is clear that the younger adult, 18-24 smoker

> group, although still smoking a full price brand, 'claim' a greater sensitivity towards price than the older age groups.

82849666-9667 at 9666 (US 55569).

(4) Brown & Williamson

3017. Since approximately 2000, B&W has spent more on discounting or reducing the price of Kool cigarettes than any of its other brands, according to Paul Wessel, the Current Divisional Vice President at B&W in charge of value for money premium niche brand and new product development. Wessel PD, United States v. Philip Morris, 3/19/03, 28:17-29:1.

3018. Wessel claimed that he was unaware of whether youths were price sensitive and whether B&W had ever taken a position on the price sensitivity of youth. Id. at 36:23-37:12. That statement is not credible in light of his corporate responsibilities and B&W's oft-claimed sensitivity to avoiding the marketing of its products to youth.

(5) R.J. Reynolds

3019. In a September 20, 1982 memorandum, titled "Estimated Change In Industry Trend Following Federal Excise Tax Increase," to P.E. Gaylan, a Marketing Research Department employee, Diane Burrows estimated how the cigarette industry would be affected by a federal excise tax increase. The memorandum included data on "starting age patterns," "[s]tarting age," and "new smokers." Burrows estimated that an excise tax increase would result in 1,759,000 "new smokers" lost to the industry. Their potential consumption, if they had smoked ten cigarettes a day, would amount to 605 million cigarettes, or .1% of the industry total. Burrows stated that: "[s]ince the Industry growth rate depends on new smokers, losses in these groups can change the direction of the

Industry trend." 501988846-8849 at 8846, 8846-8848 (US 20692); 504630598-0702 at 0701 (US 20731).

3020. In a September 20, 1982 internal memorandum to J.W. Johnston and H.J. Lees, Greg Novak, RJR Group Director of Marketing Services, stated:

> Our Forecasting Group has determined that younger adult smokers, particularly younger adult male smokers, tend to be very price sensitive. The effect of a price increase on younger adult male smokers could be three to four times greater than on smokers in general, in terms of negative impact on volume.

500151647-1647 (US 21785).

3021. A September 27, 1982 RJR memorandum from Burrows to P.E. Galyan summarized the conclusions of the NBER on relative price sensitivity and stated:

> A key finding is that younger adult males are highly sensitive to price. This suggests that the steep rise in prices expected in the coming months could threaten the long term vitality of the industry, by drying up the supply of new/younger adult smokers entering the market. It could also undermine the long range growth potential of brands which rely on new/younger smokers, including Marlboro and Newport.

503011368-1369 at 1368 (US 20709).

3022. In an August 1986 report, titled "R.J. Reynolds Quarterly Industry Cigarette Demand Model," Data Resources updated RJR's earlier information regarding price elasticity. The report stated: "The current research effort has endeavored to test the validity of the relative price elasticity estimates and to further develop some conclusions concerning the impact of the anti-smoking campaign and changes in real income." A chart included in the report, titled "1965 World Incidence," showed an age category of "12-17" year olds. 505611105-1138 at 1106, 1124 (US 20744); 519498624-8749 (US 87844*).

3023. In its Joe Camel campaign, which began in 1988, RJR relied heavily on price promotions such as coupons and "Camel Cash." Coupons were placed in magazines with substantial youth readership, such as Rolling Stone and Sports Illustrated. As one example, on November 21, 1988, RJR placed Camel advertisements that included coupons for a free pack in Sports Illustrated. 509131376-1378 (US 20822).

5. Defendants' Marketing Successfully Reaches Youth

a. Defendants' Spending on Marketing and Promotion Has Continually Increased

3024. Statistics recently released by the FTC in its 2001 Report show that cigarette company Defendants' advertising and promotional expenses rose significantly after the signing of the MSA in November 1998. 1900082-0107 (US 60663).

3025. From 1998 to 1999, Defendants' total advertising and promotional expenditures rose 22.3% to $8.24 billion, the highest ever reported to the FTC by the cigarette companies. Id. Defendants' marketing spending rose from $6.6 billion in 1994 to almost $12 billion in 2001. Dolan WD, 61:15-16.

3026. While cigarette company Defendants reported substantial decreases for outdoor advertising (down 81.7% from 1998 to 1999) and transit advertising (down 86.1%) due to the restrictions of the MSA, increases in expenditures for promotional allowances and retail "value added" account for virtually all of the overall rise in spending. 1900082-0107 (US 60663). After signing the MSA, Cigarette Company Defendants reported to the FTC significant increases in spending for newspapers (up 73%), magazines (up 34.2%), and direct mail (up 63.8%). Distribution of free cigarettes rose by 133.5%. Id.

3027. Cigarette company Defendants' expenditures on cigarette advertising and promotion, historically and currently, remain high on both an absolute basis and as compared to other industries. For example, domestic cigarette advertising and promotion in 1999 totaled $8.24 billion, an increase of 22% over 1998, and a six-fold increase over 1963, after adjusting for inflation. In the nine-year period from 1991-1999, domestic cigarette advertising and promotional expenditures totaled $51.4 billion (unadjusted for inflation). Again, promotional allowances figure prominently as the single largest category of expenditure each year since 1994. Id.

3028. Philip Morris's marketing spending increased significantly in every year from 1998 to 2002. Its 1997 budget for total spending, including advertising, events, price, direct mail, point of sale materials, and all other marketing activities was $1.6 billion, while its total spending in 2002 was projected to more than triple to $5 billion. 2085298135-8136 (US 25253); LeVan PD, United States v. Philip Morris, 6/25/02, 73:4-75:1.

3029. Since 1998, Philip Morris has increased the amount it has spent on price promotions for Marlboro, its largest selling brand, from $806 million in 1998 to an estimated $4 billion in 2002, and on product promotions, such as free packs with a purchase, from $106 million in 1998 to $500 million in 2002. Id. at 58:19-60:11, 63:14-64:12.

3030. According to David Beran, Executive Vice President of Strategy, Communications and Consumer Contact for Philip Morris, in 2004, Philip Morris's marketing expenditures were $6.56 billion, of which $5.587 billion was for price promotions, and $252.1 million was for product promotions. Beran TT, 4/18/05, 19417:17-19418:1 (Confidential -- Under Seal). The large majority of Philip Morris's marketing funds are for promotional activities which occur at retail locations. Beran WD, 15; 2085298135-8136 (US 25253); Beran TT, 4/18/05, 19273:10-17, 19274:5-10. The

large jump in Philip Morris marketing expenditures in the recent past is attributable to increases in price and product promotion. Beran TT, 4/18/05, 19274:11-25.

3031. According to Victor Lindsley, Lorillard's Senior Brand Manager, Lorillard has increased its marketing expenditures since it entered the MSA. Lindsley PD, United States v. Philip Morris, 5/16/02, 23:21-24:3.

3032. Lynn Beasley, President and Chief Operating Officer at RJR, admitted that the MSA did not limit RJR's expenditures on advertising, or promotion, including retail value added, coupons, and direct mail. Beasley TT, 3/31/05, 17370:17-17371:13. Marketing is so important to RJR that the company's market share will decline if it does not support its brands through marketing. Beasley TT, 3/30/05, 17309:6-8, 17310:21-17311:4. Much of Ms. Beasley's testimony on cross-examination was flatly not believable. Two examples will suffice. First, even though she was President and Chief Operating Officer at RJR, and a long-time employee of the company, she denied knowing that RJR's leading cigarette brand, Camel, is the third most commonly smoked brand among twelve to seventeen year olds. Beasley TT, 3/31/05, 17358:1-17359:16. Second, she stated that in March 2001, RJR removed Rolling Stone and other magazines from its list of magazines approved for youth readership; she was then shown four different 2005 Rolling Stone magazine editions that contained RJR cigarette brand ads for Camel, in direct contradiction of her testimony. Id. at 17364:11-17369:23. Therefore, the Court rejects her testimony that Reynolds's marketing, particularly in magazines, is not directed at youth.

b. Defendants Advertise in Youth-Oriented Publications

3033. Numerous academic studies have found that Defendants increased the number of advertisements they placed in youth oriented magazines after signing the MSA. Krugman WD, 124:13-127:4.

3034. Mediamark Research Inc. ("MRI") is a leading United States supplier of multimedia audience research. It offers comprehensive demographic data, lifestyle data, product usage data and data that measures exposure of people sampled to all forms of traditional media, including magazines, radio, and television. Currently, MRI measures the readership of over 300 national magazines. The sample data can be generalized to the entire population of the United States age twelve years and above. MRI's national syndicated data are widely used by advertising agencies as the basis for media and marketing plans designed for advertised brands in the United States, particularly those that advertise in magazines. Id. at 116:3-122:7.

3035. TNS Media Intelligence/CMR ("CMR") is a leading provider of marketing communication and advertising expenditure information to advertising agencies, advertisers, broadcasters and publishers. CMR measures advertising expenditures by national or regional advertisers in approximately 700 magazines. Id.

3036. As set forth below, each Defendant at different times over the last forty years has claimed to have adopted and publicized advertising policies that prevent it from marketing to youth. Defendants also claim to follow the industry's Advertising Code which states that "[c]igarette advertising shall not appear . . . in publications directed primarily to those under 21 years of age." 2070557699-7702 (US 20519). However, MRI and CMR data over the last decade demonstrate that the Defendants continue to advertise heavily in magazines with "substantial youth readership." That

term is applied to magazines having either on average, over two million teen readers ages twelve to seventeen per issue or over 15% of total readership, per issue, ages twelve to seventeen years. Krugman WD, 116:3-122:7.

(1) Philip Morris

3037. Philip Morris's stated media policy until the mid-1990s was to place cigarette advertisements in publications where 80% or more of a magazine's readership was twenty-one years and older. Philip Morris's evaluation process was not quantitative. Rather, the Philip Morris Media Department, along with legal counsel, simply made subjective determinations and recommendations for publication placements based upon personal review of the "content" of the publication, including consideration of whether the publication's editorial content was directed towards adults and whether other products advertised in the publication were for adult consumption. Through this subjective determination process, Philip Morris's media employees and attorneys would decide whether a publication passed muster under the advertising guidelines as set forth in the industry's Cigarette Advertising and Promotion Code. Virtually no magazines failed to qualify for placement of Philip Morris cigarette advertisements under Philip Morris's subjective review process during this period. Camisa PD, United States v. Philip Morris, 6/28/02, 24:23-27:10, 32:19-33:11, 51:19-52:4, 81:14-82:16.

3038. In approximately 1995 or 1996, Philip Morris's stated media policy changed: cigarette advertisements were to be placed only in publications where 85% or more of the magazine's readership was twenty-one years and older. Philip Morris's evaluation process remained a subjective, rather than quantitative one, although it had some quantitative data upon which to base its decisions.

At this time, Philip Morris continued to advertise in many magazines with high youth readership such as Rolling Stone. Id. at 24:23-27-24, 51:19-52:8, 81:14-82:16.

3039. Philip Morris has purchased readership data from MRI on readers under the age of eighteen since as early as 1995. Despite the fact that Philip Morris and its Director of Media, Richard Camisa, knew from this readership data that its magazine advertisements were read by many thousands of young people ages twelve to seventeen, Philip Morris continued to rely upon its own internal subjective review standards. Camisa PD, United States v. Philip Morris, 7/11/03, 243:17-244:23, 310:8-15; 2071239702-9705 (US 40405).

3040. A September 17, 1996 draft presentation titled "MRI and Simmons," with the handwritten notation "prepared for counsel," was developed for "internal PMUSA discussion only" and confirms Philip Morris had access at that time to MRI and Simmons data that showed the number of twelve to seventeen year olds reading the magazines in which Philip Morris advertised. 2071294033-4042 (US 20525); 207354075-4088 (US 21930).

3041. In 1997 and 1998, Leo Burnett, Philip Morris's advertising agency, sent at least seven faxed reports to Philip Morris's Marketing Department and Media Department employees containing information derived from the MRI 12+ Studies (including data on twelve to seventeen year olds) and the Simmons studies. On January 23, 1998, Andrea Starshak, Account Manager for the Simmons Marketing Research Bureau, faxed a report which contained "horizontal percentages reflect[ing] the portion of each magazine that is comprised of teens age 12-17" from STARS+ 1996 data. 2071294089-4090 (US 21945); 2071294011-4032 (US 20524); 2071294007-4009 (US 21946); 2071294086-4088 (US 20523); 2071294061-4063 (US 21948); 2071294004-4005 (US 20522*); 20071294001-4002 (US 21951); 2071294006-4006 (US 21952).

3042. A March 1998 draft letter from the files of Philip Morris USA demonstrates that at that time Philip Morris had access to 1997 MRI data showing that magazines in which Philip Morris advertised had substantial youth readership of above two million and 15% of total readership aged twelve to seventeen. 2069603598-3600 (US 27252); 2069603601-3601 (US 27253).

3043. In 1998, Philip Morris initiated a new media placement policy that required publishers to provide a signed statement that their magazine was "primarily directed at adults" and to provide data on the percentages of adult (twenty-one and older) subscriptions, circulation or readership as measured by the publisher's own research or by the MRI study. Philip Morris accepted subscription numbers as the sole source of data for determining eligibility for advertising without regard to how many magazines were sold at newsstands. For instance, even if only 20% of a magazine's issues were sold through subscriptions, as opposed to at newsstands, Philip Morris would accept subscription data as evidence that the publication was "primarily directed at adults." With certification and publisher data in hand, Philip Morris again conducted its own "subjective review" of the publication content before determining whether to approve the placement of advertising in certain publications. Camisa PD, United States v. Philip Morris, 6/28/02, 29:4-30:19; Camisa PD, United States v. Philip Morris, 7/11/03, 266:10-267:13, 270:23-272:14.

3044. Although Philip Morris had been aware since at least 1998 that relying only on subscription data, instead of total circulation or readership data, would provide limited information about a magazine's audience, it did not change its policies until 2000. In 2000, it adopted the policy that, if a magazine's subscriptions made up less than 60% of its total circulation, then the publisher was required to provide a combination of subscription and newsstand data. Camisa PD, United States v. Philip Morris, 7/11/03, 270:23-272:14, 288:8-289:5; 2071228372-8378 (US 22199).

3045. In 1998 and 1999, Philip Morris's stated Media Goals for Marlboro were to reinforce and maintain "Marlboro's leadership position," and "to identify new impactful opportunities that maximize visibility and brand essence with an emphasis on young adult smokers." According to Philip Morris's 1999 Media Plan, it was recommended that Philip Morris increase its spending towards the so-called "young adult smoker" audience, focus on young adult smoker magazines, and increase the placement of Marlboro advertising in magazines with high youth readership, including Rolling Stone, Cosmopolitan, Vogue, Sports Illustrated, Entertainment Weekly, Playboy, ESPN, InStyle, GQ and Mademoiselle. Camisa PD, United States v. Philip Morris, 6/28/02, 107:6-115:11; 2071230813-0888 (US 40404).

3046. Philip Morris developed a "Print Leadership Initiative" for execution in 1999 which was intended to "showcase Marlboro's leadership position in print" by placing Marlboro advertisements in key locations in magazines, such as the back cover, the inside cover and the centerfold. These placements would communicate that Marlboro was "the number one brand." As Camisa, the Director of Media, described the initiative,

> in a very cluttered print environment where you have so many advertisers vying for presence in a magazine, are there things that you can do that could help your ad stand out versus others . . . not just be wallpaper and just be one of ad after ad which people see.

Camisa provided examples of such placements, including: special impact units (three to four page units that may appear in a publication, as opposed to a single page); the "second" cover; page one (the inside of the front cover and first page); the back cover; or, the center spread in a magazine that is stapled so that a reader naturally opens up to the magazine's center to see a showcased advertisement. Camisa PD, United States v. Philip Morris, 6/28/02, 113:6-114:24; 2080499829-

9896 (US 20536). Such placements grab the attention of the reader and have far more impact on his or her buying decisions.

3047. Camisa further explained Philip Morris's print leadership initiative as follows:

> [L]eadership position is really, as it pertains to Marlboro, what we like to do is we like to see when we advertise in print, for example, that being the number one brand, we like to have Marlboro in the first tobacco position, which essentially is when you start reading a magazine, that of all the tobacco brands that may be advertised in that publication, we would like to have the first position. Because we think that is reflective of the brand's leadership position in the marketplace . . . showcase [Marlboro] as the first ad as you open the magazine.

Camisa PD, United States v. Philip Morris, 6/28/02, 111:22-113:5; 2071230813-0888 (US 40404).

3048. Under the Print Leadership Initiative, Philip Morris advertised Marlboro in leadership positions in the following youth oriented publications: Rolling Stone, Playboy, GQ, Spin, Car & Driver, Hot Rod, Penthouse, Vibe, Stereo Review, Car Craft, Cycle World, 4 Wheel, POV, Motorcyclist, Four Wheeler, and ESPN through at least January 2000. Camisa PD, United States v. Philip Morris, 6/28/02, 149:2-152:6; 2080499829-9896 at 9837 (US 20536).

3049. Even publishers of youth magazines pointed out that Philip Morris's advertisement placements in magazines such as Rolling Stone were aimed at teenagers. In a November 5, 1999 letter to Ellen Merlo, Senior Vice President at Philip Morris, Spin Publisher Malcolm Campbell criticized Philip Morris's decision, made under external pressure, to pull advertisements from Spin:

> From a couple of terse phone conversations, I think our demise is based on a perception that Spin is too youthful. I respect your right to subjectively critique publications, however, to single Spin out for being too young, while continuing to support magazines, such as Rolling Stone or Details is ludicrous. I find an inconsistency in the logic that you cannot use Spin, but you will run a centerspread in the current Rolling Stone with a 10 page cover line feature on "The

> Secret Life of Teenage Girls." Only Rolling Stone has put teen phenoms Britney [Spears], Ricky Martin, The Back Street Boys and Jar Jar Binks on their cover this year, and all with pull-out posters for nifty bedroom collages. These edit packages are clearly targeted at teens, so comparatively, Spin's edit looks quite sophisticated.

2070748847-8852 at 8847 (US 21819*) (emphasis in original).

3050. Philip Morris placed numerous back cover advertisements in magazines with substantial youth readership. For example: in 1999, Philip Morris had 8 (or 67%) of Car Craft's back covers; 6 (or 50%) of Hot Rod's back covers; 8 (or 33%) of Rolling Stone's back covers; 11 (or 22%) of Sports Illustrated's back covers; and 21 (or 40%) of TV Guide's back covers. Advertisements that appear on the back covers of magazines are highly priced by magazines and highly valued by advertisers because they reach many more individuals than those placed inside magazines. 2085313542-3545 (US 88803).

3051. In May 2000, Philip Morris once again changed its magazine policy to incorporate a definition of "adult-oriented publication" that had been included in a draft proposal to regulate tobacco advertising issued by the FDA in 1996. Camisa PD, United States v. Philip Morris, 6/28/02, 52:9-55:3; 2085314209-4215 (US 45714); 2085314271-4271 (US 45716). The definition described an "adult-oriented publication" as one: (a) whose readers younger than eighteen years of age constitute 15% or less of the total readership as measured by competent and reliable survey evidence; and (b) that is read by fewer than two million persons younger than eighteen years of age as measured by competent and reliable survey evidence. 2085314271-4271 (US 45716).

3052. Forty of the publications in which Philip Morris had placed advertisements failed to meet the 15% and two million readership standard using MRI and Simmons data in June 2000. They included Sports Illustrated, Rolling Stone, and Entertainment Weekly. As Richard Camisa wrote

in a May 19, 2000 letter to Fabio Freyre, the publisher of Sports Illustrated, "[t]he 1999 MRI Twelve Plus Study reports reach for your publication of 21.4% for persons below the age of 18 and reports readership of 17% for persons below the age of 18." 2085314266-4267 at 4267 (US 25275). Application of this new standard also ended Philip Morris' advertising in Rolling Stone. Application of the 1999 MRI Twelve Plus [12+] Study reported for Rolling Stone a "reach" of 11.1% for persons below the age of eighteen, and readership of 24% for persons below the age of eighteen. Camisa PD, United States v. Philip Morris, 6/28/02, 153:8-156:5; 2085314264-4265 at 4265 (US 45715). Between June 2000 and June 2002, another five to ten publications in which Philip Morris advertised cigarettes have failed the FDA standards. Camisa PD, United States v. Philip Morris, 6/28/02, 62:16-76:23.

3053. A Philip Morris document, titled "2000 Marlboro Key Media Issues," stated that, because of the suspension of Philip Morris cigarette brand advertising in thirty-two magazines, its 2000 Media Plan was "less efficient due to loss of mass reach titles [such as] . . . SI [Sports Illustrated], Rolling Stone, Cosmopolitan, People, etc." 2085152525-2525 (US 25190).

3054. Philip Morris's Director of Media Camisa claimed that prior to adoption of the 2000 FTC standard for advertising in publications, he was not aware of the number of teens who were being reached by Philip Morris's advertisements in publications. That testimony is rejected as not being credible, particularly in light of his acknowledgment that the Media Department created binders of "cheat sheets," similar to "Cliff's Notes," for the Philip Morris Brand Groups that contained synopses of each magazine in which Philip Morris cigarette advertisements could be published. Those synopses included basic readership demographic data, including information on

a magazine's age of readers, theme, and target audience. Camisa PD, United States v. Philip Morris, 6/28/02, 85:20-87:2, 92:2-93:15.

3055. As recently as June 2002, Philip Morris maintained a total "consideration set" of approximately 100 publications in which it may choose to advertise its cigarettes. As of June 2002, of those 100 publications, Philip Morris was currently placing cigarette advertisements in fifteen to twenty because only they had passed muster under the 15% or two million readership standard as measured by the MRI or Simmons studies. Because the remaining eighty to eighty-five publications are not measured by the MRI or Simmons studies, Philip Morris takes the position that the FTC guidelines cannot be applied to them. Those approximately eighty publications would be measured against Philip Morris's "print certification" process which states that 85% or more of the subscription or circulation must be twenty-one plus. Thus, under its own internal policies, Philip Morris may in the future continue to advertise in those eighty publications, particularly for new product introductions, based upon its subjective review process. Camisa PD, United States v. Philip Morris, 6/28/02, 72:7-73:15, 76:24-81:4.

3056. MRI and CMR data for the years 1993 to 2003 demonstrate that Philip Morris spent almost $600 million advertising its cigarette brands in magazines with substantial youth readership, i.e., on average have either over two million readers ages twelve to seventeen per issue or over 15% of total readership ages twelve to seventeen years old per issue. Philip Morris's largest annual expenditure for advertising its cigarette brands in these publications was over $96 million, occurring in 1999, the first year after the MSA was signed. Krugman WD, 116:3-122:7.

3057. Philip Morris advertised in Sports Illustrated, a magazine that the MRI data indicates averaged more than 4,700,000 readers ages twelve to seventeen for each issue published during the

time period from 1992-2002. From January 1993 to May 2003, Philip Morris USA spent a total of $133,727,300 on cigarette brand advertising in Sports Illustrated. In 1993 alone, Philip Morris USA spent $10,883,500 on cigarette brand advertising in Sports Illustrated; the MRI data indicates that, in 1993, on average more than 17% of the total readers of Sports Illustrated were teenagers ages twelve to seventeen years old. Id.

3058. As of June 2002, Philip Morris was still placing cigarette advertisements in magazines with high youth readership, including Outdoor Life and GQ. Camisa PD, United States v. Philip Morris, 6/28/02, 87:1-91:25, 95:1-96:22.

(2) Liggett

3059. Liggett's Vector Brand's current print advertising policy is not to advertise in any publications with over 15% under eighteen readership. Taylor PD, United States v. Philip Morris, 6/14/02, 95:8-25, 97:5-99:6.

3060. Based on MRI and CMR data for magazines with substantial youth readership from 1993 to 2003, Liggett began advertising its cigarette brands in publications with a substantial youth readership for the first time in 2001. It has increased its expenditures on such advertisements in both 2002 and 2003. Since 2001, Liggett has spent over $6 million advertising its cigarette brands in magazines with substantial youth readership. Krugman WD, 116:3-122:7.

3061. The majority of Liggett's expenditures on its cigarette brand advertisements in magazines with substantial youth readership has been spent on advertisements in People, a magazine which had, on average, more than three million readers ages twelve to seventeen years old per issue from 1992 through 2002. Id.

(3) Lorillard

3062. As of June 1998, it was Lorillard's policy not to advertise in publications that were primarily subscribed to by minors or distributed to minors. Lorillard's Media Services Department relied on a computer program designed by an independent outside agency to identify the magazines in which it was not appropriate to place Lorillard advertisements. Lorillard only looked at readership information on people eighteen years old and older in making its determination. Lorillard would then use its "best judgment" based on the information provided by the publications about the readership of people eighteen years of age and older to make a recommendation as to whether or not to advertise in a particular publication. The recommendations were made by Lorillard's media department in conjunction with its outside advertising agency. The recommendations were then reviewed and considered by Lorillard's brand group. Lindsley PD, Massachusetts v. Philip Morris, 6/8/98, 65:13-70:17; Lindsley PD, California v. Philip Morris, 6/9/98, 164:17-171:6.

3063. A document dated Fall 1999 titled "Lorillard Marketing Regulation Manual (A Guide From Counsel)" stated: "Lorillard does not and will not advertise its products in publications directed primarily to persons under 21 years of age, including school, college or university media (such as athletic, theatrical or other programs), comic books or comic supplements." 83675546-5629 at 5591 (US 67506).

3064. Lorillard's magazine advertising policy as of June 2002 was not to advertise in magazines that have greater than 18% youth readership (twelve to seventeen year olds). This advertising policy was based on the percentage, not the total number, of youth readers; therefore, Lorillard can and does place advertisements in magazines which have millions of young readers ages twelve to seventeen. Two syndicated services, MRI and Simmons, provide information to Lorillard

on the percentage and total number of youth readership. Lindsley PD, United States v. Philip Morris, 5/16/02, 83:6-84:19; Telford PD, United States v. Philip Morris, 6/26/02, 34:8-35:4.

3065. It was also Lorillard's policy to place Newport and other brand advertisements in magazines even when there was no youth readership information available from MRI or Simmons. For example, Lorillard has placed its cigarette advertisements in ESPN magazine although MRI and Simmons data subsequently indicated that there was greater than 18% youth readership. Lindsley PD, United States v. Philip Morris, 5/16/02, 81:2-81:13; Telford PD, United States v. Philip Morris, 6/26/02, 35:5-35:8, 36:21-36:25.

3066. Lorillard places advertisements in magazines to reach the respective brands' targeted consumers, as defined by brand marketing plans. In making a decision to place Newport advertisements in magazines, Lorillard considers the readership age of the magazine. Lindsley PD, United States v. Philip Morris, 5/16/02, 53:24-54:19. Lorillard tailors its advertising placement for different brands based on the desired demographic profile of those brands. For example, Lorillard advertises for Newport in younger publications like Sports Illustrated, Playboy, and Penthouse. Telford PD, United States v. Philip Morris, 6/26/02, 61:9-62-2, 62:9-17, 62:22-63:1; 92278882-8951 at 8898 (US 21114).

3067. Based on MRI and CMR data for the years 1993 to 2003, Lorillard spent over $60 million advertising its cigarette brands in magazines with substantial youth readership, i.e., that the magazines have on average either over two million teen readers ages twelve to seventeen per issue or over 15% of total readership, per issue, aged twelve to seventeen years. Lorillard's expenditures for cigarette brand advertisements in these publications almost doubled from 1997 through 2000,

rising from $4.2 million in 1997 to $7.8 million in 2000, even though the MSA was signed in 1998. Krugman WD, 116:3-122:7.

(4) Brown & Williamson

3068. In December 1999, after receiving a complaint from the National Association of Attorneys General (NAAG), B&W agreed to restrict the placement of the company's cigarette advertisements to magazines whose under-twenty-one readership did not exceed 15% of the magazine's total readership. B&W initially relied on information provided by the publishers of the magazines in which it advertised in order to determine whether the under-twenty-one readership of a magazine exceeded 15%. B&W also examined the editorial content of the magazines in which it advertised. Ivey WD, 16:7-16; Ivey TT, 11/16/04, 6118:3-10.

3069. B&W continued its "B Kool" campaign through the year 2000. Further, during this period, the "B Kool" campaign appeared in magazines, such as Rolling Stone, whose readership exceeded the 15% threshold. Smith WD, 7:3-10; 282300205-0207 (US 20574).

3070. In November 2000, B&W revised its magazine placement policy to rely on MRI and Simmons data to determine whether the youth readership of a magazine exceeded 15%. However, as early as 1996, B&W had magazine readership data from the Simmons Market Research Bureau including demographic groups of twelve to seventeen, eighteen plus, twelve to twenty and twenty-one plus. Prior to November 2000, B&W also relied in part on MRI and Simmons data in developing its media plans. Ivey TT, 11/17/04, 6313:18-6314:3; Ivey WD, 20:5-8; 210210020-0022 (US 20540*).

3071. In an August 15, 2001 press release, B&W announced another revision to its magazine placement policy. Under the new policy, the company placed its advertisements only in

certain editions of magazines sent to subscribers over the age of twenty-one. Under this policy, B&W would advertise in magazines such as Rolling Stone regardless of whether the magazine had over 15% youth readership according to MRI or Simmons, if the magazine was able to ensure that the company's advertisements only ran in those editions of the magazine sent to subscribers over twenty-one. B&W received letters from the Attorneys General of Pennsylvania, Maine, and California expressing their concern about this new policy and requesting data on the "pass along" readership among youth of magazines sent directly to subscribers twenty-one years of age and older which are then are passed along to younger readers in the household. B&W did not change its policy in response to these letters and never provided the requested "pass along" readership data. Ivey WD, 21:1- 25:7; 525022464-2464 (US 20918); 282402351-0352 (US 89163); 28250050-0051 (JD 012711); 282500100-0102 (JD 012842); (no bates) (US 90060).

3072. When B&W adopted its 15% limitation, it did not impose upon itself any limitation on advertising in magazines based on the actual number of readers age twelve to seventeen per issue. Ivey WD, 16:17-17:10.

3073. As of March 19, 2003, it was B&W policy only to advertise in magazines where 85% of the readership is over the age of twenty-one; in addition, the company did not "use any celebrities, any cartoons, any characters that would have specific appeal to youth"; models appearing in any advertising were required to be, and appear to be, twenty-five or older. Wessel PD, United States v. Philip Morris, 3/19/03, 57:20-58:18.

3074. Brown and Williamson continues to advertise its brands in general circulation magazines that it knows reach over two million readers under the age of eighteen. Newton PD, United States v. Philip Morris, 5/15/02, 138:25-146:18. B&W itself, in a July 9, 1985 document,

described Rolling Stone, Record, and Spin as "young targeted music books." 670661599-1665 at 1628 (US 23054).

3075. Based on MRI and CMR data for the years 1993 to 2003, B&W spent $223 million advertising its cigarette brands in magazines with substantial youth readership, i.e., that the magazines have on average either over two million teen readers ages twelve to seventeen per issue or over 15% of total readership, per issue, ages twelve to seventeen years old. B&W's largest annual expenditure for advertising its cigarette brands in these publications was over $38 million, occurring in 1999, the first year after the MSA was signed. Krugman WD, 116:3-122:7.

3076. In 2000, B&W placed advertisements for Lucky Strike in InStyle and Spin magazines. MRI data indicates that in 2000, over 22% of the readers of InStyle were between the ages of twelve and seventeen, and 24% of the readers of Spin were between the ages of twelve and seventeen. ADV0850271-0273 (US 14659); ADV0850308-0312 (US 14670); ADV0500461-0463 (US 12225); ADV0500493-0495 (US 12233); ADV0500499-0501 (US 12235); ADV0500511-0515 (US 12239); ADV0500537-0539 (US 12245); ADV0500549-0551 (US 12249); ADV0500569-0571 (US 12255); ADV0500590-0592 (US 12262); ADV0500602-0604 (US 12266); Krugman WD, 116:3-122:7.

3077. Currently, B&W continues to advertise in well known youth magazines such as Rolling Stone and Sports Illustrated.

(5) R.J. Reynolds

3078. Between the 1998 signing of the MSA and June 2000, RJR's print policy did not change. Beasley PD, United States v. Philip Morris, 6/25/02, 42:8-15. In the years preceding 2000, RJR's print placement policy reflected its interpretation of the Cigarette Advertising Code that prohibited cigarette advertising in any magazine that was primarily directed to underage people. RJR

limited its advertising to magazines whose readership was at least 50% adult, adult being defined as twenty-one before May 1992, or eighteen after May 1992. Id. at 55:20-58:3.

3079. RJR did not look at data that measured youth readership under eighteen years (or twelve plus "teen data") in magazines until after January 2000. Ittermann PD, United States v. Philip Morris, 5/17/01, 52:19-25, 53:1-14, 58:20-22.

3080. In June 2000, RJR revised its advertising policy from placing its advertisements in magazines that had at least 50% adult readership to advertising in magazines having at least two-thirds readership eighteen years or older, if the magazine measured readership data among audiences twelve years old and older. The revised policy permitted the placement of advertisements in publications where no readership data was available. Id. at 34:2-35:19, 43:9-44:15, 58:10-58:18, 81:1-82:18; 522040903-0903 (US 20907); 522041398-1402 at 1399 (US 52796*).

3081. A June 19, 2000 memorandum from Patricia Ittermann, RJR's Media Director, to various RJR employees demonstrates that RJR sought to take immediate advantage of Philip Morris's June 2000 magazine policy adjustment, as described above. RJR researched which magazines Philip Morris was no longer advertising in, with the intent of placing RJR advertisements where Philip Morris had previously advertised. The memorandum discussed obtaining magazine cover spaces that Philip Morris had previously occupied. 522765629-5634 (US 22141); 522642421-2433 (US 88035); Ittermann PD, United States v. Philip Morris, 5/17/01, 95:21-102:23; 522041457-1460 (US 20908).

3082. As of March 2001, RJR's stated new youth magazine policy was that 75% of the readership of a given magazine must be eighteen years old or older, for publications in which audience measurement data existed for total readership ages twelve years and older. As of June

2002, this was still the current print placement policy. Beasley PD, United States v. Philip Morris, 6/25/02, 42:4-6, 44:9-15. RJR used both Simmons and MRI data to evaluate magazine placement. Additionally, it considered other factors, specifically editorial content, the other categories of products advertised, and distribution. Blixt PD, United States v. Philip Morris, 10/31/02, 131:24-132:10, 137:7-15.

3083. Andrew Schindler, CEO of RJR, made the decision to shift from a two-thirds eighteen plus standard to a "75% 18 plus standard" during the same time frame in which RJR was being sued by the State of California for MSA violations. The issue of "pass along" readership, whereby one reader passes the magazine to another, exposing additional adolescents to RJR's advertisements, was not considered. Specifically, Schindler stated -- with a straight face -- that, when RJR advertised in the 2003 swimsuit issue of Sports Illustrated, it did not occur to him that "the Swimsuit issue, might garner a very high absolute number of adolescent boys looking at it, even if the 25% threshold was not breached" or that "even if actual sales figures for this issues were not astronomically higher for adolescents, this is the one issue that has a huge potential for one tenth grade boy who did buy it to take it to school and share around with all of his pals." Schindler WD, 214:13-215:8. This statement is not credible.

3084. RJR's website states that, "Reynolds Tobacco does not and will not advertise in publications for youth. And, that's why we adhere to a policy that restricts placement of our ads to publications that are predominately adult-oriented." ARU6432629-2633 (US 78283).

3085. Despite the policies discussed above, RJR magazine advertisements reached millions of young people ages twelve to seventeen. Based on MRI and CMR data for the years 1993 to 2003, RJR advertised its cigarette brands in magazines with substantial youth readership. Krugman WD,

116:3-122:7. In 1999, the first year after the MSA was signed, RJR increased its media spending on advertising in such magazines. 524941712-1722 (US 87804).

3086. As an example of the extraordinary number of youth reached by RJR advertising, according to CMR and MRI data, RJR advertised in Rolling Stone in 1993, during a year in which more than 20% of the readers of Rolling Stone were ages twelve to seventeen. From 1992 to 2002, RJR consistently advertised in Rolling Stone, during which time it had, on average, more than two million readers ages twelve to seventeen years old per issue. Krugman WD, 116:3-122:7.

3087. A document, titled "1999 Camel Media Recommendation Print Categories," recommended that Camel 'Core' magazines should include Bikini, Jane, and Gear, because of their younger reader profiles. 522694030-4038 at 4037 (US 20914); 524726445-6455 (US 88161); 524722990-3002 (US 87858).

3088. As recently as November 1999, internal RJR documents show that it advertised Camel in magazines with substantial twelve to seventeen year old readership percentages. These magazines include: Sports Illustrated (22%), Rolling Stone (28%), Spin (34%), Cosmopolitan (13%), Glamour (20%), Mademoiselle (23%), Car and Driver (17%), Hot Rod (30%), Motor Trend (21%), Popular Mechanics (17%), Cycle World (37%), Four Wheel and Off Road (32%), Guns and Ammo (23%), Motorcyclist (37%), Road and Track (22%), and Sport (39%). 520417937-7939 (US 20883); 524723156-3167 (US 87866); 524723279-3280 (US 87867). As of May 17, 2001, RJR was still advertising in approximately 100 publications, about 25 of which have substantial youth readership, as shown by the MRI and Simmons' studies. Ittermann PD, United States v. Philip Morris, 5/17/01, 46:1-48:24.

c. Defendants Market to Youth Through Direct Mail

(1) Philip Morris USA

3089. Defendants have made extensive use of direct mail marketing to many millions of individuals to send them coupons, t-shirts, sporting goods, mugs, and magazines, all promoting their brand of cigarettes. These mailings were sent to millions of young people for whom Defendants had nothing more than an unverified representation that s/he was over the age of twenty-one.

3090. Philip Morris keeps a database of names, collected in various way, to whom it sends mailings and promotional materials.

3091. Philip Morris has stated that its policy is not to send any mailings to individuals on its Direct Mail Marketing Database who are under the age of twenty-one. According to Jeanne Bonhomme, Philip Morris Director of Database Management and Direct Marketing Operations from 1998 to 2000, who "had general responsibility for all of the direct mail that Philip Morris USA sent to consumers" from 1998 to 2000 and also had "responsibility for managing the Philip Morris direct mail marketing database," Philip Morris has never knowingly mailed brand mailings to anyone under twenty-one years of age. Bonhomme WD, 4:11-19, 67:9-68:10, 84:6-7, 87:9-14.

3092. Marlboro Unlimited is a glossy, color magazine created by Philip Morris and sent to individuals on Philip Morris's Direct Mail Marketing Database. It contains full color, glossy Marlboro advertisements which are either identical to, or are very similar to, those that Philip Morris has placed in magazines such as Rolling Stone and Sports Illustrated. Marlboro Unlimited was routinely sent through the United States mail to approximately 750,000 to 800,000 people on Philip Morris's Database four times each year. Dudreck PD, United States v. Philip Morris, 8/26/03, 458:21-460:2.

3093. Starting with its premiere issue in 1996, and continuing to the present day, Philip Morris has sent Marlboro Unlimited to tens of millions of individuals on its Direct Mail Marketing Database. PM3000196002-6092 at 6013 (US 23056).

3094. Millions of copies of the magazine have been sent to individuals for whom Philip Morris has no age information beyond the individual's own unverified representation that he or she is twenty-one or over. In 1999 alone, Philip Morris sent 8,264,645 copies of Marlboro Unlimited to individuals who had only a signature on record to "verify" that they were twenty-one or above. Id. Use of such a procedure raises obvious reliability concerns, because people under twenty-one can provide a false signature. Philip Morris has sent Marlboro Unlimited to many individuals who Philip Morris knew were under the age of twenty-one at the time they received it. For example, in 1999 alone, Philip Morris sent Marlboro Unlimited to 37,826 individuals who were under the age of twenty-one, according to Philip Morris's own records. Id. at 6016.

3095. Philip Morris has also sent marketing mailings other than Marlboro Unlimited, such as products and coupons, to individuals who had only a "signature" on record -- and no identification such as a drivers license -- to "verify" that they were twenty-one or above. Between 1989 and 2003, Philip Morris sent at least 813,905,702 marketing mailings to such individuals. Id. at 6011. In 1999 alone, Philip Morris sent at 69,170,720 cigarette coupons to such individuals. Id. at 6012. In 1993 alone, Philip Morris sent 2,815,036 mailings containing cigarette products to individuals who only had a "signature" on record to "verify" that they were twenty-one or above. Id. at 6013.

3096. Many individuals whose records are contained on Philip Morris's Direct Mail Marketing Database and who had a "signature" on record to "verify" that they were age twenty-one or above were in fact under the age of eighteen at the time they received marketing mailings from

Philip Morris. In 1993, Philip Morris sent 71,485 marketing mailings to such individuals, including 48,822 coupons and 28,335 gift or continuity items, such as t-shirts, mugs, and sporting goods. In 1994, Philip Morris sent 94,151 marketing mailings to such individuals, including 44,919 coupons and 31,572 gift or continuity items. In 1995, Philip Morris sent 76,378 marketing mailings to such individuals, including 30,190 coupons and 34,909 gift or continuity items. Id. at 6016-6018.

3097. In 1999, Philip Morris USA decided to convert its database to a third-party age verification system, by submission of a Government-issued ID ("GIID") or by electronic age verification ("EAV"). Beran WD, 100:4-9; Beran TT, 4/19/06, 19454:7-19456:11. After requiring third-party age verification in 1999, Philip Morris sought third-party age verification for names previously qualified without such verification. The company sent a number of requalification mailings offering incentives to submit a photocopy of their GIID; held special event programs at which smokers were solicited to submit their GIID; and conducted retail recertification programs at retail outlets across the country, where smokers were offered a coupon in exchange for a photocopy of their GIID. In total, the company has spent over $90 million on these efforts during the past six years. Beran WD, 101:13-102:6. Approximately 85% of the A/Q (qualified to receive mailings) segment of the Database have supplied third-party age verification through either GIID or EAV. Beran WD, 101:13-104:3.

3098. Despite its policy which prohibits it from sending mailings to individuals under age twenty-one, Philip Morris still sends marketing mailings to individuals for whom it has no identification (such as a driver's license) and has no "signature" verifying their age on record. From 1989 to 2003, Philip Morris sent to mailings to 18,847,776 such individuals, including 60,973,164 marketing mailings. 3000196023-6025 at 6023 (US 61452).

3099. According to Philip Morris's "2003-2007 Five Year Plan" dated April 3, 2003, Philip Morris planned to "improve the vibrancy and reach" of its Direct Mail Marketing Database in 2003 with a newly launched website titled www.smokersignup.com that currently allows people to add their names to the database over the internet. According to the Plan,

> [f]rom this expanded database, we plan to increase our use of direct mail as well as increase efficiency through the use of database segmentation strategies that will allow PM USA to better tailor [marketing] communications and promotional offers based on adult smoker preferences.

PM3000540103-540118 at 0107, 0116 (US 88649) (Confidential). As further stated in its "2004 Original Budget & Five Year Plan Presentation," in order to address the "Critical Issue" of the "Loss of mass marketing" that it faces ahead in 2004-2008, Philip Morris plans a short-term strategy of marketing through packaging onserts, expanded direct mail, and a rewards card that is preloaded with a fixed dollar amount for cigarette purchases, and a long-term strategy of controlled internet access, or "internet sites marketing cigarettes" to include selling cigarettes on-line, or by phone, fax or mail orders. PM3000613782-3913 at 3790, 3801, 3804, 3887 (US 88647).

(2) Lorillard

3100. Lorillard currently maintains two databases, both of which contain names of smokers whose ages have not been verified through a copy of government-issued identification or public records database:

> The [first] database . . . Epiphany . . . contains information on smokers who have certified they are 21 years of age or older and want to receive information on our products. Some of the smokers on Epiphany are verified, meaning it has been verified either through a copy of a Government identification or a public records database that they are at least 21 years of age. Smokers whose age is verified are qualified to receive continuity goods. A second database,

> Suppression, contains a list of individuals who for a number of reasons are not eligible to participate in our direct mail program. The purpose of the Suppression list is to ensure that these people cannot get on the Epiphany database.

Orlowsky WD, 60:22-63:22; 82093356-3358 at 3357-3358 (US 22198).

3101. Lorillard, through its CEO Martin Orlowsky, admitted that "at times" it has sent mailings to individuals for whom it has no government-issued identification, and that it does not have third-party verification for every person to whom it mails. Orlowsky TT, 10/13/04, 2277:25-2278:25.

3102. In 2000, Lorillard sent 4,181,593 mailings that included coupons for cigarettes to 2.6 million individuals for whom Lorillard has no third-party age verification and no government-issued identification on file. 94945731-94945736 at 5734 (US 90002).

3103. In 2003, Lorillard sent promotional mail to 2,261,881 different individuals for whom it had no third-party age verification and no government-issued identification on file. Id.

3104. As of August 16, 2004, Lorillard had sent promotional mailings to more than 1.7 million individuals for whom it had no third-party age verification and no government-issued identification on file. These 1.7 million persons were sent 4.9 million total mailings. Id.

3105. As of August 10, 2004, Lorillard's direct mail marketing database, Epiphany, contained the names of 11,077,551 individuals. Lorillard limits its direct mail marketing to individuals who, at a minimum, self-certify that they are smokers of legal age. In 2002, Lorillard checked all 4.8 million qualified individuals on its database against persons under twenty-one on two public databases, Donnelly and Knowledge Base. Lindsley WD, 52:8-9. Nevertheless, as of August 16, 2004, Lorillard had no government-issued identification or third-party age verification for

approximately 2,341,622 individuals contained in the Epiphany direct mail database. Orlowsky TT, 10/13/04, 2279:14-22; 94945731-94945736 at 5732 (US 90002).

(3) Brown & Williamson

3106. As of August 31, 2004, B&W's direct mail marketing database contained the names of 25,765,233 individuals. The company publicly states that it limits its direct mail marketing to individuals who, at a minimum, self-certify that they are smokers of legal age. As of August 31, 2004, B&W had no government-issued identification age verification or third-party age verification for approximately half of the individuals contained in its direct mail database. Ivey WD, 44:1-45:17; Ivey TT, 11/17/04, 6224:8-6225:25; 469100116-0136 (US 89166) (Confidential); USX5560116-0119 (US 92039).

3107. In 2000, B&W sent mailings to 12,306,748 individuals whose age had only been self-certified. In 2003, B&W sent mailings to 3,687,547 individuals whose age had not been verified either through government-issued identification or third-party verification. As of August 31, 2004, B&W in 2004 had sent mailings to 2,061,714 individuals whose age had not been verified either through government-issued identification or third-party verification. In 2004, B&W also sent mailings to individuals under twenty-one whose age had not been verified through government-issued identification. Ivey WD, 45:9-46:8; Ivey TT, 11/17/04, 6233:20-6236:22; 469100116-0136 (US 89166) (Confidential); USX5560116-0119 (US 92039).

3108. Although B&W would send advertisements and coupons to individuals whose age had not been independently verified, third-party age verification was required in order for individuals to receive premium items or cigarettes through the mail. Ivey WD, 44:1-45:17; Ivey TT, 11/17/04, 6224:8-6225:25. Contrary to Ivey's testimony in 2004, B&W did send premium items to individuals

whose age had not been verified either through government-issued identification or third-party verification. In 2004, B&W also sent cigarettes through the mail to individuals whose age had not been verified through government-issued identification or third-party verification. Ivey TT, 11/17/04, 6241:1-6243:11; 469100116-0136 (US 89166) (Confidential).

(4) R.J. Reynolds

3109. A January 25, 2002 RJR internal memorandum from Chris Gunzenhauser of Database Marketing to Peggy Carter of the Personal Relations department describes RJR's process of age verification for names on its database and states:

> We historically match about 41% of names we send for age verification. Our matching pattern looks for an exact match on names and address. Approximately 90% of the underage names report to be between 21 and 24. While we are requiring a signature and DOB, we are not currently requiring age verification before mailing to consumers.

RJR000000000800117870019055 1-0551 (US 22140*). In order to be on its direct mail database, RJR requires self certification that a person is a smoker of a legal age, which must be verified by a Government-issued identification or through a third-party verification.

d. Defendants Market to Youth Through an Array of Retail Promotions

3110. The retail store has become one of Defendants' central vehicles for communication of brand imagery and promotional offers. At retail stores, Defendants use retail promotion techniques including cash/rebates, free products, display cases to dealers, and special value added offers such as "two-for-one" to consumers, to encourage retailers to create tobacco friendly environments containing enticing displays, competitive prices, and visible point-of-sale advertising. Krugman WD, 129:17-130:11. The result of offering an array of marketing techniques is that

convenience stores and gas stations frequented by teenagers are more likely to be tobacco friendly environments because they contain such a profusion of tobacco messages. A recent study funded by the Robert Wood Johnson Foundation examined the use of advertising and promotion in such stores and concluded that retail environments, such as convenience stores and gas retailers frequented by teenagers heavily promote tobacco use. Id.

3111. In-store placement displays and signs are key methods by which Defendants communicate brand information and communicate a brand's central message or image. Brand information at the store is coordinated with other advertising to display consistent images. Because of these synergies, advertising and promotion messages in one medium reverberate in another medium. Storefront and in-store advertising can remind the consumer of an overall message or theme encountered in other media and therefore stimulate purchase. For example, a consumer might encounter Marlboro colors and imagery on a placard outside the convenience store which lists per pack prices and then, inside the store, encounter Marlboro stand-up signs, posters, and other imagery behind the counter where the cigarettes are sold. Id. at 41:7-19.

3112. Defendants compete with one another to obtain what they consider prime placement of their products in retail stores in order to achieve high consumer visibility. To ensure such placement, tobacco companies offer a variety of incentive programs (such as volume discounts and buydowns) to retailers. Id. at 129:17-140:2.

3113. A September 1994 Philip Morris USA document, titled "POS [Point of Sale] Visibility Strategy," emphasized the importance of visibility at retail to drive Marlboro performance. The strategy's objective was "[t]o obtain & maintain leadership presence commensurate with Marlboro's market position. In other words, Marlboro should look like the 'BIGGEST BRAND' at

retail on an ongoing basis." Further, "[a]s we experienced with MAT, MLP, & PRP [3 Marlboro promotions], Marlboro's increased visibility drove the brand's performance and reinforced Marlboro as the most popular brand in the mind of the consumer." 2060124885-4908 at 4888, 4896 (US 23997).

3114. In the 1990s, Philip Morris commissioned a study, titled "Metro Area Consumer Retail Study," to learn where it should place its cigarette products in retail stores to ensure that its products drew the maximum amount of consumer attention. As part of the study, consumers wore eye-tracking glasses while shopping so that researchers could track their eye movements to learn what displays and products drew the most consumer attention in retail outlets. The study found that the best, most visible, point of sale spots were "on the counter, behind the counter or cashier, and on and around the door." Currently Philip Morris's cigarette displays are consolidated behind the counter at retail outlets, and its point of sale materials are similarly placed. The study also reported that stores that operated under Philip Morris's retail program, the Retail Masters program (later Retail Leaders program), provided higher visibility for Marlboro than other cigarette brands. Lund PD, United States v. Philip Morris, 6/27/02, 200:25-203:15; 2073194491-4524 at 4492, 4494 (US 42869).

3115. Using research from the 1994 "NACS [National Association of Convenience Stores] State of the Industry Report" showing that tobacco accounted for 20.7% of convenience store profits, Philip Morris presented "What Does Tobacco Do For Your Store" to retailers, urging them to "[p]rominently display the leading brands . . . [and] [u]se cigarette promotions and advertising to build store traffic." 2077232243-2310 at 2250 (US 70700*).

3116. Philip Morris's Retail Leader program is a "merchandising program that helps ensure . . . visibility at retail." Over 85% of cigarettes are sold in stores which participate in the Retail Leaders program. For retailers who participate in this program, Marlboro will have the number one visibility spot at retail. If a participating store plans to have any cigarettes on the counter, then Marlboro cigarettes must be on the counter and in the number one position. If a retailer chooses to have outdoor signage, then Marlboro signage must be in the number one position. This program has been a major contributor to Marlboro being the number one brand. Willard TT, 4.14/05, 19083:1-19086:19.

3117. Philip Morris research found that its Retail Visibility Programs, in conjunction with its Retail Masters Program, made Marlboro the leading brand in visibility at convenience stores -- not only ahead of all other cigarette brands, but ahead of any other products carried at these stores. A February 1999 "Marlboro Retail Prominence In-Store Test" stated:

> Marlboro is clearly the leading brand in terms of perceived retail visibility, not only compared to other brands of cigarettes, but across categories as well. . . . The Retail Masters program is an effective vehicle for enhancing Marlboro's perceived retail prominence. Even brands as big as Coke and Budweiser lag significantly behind Marlboro's retail visibility, as perceived by adult smokers.

The report further noted that Philip Morris's product displays were most effective at driving visibility:

> On counter product displays are more effective in driving visibility than signage . . . Marlboro is overwhelmingly perceived to be the most visible brand of cigarette in the store. . . . [Product] displays, more than signage, are cited for making Marlboro stand out.

2073970827-0848 at 0831, 0832, 0838 (US 43390).

3118. Philip Morris's Retail Leaders program will suspend retail stores only after three criminal convictions for underage sales. Philip Morris obtains information about convictions in retail stores from only about nineteen states. It does not require the retailer to provide this information. There is no evidence that Philip Morris has ever suspended a retailer for underage sales. Even if suspended, a retailer would remain free to sell Philip Morris cigarettes apart from participating in the program. Permanent termination from the Retail Leaders program is never authorized under any circumstances; a suspended retailer may re-enter a Retail Leaders contract at the start of the next twelve-month contract period. Szymanczyk TT, 4/12/05, 18543:6-18544:6, 18545:19-18546:4; Szymanczyk TT, 4/11/05, 18322:25-18333:4, 18338:22-18339:2, 18332:14-20; Willard TT, 4/14/05, 19130:23-19131:12.

3119. Philip Morris's Retail Leaders 2004 Internal Presentation stated that "Marlboro is bigger than the next nine premium brands combined," is number one in sales and profits, and had an opportunity to improve Marlboro's "look" at retail as well as the presentation of Philip Morris brands at retail and point of sale. PM3002547761-7804 (JD 051493) (Confidential); Beran TT, 4/18/05, 19412:3-19416:7 (closed court).

3120. According to Lynn Beasley, President and Chief Operating Officer at RJR, Philip Morris's Retail Leaders Program prevents RJR from getting the highest visibility for its marketing at retail stores. Beasley TT, 3/30/05, 17311:5-25.

3121. Self-service of cigarettes in retail locations (as opposed to behind-the-counter service) allows ease of access to cigarettes, particularly for youth. Philip Morris opposed bans or limitations on self-service display advertising at retail stores which would limit the availability and visibility of their cigarette brands at retail. A Philip Morris document produced from the files of its then-Director

of Policy & Programs for Tobacco, Philip Morris Management Corporation, written in or after 1995, provided talking points in "Opposition to Ban on Slotting Allowances":

> Self-service display advertising is an effective means to enhance awareness and encourage loyalty at the point-of-purchase for individual brands among adult smokers. Cigarette racks and promotional displays are positioned to help generate greater visibility and accessibility for adult smokers' favorite brands.

2063018737-8739 at 8737 (US 85164).

3122. Under Lorillard's Excel merchandising program, retailers are provided with monetary incentives in exchange for agreements to provide Lorillard cigarettes with visibility of promotional signage equal to or exceeding that of competitors' brands. Milstein TT, 1/7/05, 9347:20-9348:11. The number of stores under the Excel program has risen in the last several years. Milstein TT, 1/10/05, 9421:4-19.

3123. Lorillard has approximately 79,000 retail stores which participate in Excel. Lorillard does not require retailers to report convictions for underage sales to the company. At present, only four states report convictions to Lorillard. Milstein TT, 1/7/05, 9356:2-16. In the four states reporting, more than 1,000 retailers have been convicted of underage sales. In November 2, 2001, Ron Milstein, Lorillard's General Counsel and Vice President, emailed Steve Watson, the executive level manager designated to reduce youth smoking and access to cigarettes under the MSA, asking him whether he was going to share Lorillard's information about these retailers' convictions for illegal sales with the National Association of Attorneys General or the individual state attorneys general. Watson responded: "Unless you think there is legal reasons [sic] to do so, I would be inclined not to share this info." Watson "was not inclined to share the information at this time with NAAG." Id. at 9356:23-9361:4; 99409377-9377 (US 89183).

3124. Even if a retailer is convicted of selling to a minor, the Excel program only requires that she obtain training in the We Card Program. (For more detail about the We Card Program, see Section 6, infra.) Upon the second conviction, the retailer is suspended for six months, and upon the third conviction, the retailer can be suspended indefinitely from participating in the Excel program. Such a retailer would, however, continue to be able to sell Lorillard cigarettes, apart from participation in the program. Milstein TT, 1/7/05, 9353:16-9354:24, 9363:2-6.

3125. Lorillard has opposed bans or limitations on self-service display advertising in retail stores in the past and has not changed its position on this issue. Watson PD, United States v. Philip Morris, 4/2/02, 136:11-25. Lorillard continues to oppose legal restrictions on self-service merchandising despite its stated support in its Corporate Principles of "further legislative efforts to curb youth access to tobacco." Milstein TT, 1/7/05, 9338:16-9342:3, 9384:15-25.

3126. Defendants have engaged in a large post-MSA spending increase on various forms of promotion at the retail level. In 2000, tobacco companies spent $9.57 billion dollars to market their products, the overwhelming majority of which was spent on marketing aimed at retail locations such as convenience stores. In those retail locations in 2000, tobacco companies spent $4.26 billion on point of sale advertising (e.g., in-store signs) and promotional allowances (payments to retailers for prime shelf space and in-store displays, as well as volume discounts and buydowns or rebates) and $3.52 billion on retail value added items such as purchase-related gifts and multi-pack discounts. Combining the figures for point of sale advertising and promotional allowances, tobacco companies spent approximately 81.2% of their marketing expenditures at retail locations. Chaloupka WD, 73:16-91:7.

3127. Philip Morris's spending on Marlboro promotion at retail increased more than a hundred-fold between 1987 and 1997, and then doubled again from 1997 to 2000. Philip Morris's retail promotions budget for Marlboro increased from $16.7 million in 1987 to $469.4 million in 1997. 2085296400-6461 at 6412 (US 45702).

3128. According to its "2003-2007 Five Year Plan," dated April 3, 2003, Philip Morris planned to "test concepts for a new wallet-sized Marlboro rewards card among young adult smokers in the fall of 2003 . . . to reinforce our equity messages and use an innovative approach to deliver incremental value that will continue to set our brands apart from those of our competitors." The proposed card would be preloaded with a fixed dollar amount that allows Marlboro smokers to make purchases wherever a major credit card is honored. Id. at PM3000540103-0118 at 0107, 0116 (US 88649) (Confidential).

3129. Post-MSA, RJR has also increased its promotional spending and discounting. Leary PD, United States v. Philip Morris, 5/2/02, 16:4-17:19, 25:7-27:15, 63:3-64:17; 526293849-4014 (US 87845).

e. Defendants' Promotional Items, Events and Sponsorships Attract Youth

(1) Events

3130. Defendants continue to hold and advertise events such as "Bar Nights" that reach youth.

3131. The cigarette company Defendants have increased their event budgets since signing the MSA. 2085296400-6461 at 6412 (US 45702).

3132. Defendants often promote their events -- and therefore their cigarette brands -- in free newspapers available to anyone. For example, in 2002, Philip Morris continued to place

advertisements for its events program Marlboro Bar Nights in "alternative" newspapers, such as the Village Voice, that are free and widely distributed. Camisa PD, United States v. Philip Morris, 7/11/03, 354:18-24, 356:7-18.

3133. Beginning in 1999, B&W sponsored the Kool Mixx DJ Competition. The objective of the Competition was to

> contemporize the Kool image by creating grassroots programs that fuse or mix different elements of hip-hop that will showcase artists' skills and stretch the brand muscles . . . [and] [b]uild awareness, trial and image of Kool among Urban ASU [Adult Smoker Under] 26 year old smokers, both male and female for all cultures.

Competition events were scheduled in major United States cities such as New York, Chicago, Detroit, and Los Angeles. "Communication Vehicles" used to publicize the Competition included an 800 number, radio spots, pack sleeves, and retail tie-ins. B&W continued to sponsor the Kool Mixx DJ Competition in 2002 and 2003. 432210032-0067 at 0036, 0038, 0047 (US 22226); ARU6432538-2543 (US78267).

3134. In 2000, B&W sponsored the "Band to Band" 2000 Music Competition, "a rock-oriented, nationwide band-based talent search" which offered over $100,000 in cash and prizes and promoted one of B&W's flagship brands, Lucky Strike. B&W support for the program, which began in 1996, included "promotions, posters and media buys for the bands." In 2000, "Band to Band" program events were scheduled to take place in major cities such as Washington D.C., Chicago, Miami, Los Angeles, and Houston. 239040063-0065 (US 22201).

3135. The age of individuals attending these events was not always verified. An internal Lorillard document describes how David Desandre, a Lorillard marketing employee, and Beth Crehan, an employee of a marketing promotion firm, were able to attend a Lucky Strike "Band to

Band" event held at Park West Concert Hall in Chicago on November 11, 2000 without being asked for any identification. Inside the Concert Hall were "pole banners with the Lucky Strike Band to Band tag-line" as well as additional banners and signs. Desandre described how, while he was filling out a form to receive a free CD, a Lucky Strike staff member "threw me a pack of Lucky Strike cigarettes . . . she did not ask me if I was 21 or a smoker. She also did not ask for my id. Beth Crehan was also not asked if she was 21 or a smoker. Beth was also not asked for id." 98600272-0273 (US 22212).

(2) Sponsorships

3136. Defendants sponsor televised racing events which have great appeal with youth. As a result, millions of youth watching these events are exposed to Defendants' cigarette marketing imagery.

3137. The cigarette company Defendants have increased their sponsorship budgets since signing the MSA. In 1999, Defendants spent $267.4 million on sponsorships, an increase of 7.6 % from 1998. 1900082-0107 at 5 (US 60663).

3138. Sponsorships allow the cigarette company Defendants to garner national television exposure, despite the broadcast ban on televised cigarette advertising. Races are broadcast on television and radio, and are covered in newspapers and magazines; each of these types of media coverage mention the cigarette brand that sponsors the race itself or the individual race car and driver. For example, the Winston Cup NASCAR race series with over thirty races annually was broadcast on radio and television; race highlights were also shown on television news programs and in newspapers and were featured in magazine sports columns. 507424927-4929 (US 24261). Often, broadcast coverage of Defendant-sponsored races is required under the broadcast contract. For

example, in connection with the May 21, 1989 Winston NASCAR race in Charlotte, North Carolina, the broadcast contract called for "a 'mid-race recap' which will air immediately after the second race segment. . . . a [60 second] length [recap] with a superslide of the Winston race logo at the top of the screen with the Nabisco logo displayed below and to the left." 507424864-4864 (US 22895).

3139. Races are preceded by preliminary events (including qualifying races and announcement of pole positions) and followed by highlight footage or the announcement of awards, such as the Winston "No Bull" race awards. In connection with the 1989 Winston NASCAR race in Charlotte, North Carolina, RJR, through its parent RJR Nabisco and Charlotte Motor Speedway, provided pre-race events for broadcast to target markets. For example, RJR, Nabisco, and Charlotte Motor Speedway prepared six to eight driver's columns, video and audio news releases, video feed of open practice sessions, radio promotions and giveaways where "the grand prize will be a first rate weekend at The Winston [Cup]," stories and photographs of practice sessions and color slides of the drivers with the Winston logo, pre-race tours by drivers, as well as post-race coverage of the Winston Million. 507424862-4863 (US 51200); 507424872-4874 (US 51201).

3140. Cigarette brand names are reinforced not only on the race cars themselves, but also on drivers' uniforms, team uniforms, hats, and the large transporters used to move cars from event to event. The events themselves offer marketing opportunities for trackside billboards, sampling, hospitality tents, and promotional giveaways, like hats, sunglasses, and programs. 2072516263-6267 (US 41558); 520809149-9152 (US 52643*).

3141. Defendants falsely deny that the television exposure their cigarette brands garner does not motivate their continued sponsorship of racing events. For example, RJR asserted in its August 1994 statement before the United States House of Representatives Committee on Energy and

Commerce, Subcommittee on Health and Environment that "radio and television exposure is not a motivating consideration for Reynolds in deciding whether to sponsor an event or a vehicle participating in an event." 509321275-1290 (US 21993). However, Susan Ivey, President and CEO of Reynolds American, acknowledged that one of the benefits of brand sponsorship of televised sporting events is exposure of the brand name on television. Ivey WD, 48:6- 49:4.

3142. The television exposure gained by Defendants' sponsorship of racing events is obviously extremely valuable -- especially in light of the ban on broadcast advertising. For example, in 1999, for the three main tobacco-sponsored auto racing series -- NASCAR Winston Cup, CART FedEx Championship (where Marlboro and Kool sponsor racing teams and Philip Morris offers the Marlboro Pole Award), and NHRA Winston Drag Racing -- the tobacco industry received over $120 million of television exposure in the United States alone. Krugman WD, 116:3-122:7.

3143. Joyce Julius and Associates is an independent company which provides measurement and estimates monetary values of cigarette brand exposures in independent sports and special event programs. Id. According to Joyce Julius data, Defendants' cigarette brands continue to receive considerable television coverage. For instance, in 2002 alone, across all airings of the measured televised racing events, 533,301,591 television viewers tuned in to shows where Defendants' cigarette brands were mentioned or exposed (this is a count of viewing instances and not of unique viewers), whereas only eleven million people actually attended these same races. Id.

3144. Joyce Julius valued the total exposure received by Philip Morris of its cigarette brands at televised racing events during 2002 to be $197 million. Id. The Marlboro cigarette brand was exposed or mentioned to approximately 54 million television viewers and 2.4 million racing event attendees in 2002. Id.

3145. Joyce Julius valued the total exposure received by B&W of its cigarette brands at televised racing events during 2002 to be $44 million. Id. The Kool cigarette brand was exposed or mentioned to approximately 136 million television viewers and over five million racing event attendees in 2002. Id.

3146. Joyce Julius data valued the total exposure received by RJR of its cigarette brands at televised racing events during 2002 to be $1.2 billion. Id. The Winston cigarette brand was mentioned or exposed at every one of the televised racing events in 2002, reaching over 533 million television viewers and eleven million race attendees. Id.

3147. Minutes from a November 5, 1992 BATCo Management Board Meeting revealed that the company was aware of the monetary value of cigarette brand exposure through the sponsorship of televised sporting events. Specifically, BATCo estimated the value of the television airtime that its brand State Express 555 would receive through its sponsorship of the Subaru International Rally Works Team in the 1993 World and Asian Specific Rallies Championship. The cost of sponsorship would be £5.9 million but it would provide £15.3 million "in television air time benefit and other unquantified media benefits." 320010638-0640 at 0639 (US 28201); 321440293-0311 at 0294 (US 85217).

3148. Races continue to be very popular televised programs. Millions of young people under the age of eighteen watch Defendants' racing events. In April 2000, NASCAR television ratings were double those of an NBA playoff game in a competing time slot. TLT0741089-1089 (US 88741).

3149. Defendants use their race sponsorships, as well as the television broadcast exposure, to promote their cigarette brands at retail. In 1996, RJR displayed at retail locations such as grocery

and convenience stores: the Winston Motorsports simulator; the Winston or Camel show car; "well known Winston Cup or Smokin' Joe driver, surrounded by a small army of fans . . . complete with autograph session"; extensive signage; and an inflatable Winston or Camel cigarette pack that was "an awe inspiring 15 feet tall." 514238599-8634 at 8604 (US 51832).

3150. Similarly, Philip Morris's Marlboro Racing Program included various magazine, newspaper, billboard, and retail advertising components. A Philip Morris planning document for its 1995 Marlboro Racing Program stated:

> Philip Morris will implement a comprehensive advertising program to support Marlboro racing and will include the following: Outdoor advertising . . . ROP [free newspapers] . . . USA Today . . . [and] Insertions in racing enthusiast books and national magazines.

Philip Morris planned to "[d]ominate retail environment thirty days prior to the race with three tier wave promotion . . . [and] Display racing POS for 30 days prior to the race." The document also noted that the Marlboro Pole Award "provides Philip Morris with . . . Year-long visibility at all venues." 2060138575-8585 at 8577, 8580, 8581 (US 24004).

3151. Further exposure to the Marlboro trademark occurs through media coverage in the United States of Philip Morris International sponsored races. Szymanczyk TT, 4/11/05, 18372:5-18413:25. Philip Morris also sponsors an auto racing team, called Marlboro Team Penske, in the Indy Racing League ("IRL") series. The IRL is a racing organization that sponsors a series of races in the United States, the best-known of which is the Indianapolis 500. Szymanczyk WD, 115:14-18; Szymanczyk TT, 18381:2-5.

3152. Philip Morris has long understood how important its use of racing imagery is to attracting young smokers. In a December 1992 marketing review titled "Motorsports Sponsorship,"

Philip Morris evaluated its racing sponsorships and adjusted its "marketing strategy for motorsports" going forward. To the question of whether Philip Morris should remain in motorsports sponsorships, the answer was: "Yes: It enables us to reach millions of our target market with TV media coverage, and is particularly important in restricted markets." The identified objectives were: (1) to "Regain momentum in the hearts and minds of our target market -- young adult smokers under 25"; and (2) to "look at current and new program opportunities to extend our reach with starters and young adult smokers." One specific Formula 1, a European racing league, marketing strategy was to create a Formula 1 "team of young talent which is not necessarily a winning team, more rebellious, fun, daredevil, more easily identifiable with the young adult target market." The team would feature "[a]nti-establishment gear (jeans/boots)" and a "[c]razy car design." 2501058650-8680 at 8657-8658, 8661 (US 21702).

(3) Promotional Items

3153. Defendants' marketing reaches youth by providing promotional items -- gifts such as t-shirts, mugs, or lighters -- at retail and via direct mail.

3154. A 1992 Gallup survey revealed that almost half of adolescent smokers and one quarter of nonsmoking adolescents had received promotional items from tobacco companies. Krugman WD, 107:18-20.

3155. Defendants currently continue to provide individuals with promotional items that appeal to youth. For example, on May 7, 2003, B&W issued a press release titled "Kool Connects Consumers with Free Motorola Pager Offer." The press release described an opportunity for consumers to purchase specially marked packs of Kool and receive coupons redeemable for a Motorola pager. The press release quoted Ledo Cremers, Divisional Vice President for Kool brand

marketing, as stating: "Kool celebrates urban living . . . [t]he Motorola pager promotion fits into the liftstyle of Kool consumers who want to be connected." The press release indicated that the Motorola pager promotion would "be supported by advertising in newspapers, national magazines, and alternative media." TLT074110-0110 (US 86668).

3156. In an April 22, 1981 internal memorandum to Dick Veatch, B&W Brand Promotion Manager, from P.W. Stebbins, B&W employee, memorialized a telephone conversation with Betty Carr regarding a Barclay sampling program, in which Carr reported that her Houston store, Tobacco Road, had been inundated with teenagers trying to sell or exchange the cigarettes they received as part of a Barclay promotion. Carr indicated that a similar situation had occurred with a Kool milds sampling in Houston. 666006105-6106 (US 20959).

6. Defendants' Youth Smoking Prevention Programs Are Not Designed to Effectively Prevent Youth Smoking

3157. Defendants have widely publicized their policies not to market to youth, their intent to prevent youth smoking, and the corporate programs they have adopted to achieve those goals. MNAT00280070-0070 (US 21724). Defendants' "youth programs" and youth smoking prevention efforts are not only minimally funded -- given the vast sums they spend on marketing and promotion to youth -- and understaffed both qualitatively and quantitatively, but no efforts have been made to validate their effectiveness amongst the total population. Biglan WD, 381:5-17.

3158. There are four strategies that have proven effective in preventing adolescent smoking: (a) increase the cost of cigarettes; (b) eliminate marketing practices that make smoking appealing; (c) implement empirically validated school-based prevention programs; and (d) conduct media campaigns directed at youth, using spots that have been shown to influence adolescent smoking.

Defendants have not adopted or implemented any of these four strategies. Id. at 386:7-398:16, 401:12-411:8; Chaloupka WD, 30:15-32:20.

3159. In contrast to these four proven strategies, Defendants have adopted YSP Programs focusing on: (a) school-based and community prevention programs; (b) media campaigns; and (c) programs targeting parents. Personnel assigned to these YSP Programs by Defendants are often given impressive sounding titles but lack experience or skills relevant to the task of preventing youth smoking and face an inherent conflict of interest.

3160. Philip Morris continues to increase its marketing expenditures in grossly disproportionate amounts to its spending on youth smoking prevention. Philip Morris's 2003 Financial Forecast Budget includes a budget of $110 million for youth smoking prevention, $8.9 million greater than its 2002 spending, "primarily due to increased spending for adult cessation programs." In contrast, in that year, Philip Morris spent more than $7.1 billion on sales incentives and product promotions. PM3000172220-2256 at 2234-2235, 2242 (US 88646) (Confidential).

3161. School-based programs, which generally take place in classrooms for grades seven through nine, focus on sensitizing young people to influences that encourage smoking and teaching them skills to resist such influences. One of the largest programs is Life Skills Training, funded by Philip Morris and B&W. RJR implemented a similar Right Decisions, Right Now Program. Although Philip Morris, RJR, and B&W have each supported the implementation of school-based youth smoking prevention programs, they are often not effective because of the failure to implement the program as rigorously as the research study justifying it calls for. Lorillard also funded a school based program, "Making it H.I.P. Not to Smoke" which consisted of scholarship programs and other

cash awards. A randomized control trial on the Lorillard program found that it did not deter adolescent smoking. Biglan WD, 382:18-396:17.

3162. Of greater concern is the fact that Philip Morris, RJR, Lorillard, and B&W direct their youth smoking prevention efforts towards early adolescents and ignore older adolescents. About 1,250 young people per day become established smokers (defined as smoking more than 100 cigarettes lifetime) at ages fifteen through seventeen, while about 725 per day become established smokers at ages eleven through fourteen. Thus, nearly two thirds of adolescents who smoke become established smokers in the later age range of fifteen through seventeen. Biglan WD, 403:1-5. The Philip Morris media campaign targeted youth ten to fourteen years old. Levy WD, 71:17-72:4. Lorillard targets ten to fifteen year olds. Watson PD, United States v. Philip Morris, 4/2/02, 160:22-162:11. RJR targets twelve to fifteen year olds. 520877431-7484 (US 87873). Several of B&W's activities target children and early adolescents. Biglan WD, 401:18-402:9.

3163. Defendants also support community programs to reduce teenage access to cigarettes. For example, Defendants support the We Card Program, a form of merchant education, to reduce illegal sales of tobacco to young people at the retail, convenience store level. We Card offers "free training seminars, in-store signage, and educational materials and incorporates an online catalogue which lists signage and training materials available for purchase. Studies show that vigorous enforcement does lead to a reduction in illegal sales. (no bates) (US 73411).

3164. One of Lorillard's Corporate Principles provides that "Lorillard strongly supports the enforcement of laws which requires retailers to check the age of potential purchasers of cigarettes." Milstein TT, 1/7/05, 9382:5-10. However, Lorillard's expenditures for the We Card Program decreased significantly in 1999 and 2000 over its pre-MSA funding level; they decreased from $9.5

million in 1996 to $6.1 million in 1997 and then to $5.05 million in 1998. In 1999, the total program spending decreased to $4.2 million. This reduction in funding significantly limited distribution of We Card materials and training sessions. Id. at 9327:6-9331:14; 2085092888-2894 (US 89180).

3165. There is no evidence that any Defendant has evaluated whether tobacco outlets participating in the We Card Program were actually not selling tobacco to young people or whether the program reduced the overall adolescent smoking prevalence rate. Biglan WD, 439:11-443:26. In fact, according to the Philip Morris commissioned 2003 TABS (Teenage Attitude and Behavior Survey), almost 70% of adolescent eleven to seventeen year old smokers who had bought cigarettes in the previous month purchased their cigarettes directly from the retail clerk where the clerk handed them the pack of cigarettes. Specifically, 43.8% of these eleven to fourteen year-olds, and 72.9% of these fifteen to seventeen year old smokers purchased their cigarettes from a retail clerk who handed them cigarettes. Willard TT, 4/12/05, 18694:9-18697:7; UCX0280450-0807 (US 93349).

3166. Defendants also utilize media campaigns in their youth smoking prevention programs. Lorillard, RJR and Philip Morris have run televised national youth smoking prevention media campaigns. Lorillard ran the "Tobacco is Whacko -- If You're a Teen" campaign, which included both print and broadcast advertising. Philip Morris has run the "Think. Don't Smoke." campaign, which began in 1998. RJR ran print ads as part of its "Right Decisions. Right Now" campaign.

3167. A study of seven different types of anti-smoking messages on adolescents' (seventh and tenth graders) intentions to smoke found that three types of messages were effective: (a) ads emphasizing the deleterious effects of smoking on families; (b) ads portraying young smokers as unable to achieve popularity, sophistication, or success; and (c) ads depicting attractive individuals

refusing to smoke. Basically, to be effective with adolescents, ads must communicate that smoking is socially unacceptable. (no bates) (US 73411).

3168. Instead, both Lorillard's and Philip Morris's media campaigns promote the message that smoking is an adult decision. Emphasizing that smoking is an adult activity underscores the desirability of engaging in adult behavior for adolescents who are particularly motivated to appear mature. Biglan WD, 409:20-21, 433:15-22. Most of Lorillard's and Philip Morris's youth smoking prevention advertisements do not promote the social disapproval of youthful smoking which available research indicates is critical to their effectiveness. Id. at 403:21-412:8.

3169. Although they have conducted focus groups on public reactions to the campaigns, no Defendant has evaluated whether its media campaigns are actually effective in reducing adolescent smoking or intentions to smoke. Id. at 403:21-412:8.

3170. On October 26, 1998, Fox Broadcasting Company reviewed Philip Morris's first round of Youth Smoking Prevention ("YSP") ads and rejected them for failing to send a strong enough anti-smoking message to children. Szymanczyk TT, 4/07/05, 18256:9-18258:20, 18262:3-19; 2069512311-2311 (JD 053821).

3171. On April 13, 2001, California Attorney General Lockyer wrote a letter to Denise Keane, Philip Morris Senior Vice President and General Counsel, requesting immediate discontinuation of the "Think, Don't Smoke" campaign on the basis of research demonstrating that its message was ineffective and in fact diluted the effective anti-smoking messages of the states and the American Legacy Foundation which was created pursuant to the MSA. Philip Morris continued to air the "Think, Don't Smoke" advertisements for nine months after receiving this letter. Szymanczyk TT, 4/07/05, 18264:3-18272:17.

3172. Lorillard utilized the slogan "Tobacco Is Whacko -- If You're a Teen" in its youth smoking prevention media campaign. According to a February 2000 Lorillard report on the results of focus groups that were done with ten to fifteen year olds to get their reactions to Lorillard's youth smoking prevention advertisements:

- Respondents remembered the tag line, but had negative responses to it.
- They complained that it was very young (younger than they are) and "cheesy."
- They particularly disliked the if you're a teen part of "Tobacco is Whacko -- If You're a Teen." They complained that this singled them out and that they believe it should apply to all ages.

94691840-1858 (US 87874); Biglan WD, 409:5-18.

3173. Despite these results, Lorillard continued to use the slogan. Victor Lindsley, Lorillard's group brand director who was involved in developing the company's youth smoking prevention media campaign, by email dated April 4, 2000, indicated to General Counsel Milstein that he was "very uncomfortable" about the tag line. In response, Milstein stated that Martin Orlowsky, Lorillard's President's "only comment to me [Milstein] was that he [Orlowsky] did not want to hear again about the tag line ever, and that I [Milstein] should not be influenced by the creative complainers." Lorillard did not remove this unpopular tag line until 2001. Milstein TT, 1/10/05, 9399:25-9410:6; 97011359-1359 (US 89287); 99282955-2955 (US 89288).

3174. Philip Morris, Lorillard, B&W, and RJR have also directed a variety of communications concerning youth smoking prevention to parents, including television advertisements, brochures, and workshops. Biglan WD, 412:9-436:3. Philip Morris started out with

television ads and now distributes youth smoking prevention brochures to approximately one million parents who are on the Philip Morris mailing list. Levy WD, 74:4-6, 87:10-89:20. The RJR website describes, and includes the text of, three youth smoking prevention brochures intended for parents. 520877431-7484 (US 87873); Biglan WD, 433:1-434:6. As part of its "Take 10" campaign, Lorillard has placed youth smoking prevention print advertisements directed at parents in a number of magazines. The advertisements emphasize that by the teenage years, young people are often alienated from their parents and encourage parents to talk to their children. Id. at 424:14-425:23. B&W has information for parents and an available video on its website.

3175. Beginning in June 2003, Philip Morris USA began to run television commercials directing viewers to its website, where it addresses smoking and disease, addiction, quitting, and talking to kids about smoking. (no bates) (JD 053158). While some of the ads may grab the viewers' attention, the fact remains that those ads have never been evaluated to see if they are actually achieving their intended results, namely, impacting youth smoking incidence. The fact that parents or other adult viewers may find the ads persuasive casts no light on whether the seventeen to twenty-one year olds do.

3176. The evidence is mixed on whether such efforts to mobilize parents actually affect adolescent smoking prevalence. For example, one study randomly assigned parents to receive or not receive a set of four messages designed to encourage parents to set rules about tobacco use. There was no evidence that the messages deterred smoking. Moreover, research has found that flooding a community with pamphlets urging parents to talk to their children about not using tobacco had no discernible effect. Biglan WD, 412:9-413:19.

3177. Youth smoking prevention campaigns targeting parents should be routinely evaluated in terms of: (a) their efficacy in getting parents to talk to their children about not using tobacco or otherwise set limits around smoking; and (b) their actual impact on youth smoking. Defendants have not undertaken any such evaluations. Id. at 434:19-435:5, 416:17-19, 427:15-16, 430:3-4, 434:9-10.

3178. Despite the fact that most smokers want to quit, RJR advises parents who smoke that, "[i]f you are like most smokers, you smoke because you enjoy it." The B&W website advises, "[t]ell your children that laws exist to enforce smoking as a choice made by informed adults." VXA 1240104-0567 (US 64316).

3179. Defendants never recommend that parents inform their children that smoking kills more than 400,000 people each year, involves an addiction that most smokers desire to end, and will harm those around the smoker. Nor do Defendants ever suggest that parents, as role models for their children, stop smoking.

3180. Defendants have failed to staff their YSP programs with individuals with experience or background in smoking prevention, prevention generally, or even youth issues. While it is understandable, as Defendants suggest, that YSP programs must be led by long-time employees with corporate credibility, that is no excuse for the total failure to hire persons with skills relevant to identifying and developing effective, empirically validated programs to prevent youth smoking. For example, Carolyn Levy, former Director of Youth Smoking Prevention at Philip Morris and a former research scientist, had no experience or background in prevention or youth smoking or youth issues and was unaware of even the basic prevention journals relied upon by prevention experts. Her successor and the current Senior Vice President for Youth Smoking Prevention, Howard Willard,

had served previously as Senior Vice President of Quality and Compliance for Philip Morris, with no background in youth smoking prevention. Levy WD, 55:16-19, 57:14-59:24, 63:13-64:19.

3181. Neither Claudia Newton, B&W Tobacco Corporation's Vice President, Corporate Responsibility and Youth Smoking Prevention, nor Theresa Burch, the head of B&W Tobacco Corporation's youth smoking prevention programs, had any experience in youth smoking prevention. Newton PD, United States v. Philip Morris, 4/17/02, 70:23-71:2, 78:10-81:12, 192:24-193:9.

3182. Brennan Dawson, the longtime industry spokeswoman for the Tobacco Institute, had been B&W's Vice President for External Affairs (which includes YSP) and MSA Section III(1) designee, after Claudia Newton. Dawson had no college degree, no formal educational background in science or medicine, and no experience with youth smoking prevention or teen behavioral research prior to taking the position. Dawson WD, 4:10-20.

3183. Steven Watson, Vice President of External Affairs for Lorillard, prior to joining Lorillard with responsibility for the oversight of Lorillard's Youth Smoking Prevention Program, had never done any research on risk perception or any work that required him to develop programs for youth. Nor was he asked if he had such experience when he was interviewing for the position at Lorillard. Watson PD, United States v. Philip Morris, 4/2/02, 24:18-26:1. Interestingly, Watson did not even apply for the position of Vice President of External Affairs, but was contacted by Lorillard regarding the position. Id. at 21:6-19.

3184. Internal documents suggest that Defendants designed their YSP programs for public relations rather than efficacy in youth smoking prevention. A 1991 discussion paper from the Tobacco Institute explained that a "youth program" is important to the industry because it will:

> support the Institute's objective of discouraging unfair and counterproductive federal, state, and local restrictions on cigarette advertising, by: (a) providing on-going and persuasive evidence that the industry is actively discouraging youth smoking and independent verification that the industry's efforts are valid; (b) Reinforcing the belief that peer pressure -- not advertising -- is the cause of youth smoking [and] (c) Seizing the political center and forcing the anti-smokers to an extreme.

TIMN0164421-4424 at 4423 (US 34445*) (emphasis in original).

3185. A 1995 Philip Morris document stated: "If we can frame proactive legislation or other kinds of action on the Youth Access issue . . . we will be protecting our industry on into the future." Additionally, the document stated:

> [I]f we don't do something fast to project that sense of industry responsibility regarding the youth access issue, we are going to be looking at severe marketing restrictions in a very short time. Those restrictions will pave the way for equally severe legislation or regulation on where adults are allowed to smoke.

2044046017-6022 at 6021-6022 (US 66716).

7. Despite the Overwhelming Evidence to the Contrary, Defendants' Public Statements and Official Corporate Policies Deny that Their Marketing Targets Youth or Affects Youth Smoking Incidence

a. Defendants Claim They Restrict Their Marketing to People Twenty-one and Older

3186. All Defendants have made numerous public statements that they do not market to persons under twenty-one. From 1964 to 1991, all Defendants voluntarily agreed to abide by the industry's Advertising Code which prohibited marketing to persons under twenty-one. After 1991, when the Code was revised, all Defendants, at different times, adopted, and publicized, internal company policies not to market to persons under twenty-one.

(1) The 1964 Advertising Code

3187. On January 25, 1964, the Federal Trade Commission ("FTC") published a proposed Trade Regulation Rule for the prevention of unfair or deceptive advertising and labeling of cigarettes in relation to the health hazards of smoking. 03573546-3751 (US 75032).

3188. Because of mounting public pressure to curb their marketing practices, and to avoid regulation by the FTC, Defendants, through the Tobacco Institute, voluntarily adopted the Cigarette Advertising and Promotion Code in April 1964. Key aspects of the Code, as revised in 1991, include provisions prohibiting advertising: (a) that appears in magazines "primarily directed to" persons under twenty-one years of age; (b) that represents cigarette smoking as essential to social prominence, distinction, success, or sexual attraction; (c) that uses models or other characterizations who appear to be under twenty-five years of age; (d) that suggests that healthy looking models derive their attractiveness from smoking or that good health is due to smoking; (e) that depicts a smoker as any person participating in, or obviously having just participated in, a physical activity requiring stamina or athletic conditioning beyond normal recreation; (f) that makes health claims; and (g) that uses sports celebrities who have special appeal to persons under twenty-one years of age. The Code also prohibits sampling of persons under twenty-one or near schools or any other center of youth activity. Defendants have operated under the 1964 Code, as revised in 1991, until the present time. Krugman WD, 163:1-182:23; 2025345360-5362 (US 20414); 2070557699-7702 (US 20519); MNAT00608606-8614 (US 21228); TIMN0102493-2494 (US 21271); TIMN0015615-5617 (US 21265); 2022976326-6335 (US 20370); ATX040294056-4056 (US 58599).

3189. Defendants widely publicized their adoption of the Code. 2025345360-5362 (US 20519); 2070557699-7702 (US 21228); MNAT00608606-8614 (US 78779); TIMN0102493-2494

(US 21271); TIMN0015615-5617 (US 21265); 2022976326-6335 (US 20370); ATX040294056-4056 (US 58599).

3190. For example, on April 27, 1964, Philip Morris, B&W, Lorillard, Liggett, RJR, and American Tobacco, through the Tobacco Institute, issued a press release, titled "Cigarette Manufacturers Announce Advertising Code," to announce their adoption of the Cigarette Advertising Code establishing "uniform standards for cigarette advertising." 2065081133-1135 at 1133 (US 20517).

3191. Authority to enforce the Code was vested in a Code Administrator. The Code stated that the Administrator was to be an independent person who would, among other duties, evaluate Defendants' marketing efforts to ensure that they did not target young people. The Code vested in the Administrator the power to reject marketing that inappropriately appealed to youth and to assess damages of up to $100,000 for violations. The first and only Administrator, who served from 1964 to 1970, was former Governor Robert B. Meyner of New Jersey. MNAT00608606-8614 (US 21228).

3192. On March 25, 1966, Manuel Yellen, Lorillard's Chief Executive Officer, wrote to Governor Meyner withdrawing his company's agreement to the Administrator's enforcement authority. Yellen stated:

> The Code was essentially the cigarette industry's response to a recognized need for industry self-regulation during a time of uncertainty over the course of future legislative and regulatory action. It is our belief that the circumstances which led to the establishment of the Code administration have now significantly changed. . . . Accordingly, we now wish to advise you of our resignation. . . . We shall also continue to adhere to those principles underlying the provisions of Article IV, Section 1, of the Cigarette Advertising Code dealing with limitations on advertising to youth.

03595414-5415 (US 21385).

3193. By 1970, all of the companies had abandoned the office of the Code Administrator. As a result, the Advertising Code had no enforcement mechanism. Langenfeld TT, 3/10/05, 15192:12-15193:17.

3194. Even when the authority of the Code Administrator was recognized, the provisions of the Code were not strictly enforced. As early as 1967, the FTC Report to Congress pointed out loopholes in the Advertising Code, specifically the provision which stated that

> Cigarette advertising shall not appear -- (a) in publications directed primarily to persons under 21 years of age. . . . Cigarette advertising shall not depict as a smoker any persons participating in, or obviously just having participated in physical activity requiring stamina or athletic conditioning beyond that of normal recreation.

2070557699-7702 (US 20519). The FTC Report criticized cigarette advertising for exploiting these loopholes by appearing during television shows with audiences where at least 45% of the viewers were under twenty-one; for portraying physical activity as long as the smoker is not a participant; and for implying that smoking contributes to success, even if it is not essential to it. 85872480-2503 at 24-27 (US 22148).

3195. Despite the withdrawal of all cigarette company Defendants from the supervision of the Code Administrator twenty years earlier, the Tobacco Institute issued a multi-page advertisement in 1990 captioned "Cigarette Industry Initiatives Against Youth Smoking" emphasizing the cigarette manufacturers' opposition to youth smoking and stating that cigarette company Defendants continued to obey the marketing provisions in the Code. 6300337-0345 (JE 62448).

3196. For example, a December 1990 pamphlet published by the Tobacco Institute, titled "Cigarette Advertising and Promotion Code," stated: "The cigarette manufacturers advertise and

promote their products only to adult smokers . . . [and] have adopted the following Code to emphasize their policy that smoking is solely for adults." Camisa PD, United States v. Philip Morris, 6/28/02, 24-26; 2021183859-3862 at 3859 (US 36717).

3197. Philip Morris, B&W, Lorillard, and RJR continue to state to the public on their websites and in other public fora that they have adopted the industry's voluntary Code, as revised in 1991, and that they follow this Code in planning and executing cigarette marketing. 2021183859-3862 (US 36717); TLT0450351-0360 (US 65080); TLT0370590-0592 (US 76628); TLT0770001-0065 (US 72407); LIGSC2507550-LIGSC2507554 (US 65063).

(2) Official Corporate Policies

3198. In 1992, RJR adopted a policy which proscribed marketing to anyone under twenty-one years of age. CEO Andrew Schindler explained that the policy in fact meant that RJR would not use source data information gathered from research into the smoking preferences of eighteen to twenty-one year olds. Schindler further stated that RJR does not "interact with" or "talk to" eighteen, nineteen, and twenty year olds, but rather "conducts its interactive marketing practices only with those 21 and older." Schindler WD, 170:16-171:18, 208:16-18. Beasley PD, United States v. Philip Morris, 6/25/02, 54:17-55:19, 77:19-78:4, Burrows PD, United States v. Philip Morris, 6/27/01, 14:5-7. Prior to 1992, RJR "marketed to adults 18 and up." Leary PD, United States v. Philip Morris, 5/2/02, 19:13-18, 22:14-16, 30:3-33:12.

3199. A May 28, 1992 RJR internal memorandum, titled "Advertising Practices," from James C. Schroer, Executive Vice President of Marketing and Sales, to Lynn Beasley and other marketing staff, set forth the actual motivation for this policy change: "it would be in our long-term best interests to join the ranks of our competitors and limit our advertising and marketing efforts to

smokers 21 years of age and older." The memorandum recognized that all of RJR's competitors publicly stated that they did not market to anyone under twenty-one: "[n]one of our competitors in their public statements admit that they advertise or promote their products to anyone under 21." 513180912-0913 (US 51672); 511388874-8875 (US 22497); 513385651-5652 (US 20852); 507647460-7461 (US 21680); 522908112-8112 (US 87746). It is clear that policy change was implemented in order to keep up with RJR's competitors.

3200. Despite RJR's post-1992 policy proscribing marketing to anyone under twenty-one years of age, RJR made no changes in its marketing efforts. For example, RJR did not restrict the locations of cigarette vending machines to only age twenty-one plus venues. Nor did RJR withdraw or change its "Joe Camel" campaign even though the target group of the campaign was eighteen to twenty-four year olds. RJR continued to conduct research among eighteen to twenty-four year old smokers about "every aspect" of Joe Camel "for its appeal and relevancy to the target." Schindler WD, 166:15-20, 174:1-3.

3201. On April 26, 1979, Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, wrote to Raymond J. Mulligan, then President of Liggett, in response to Califano's April 26, 1979 letter to him, stating that millions of children are regular cigarette smokers and urging Liggett to dedicate a percentage of its advertising budget to youth smoking prevention programs. Mulligan responded on May 18, 1979, stating that:

> [T]his Company does not promote or advertise its cigarette products to children or young people under twenty-one years of age, nor are our promotional activities and advertising aimed at encouraging such children and young people to begin smoking or even continue smoking. Cigarette smoking is an adult pleasure and custom, and our promotional activities and advertising are directed at attaining loyalty to our cigarette brands among adult smokers only.

TI03972545-2546 (US 22358).

3202. Philip Morris has, on numerous occasions, prepared internal memoranda or "talking points" intended for Philip Morris spokespersons to use when speaking to the public. For example, talking points produced from the files of Joshua Slavitt, Director of Policy & Programs for Tobacco, Philip Morris Management Corporation, dating from or after 1990, stated: "Philip Morris directs its marketing efforts to existing adult smokers 21 years of age and older. " 2078842251-2253 at 2251 (US 25034).

3203. In a website section titled, "Responsible Marketing," Philip Morris states,

> At Philip Morris USA, we demonstrate our commitment to responsibly marketing our products to adult smokers by developing and implementing programs that comply with both the letter and the spirit of the laws, rules, policies and agreements that govern our business practices.

In describing its "marketing practices," Philip Morris states, "Philip Morris USA does not direct its advertising to underage smokers or to non-smokers." With regard to its obligations under the MSA, Philip Morris states, "Although the agreement restricts participation in promotional programs to 'Adults' (defined as 18 years of age and older), PM USA voluntarily restricts such programs to adult smokers age 21 or older." ARU6432619-2620 (US 78280)

3204. According to Martin Orlowsky, CEO of Lorillard:

> Lorillard does not and will not design or implement any marketing or promotional program intended to encourage youth to smoke cigarettes, and will continue to utilize only those advertising, promotional and marketing materials that do not, directly or indirectly, target youth. . . . Lorillard does not and will not advertise its products in publications directed primarily to persons under 21 years of age, including school, college or university media (such as athletic, theatrical or other programs), comic books or comic supplements. . . . Lorillard's advertising does not and will not depict

> as a smoker anyone who is or has been well known as an athlete, nor does it or will it show any smoker participating in, or obviously just having participated in, a physical activity requiring stamina or athletic conditioning beyond that of normal recreation . . . and Lorillard does not and will not take any action the primary purpose of which is to initiate, maintain, or increase the incidence of youth smoking.

Orlowsky WD, 8:23-9:11; 82225801-5805 at 5803-5805 (US 55455).

> Lorillard does not and will not target its marketing or promotions directly or indirectly to persons under 21 years of age . . . does not and will not conduct market research for its products involving persons under 21 years of age . . . does not and will not use any model in the advertising of its products who is, or appears to be, under 25 years of age. . . . Lorillard advertising does not and will not suggest that smoking is essential to social prominence, distinction, success or sexual attraction[.]

Orlowsky WD, 16:20-18:8. These are the same representations made in the Advertising Code and reiterated by Lorillard over the past forty years. Id.; TLT0370590-0592 (US 76628); MNAT00608606-8614 (US 21228).

3205. On May 4, 1979, B&W Chairman and Chief Executive Officer Charles I. McCarty sent a letter to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare. McCarty stated that B&W had a "policy against advertising or in any way promoting the sale of cigarettes to persons under 21." 521038912-8912 (US 20890).

b. Defendants Deny Their Marketing Influences Youth Smoking Initiation; Defendants' Explanation for Their Marketing Practices Is Not Credible

3206. Despite all of the evidence above, for several decades, Defendants have falsely denied that their marketing efforts target young people. Defendants falsely claim that all of their marketing is aimed only at encouraging the brand loyalty of adult smokers. Defendants also falsely state that marketing has no effect on youth initiation and smoking behavior.

(1) Tobacco Institute

3207. The Tobacco Institute, since its founding in 1958, has made numerous false public statements denying that industry marketing targets young people.

3208. On November 20, 1962, Hill & Knowlton, on behalf of Philip Morris, RJR, B&W, Liggett, Lorillard, and American, through the Tobacco Institute, in response to a comment made by LeRoy Collins, President of the National Association of Broadcasters, that "cigarette advertising is designed primarily to influence high school children," issued a press release, titled "Tobacco Institute Head Calls N.A.B. President's Charges Incorrect." In the press release, George V. Allen, President of the Tobacco Institute, stated "the president of the National Association of Broadcasters, in a statement focused on high school age children, is incorrect when he suggests that cigarette advertising is designed primarily to influence them." The press release also stated that "[t]he tobacco industry regards smoking as an adult custom, and the decision to smoke or not to smoke should be made at the age of mature judgment." MNAT00280070-0070 (US 21724).

3209. On or about July 9, 1963, the Tobacco Institute, through its agent Hill & Knowlton, issued a press release stating that it was "the tobacco industry's position that smoking is a custom for adults and that it is not the intent of the industry to promote or encourage smoking among youth." It further stated that "[t]he industry wants to make it demonstrably clear that it does not wish to promote or encourage smoking among youth." TIMN0098597-8598 at 8597 (US 21270); TIFL0522044-2045 at 2045 (US 21313).

3210. On July 22, 1969, Joseph F. Cullman III, Chairman of the Executive Committee of the Tobacco Institute and Chairman of the Board of Philip Morris, testified to the Consumer Subcommittee of the Senate Committee on Commerce that "it is the intention of the cigarette

manufacturers to continue to avoid advertising directed at young persons." 680263421-3422 (US 22345).

3211. In September 1975, the Tobacco Institute, through its agent Hill & Knowlton, issued a press release, titled "Cigarette Industry Advertising Standards," communicating that the Tobacco Institute had issued statements denying that the cigarette industry marketed to youth smokers. The press release also repeated Cullman's July 22, 1969 testimony that "it is the intention of the cigarette manufacturers to continue to avoid advertising directed at young persons." 680263421-3422 (US 22345).

3212. On February 15, 1978, Horace Kornegay, President of the Tobacco Institute, testified before the Subcommittee on Health and the Environment of the House of Representatives Energy and Commerce Committee: "I do not believe, as some have suggested, that cigarette advertising induces young people to smoke, and I am supported on that statement by several studies that have been done. I do believe that it is peer influence." (no bates) (JD 011816). In a letter dated March 6, 1978, in response to a congressional request during his testimony to provide documentation of any recent studies targeting young women by the Tobacco Institute's constituent companies, Kornegay stated the following:

> I am writing to confirm that I am unaware of any consumer study conducted by any of our member companies with regard to children nor any cigarette advertising campaigns directed at children, whether male or female. I have communicated with each of our cigarette manufacturing members and advised them of the Subcommittee's request for such material, should any exist.

(no bates) (JD 011816).

3213. A 1979 Tobacco Institute brochure, titled "Fact or Fancy?" declared that cigarette advertisements create new smokers

> [n]o more than advertising a specific brand of toothpaste causes more people to use toothpaste. Cigarette advertising is brand advertising, aimed at interesting smokers in switching brands and in creating brand loyalty. . . . The tobacco industry does not try to persuade anyone to smoke. Nor does it discourage anyone who makes up his or her mind to quit.

TIMN0133740-3798 at 3760, 3786 (US 21280).

3214. A May 24, 1979 letter from Kornegay to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, was written in response to Califano's statements to the Interagency Council on Smoking and Health on April 26, 1979. Kornegay's letter stated that Califano's "statements . . . reflect the erroneous view that brand advertising has an effect on the decision to begin smoking." TI05031337-1339 (US 21245); (no bates) (US 78792).

3215. On August 31, 1979, the Tobacco Institute issued a press release articulating Defendants' "policy" on youth smoking: "Kids shouldn't smoke! Smoking is an adult custom. Until a person is mature enough to make the decision in light of all the available information and on the basis of individual freedom of choice, that decision should be deferred." TIMN0157538-7538 (US 85136).

3216. On or about May 13, 1981, the Tobacco Institute issued a press release announcing the adoption of a "Code of Cigarette Sampling Practices" that promised the cigarette companies would cease their prior practice of distributing cigarette samples to persons under twenty-one, and limit the distribution of cigarette samples to "persons 21 years of age or older." The press release included a statement that members of the Tobacco Institute had a "long-standing policy of

discouraging smoking by children," and that "the thrust of the new code is further to discourage smoking by children." The code stated that sample distribution would not occur within two blocks of any "center of youth activities, such as playgrounds, schools, college campuses, or fraternity or sorority houses." TIOK0000817-0818 (US 22346); TIMN0123794-3795 at 3794 (US 85138); TIMN0123589-3590 at 3589 (US 21279); TIMN0102493-2494 at 2493 (US 21271).

3217. In a 1983 document, titled "Voluntary Initiatives of a Responsible Industry In Advertising," the Tobacco Institute stated that "smoking is an adult custom to be considered only by those mature enough to make an informed decision." ATX040294056-4056 (US 58599); TIMN333363-3363 (US 62907).

3218. A 1983 Tobacco Institute advertisement stated in bold letters: "We don't think our kids should smoke, either." The advertisement further stated that:

> As with many of life's pleasures, smoking, drinking, and driving a car require a knowledge of oneself and a sense of moderation that come only with age. When our children acquire this sense of moderation and this knowledge of themselves -- and are, therefore, no longer children -- they can make their own decisions. Until then, we'll try to help them learn what every human being . . . has always had to learn. When we confuse the pleasures of growing up with the satisfactions of being grown up, we miss a great deal of both.

TIOK0001287-1288 (US 78789).

3219. On the nationally televised ABC program 20/20, broadcast on October 20, 1983, Ann Browder, a Tobacco Institute spokesperson, stated: "We feel very strongly that cigarette smoking is an adult custom that one should not even consider until they've reached the age of maturity" and that the "age of maturity is 21." Browder also stated that

> [c]igarette manufacturers are not interested in obtaining new business from teenagers. . . . We've been in business very well, thank you, for

> sometime now without attempting to hook kids. We do everything possible to discourage teenage smoking.

680286673-6686 at 6675-6676 (US 20999); 690149518-9531 at 9520-9521 (US 21046).

3220. On April 1, 1984, the Tobacco Institute initiated a project with the National Association of State Boards of Education ("NASBE") to publish a pamphlet, titled "Helping Youth Decide," which advised parents on how to communicate with their children and how to assist them in making decisions on issues such as tobacco and alcohol use, drug use, and sexual activity. 04210444-0455 at 0445 (US 74879). On September 25, 1984, the Tobacco Institute's Vice President Walker Merryman stated in a speech pertaining to the "Helping Youth Decide" pamphlet:

> [w]e do not want youngsters smoking cigarettes. That has been our policy for many years and it is a policy which has guided and will continue to guide our industry's marketing, promotion and advertising practices.

TIMN0053189-3191 at 3189 (US 77043).

3221. On September 21, 1984, Curtis Judge, Lorillard President and Chairman of the Tobacco Institute's Executive Committee, stated in a press release that cigarette manufacturers feel "that smoking is among many behaviors that should be left to adults, like driving, voting, raising a family, and knowing enough to make an informed decision about all sorts of adult activities." He also stated: "The cigarette manufacturers of America do not want youngsters to smoke." TIMN0013806-3806 (US 85140).

3222. In 1989, the Tobacco Institute issued a brochure, titled "Smoking and Young People -- Where the Tobacco Industry Stands," which stated that the "tobacco industry has long taken the position that smoking is an adult practice to be considered solely by mature, informed persons." The Tobacco Institute further stated that "no other industry in America has taken such direct -- and

voluntary -- action to steer its product away from young people." The Tobacco Institute denied that advertising encourages people to begin smoking, stating that "[m]any [studies] have concluded that peer pressure and parental influence are the chief factors in an adolescent's decision" to smoke and that "[a]ccording to many behavioral experts, the answer is an unequivocal no -- there is no significant connection between advertising and the decision to start smoking." 2025861325-1334 at 1327, 1330, 1332 (US 23049).

3223. In a January 11, 1989 interview on CBS This Morning, the host asked Brennan Dawson, Vice President of the Tobacco Institute, whether cigarette brand advertisements, such as ones featuring "Joe Camel," were directed toward teenagers. Dawson responded:

> No. In fact, like all tobacco advertisements, they're directed at smokers, people who are already smokers, to give them education about how much and how many different brands there are, and things like that.

TIMN389505-9507 at 9505 (US 85141).

3224. In 1990, the Tobacco Institute issued a series of press releases, titled ". . . On Youth Smoking." The releases pronounced Defendants' public position on various youth smoking issues. A release titled ". . . On Youth Smoking Tobacco Advertising . . . And Why Kids Smoke" stated: "cigarette advertising has no significant effect on the prevalence of smoking by young people." TIFL0303295-3368 at 3305 (JD 080072). Another release, titled ". . . On Youth Smoking Reducing Access" stated:

> [i]n the past -- and for the future -- the tobacco industry has maintained responsible positions on the issue of smoking by young people. The longstanding policy of cigarette manufacturers is that the choice to smoke or not to smoke is to be made by informed adults.

TIFL0303295-3368 at 3308 (JD 080072). A release titled ". . . On Youth Smoking Tobacco Industry Initiatives" stated: "[t]he tobacco industry has long taken the position that smoking is an adult practice to be considered solely by mature, informed persons." TIMN0015624–5625 at 5624 (US 65589). A release titled ". . . On Youth Smoking Tobacco Industry Guidelines" stated:

> Long holding the view that smoking is for adults who choose to smoke -- and an activity that should not be engaged in by youth -- the tobacco industry has taken measures to address public concerns about youth smoking.

TIMN0057161-7161 (US 62818).

3225. On February 20, 1990, the Tobacco Institute issued a press release stating that Charles Whitley, Tobacco Institute Legislative Consultant, had appeared before the Senate Committee on Labor and Human Resources on behalf of the Tobacco Institute and had testified that "the cigarette industry does not want young people to smoke." TIMN341503-1504 (US 85377).

3226. In a February 22, 1990 interview on Larry King Live, Brennan Dawson stated: "[T]he industry does not target kids. In fact, you'll only find tobacco ads in publications that are primarily geared towards older people; adults, in fact." TIMN341405-1422 (US 21363).

3227. On CBS News Nightwatch, broadcast on February 27, 1990, Brennan Dawson stated: "[A]dvertising doesn't cause smokers. . . . And advertising in that mature market doesn't create the urge to run out and buy a pack of cigarettes." Dawson further stated: "The industry does not target children. We don't want kids smoking. We have taken a number of very proactive steps over a long period of time to make that demonstration very clear." CORTI1731-1738 at 1734, 1737 (US 87735).

3228. In March 1990, the Tobacco Institute issued a report on youth smoking stating, "Tobacco manufacturers have always believed that the decision to smoke or not is a choice to be made by informed adults." TIMN215242-2425 (US 85149).

3229. On the CNN program Crossfire broadcast on April 11, 1990, Brennan Dawson, stated: "There is no one in the tobacco industry that wants children and underaged youth to smoke. That has been a longstanding policy of the tobacco industry." CORTI1828 -1841 at 1837 (US 85150).

3230. On May 24, 1990, the Tobacco Institute issued a press release titled "Discouraging Youth Smoking, Tax Burden On Smokers And Other Issues Discussed in Testimony" concerning the testimony offered by the Tobacco Institute's Charles O. Whitley before the Senate Finance Committee. The press release quoted Whitley as testifying: "I know of no other industry in America that has taken such direct, voluntary action to steer its products away from young people." The press release also stated that Whitley "outlined many of the steps that the tobacco industry has taken to help discourage youth smoking." The press release further stated that "Whitley also disputed claims that raising cigarette taxes would discourage youth smoking." MNAT00600156-0157 (US 22349).

3231. In a July 1990 Tobacco Institute document, titled "Youth Guidelines," the Tobacco Institute stated:

> The cigarette industry has long held the view that smoking is for adults who choose to smoke -- an activity that should not be engaged in by youth. In fact, the industry already has taken measures to address public concerns about youth smoking. To date cigarette manufacturers: do not advertise in publications directed primarily to persons under 21; do not use models in ads who are or appear to be under 25; do not distribute cigarette samples to persons under age 21; do not distribute cigarette samples within two blocks of any centers of youth activities, such as playgrounds and schools.

TIMN0038804-8804 (US 85151).

3232. On October 11, 1990, the Tobacco Institute issued a press release, titled "Major New Initiatives to Discourage Youth Smoking Announced," which stated that Defendants had a "longstanding commitment" of discouraging and preventing smoking by youth and announced "five new initiatives that expand and reaffirm the industry's longstanding commitment and positive actions against youth smoking." The press release included a quote from Brennan Dawson stating that "[w]e also were determined to address substantively concerns about cigarette marketing. And so we reviewed our practices to find what more we could do." The press release further quoted Dawson as saying: "since it is widely recognized that young people smoke primarily because of peer pressure, we are addressing this directly with a major program to assist parents in reducing that peer pressure." TIOK0000978-0980 (US 21714).

3233. On December 12, 1990, Dawson told news reporters: "If a child never picks up another cigarette it would be fine with the tobacco industry." TIMN0131524-1525 (US 85153).

3234. On the nationally televised ABC program Good Morning America, broadcast on December 12, 1990, Dawson, speaking on behalf of Philip Morris, RJR, B&W, Liggett, and Lorillard, stated that the tobacco "industry has a long-standing history going back for decades of positive actions to discourage youth smoking." TIMN0041988-1911 at 1989 (US 62806).

3235. In 1991, the Tobacco Institute distributed to the public a booklet, titled "Smoking and Young People -- Where the Tobacco Industry Stands," which stated that, in 1990, the industry "launched a set of bold, new initiatives designed to ensure that smoking remains an adult custom." In the booklet, the Tobacco Institute also stated that "[a]ccording to many behavioral experts, the answer is an unequivocal no -- there is no significant connection between advertising and the decision to start smoking." TIMN0133916-3922 at 3917, 3919 (US 22206).

3236. In a 1991 statement to the New York State Association of Tobacco and Candy Distributors, Samuel Chilcote Jr., President of the Tobacco Institute, said: "the tobacco industry has long believed that smoking is an adult choice. Over the years we have taken many voluntary steps to make that clear." TIMN0031560-1560 (US 85161).

3237. On December 11, 1991, the Tobacco Institute issued a press release criticizing a study published in the Journal of the American Medical Association ("JAMA") on youth smoking and accusing the authors of "glaring omissions and distortions." The press release stated:

> Youth smoking is not on the rise in the U.S., contrary to the impression given in a study in today's Journal of the American Medical Association. . . . Contrary to the assertion of [the study's] authors, studies suggest that the majority of U.S. smokers are of legal age when they begin to smoke.

The press release further stated: "cigarette ads have no significant effect on the prevalence of smoking by young people." The press release also contained the statement: "The tobacco industry has long taken steps to discourage youth smoking and to address concerns about tobacco marketing." TIMN0024039-4040 (US 21266) (emphasis in original).

(2) Philip Morris

3238. Philip Morris has also made numerous false and misleading statements about youth smoking and marketing. Philip Morris prepared a brochure intended to publicly promote its "thirty years of responsible marketing practices" dating from 1963 to 1993. The brochure stated: "Philip Morris Cigarette Ads are Directed to Adults Only. . . . Philip Morris advertises to promote brand loyalty among adults who already smoke." 2078842782-2814 at 2809 (US 25040).

3239. In 1989, Philip Morris initiated a program called "It's The Law" as part of its publicly-declared intention to reduce underage smoking. In a document regarding this program,

Philip Morris denied that advertising leads children to smoke, stating: "All that cigarette advertising does is help smokers select a brand; it does not encourage nonsmokers or kids to smoke." 2046573757-3759 at 3757 (US 20472).

3240. Doreen Baker, Manager of Marlboro Accounts at Philip Morris, sent a letter dated November 22, 1989 to Don Miller, Vice President and General Manager, Motorsports International, which stated that Philip Morris's "policy [is] to market to the 21 and above aged consumer." 2048513994-3994 (US 20483).

3241. In 1991, Philip Morris placed advertisements which stated that "Philip Morris U.S.A. does not market cigarettes to children because smoking is an adult choice," and that "smoking is an adult decision." 2022881505-1505 (US 20366); 2022881503-1503 (US 20365).

3242. Responding to a letter from school children at Fairmont Public School in Fairmont, North Dakota, in a February 24, 1995 letter, Ellen Merlo, Senior Vice President at Philip Morris, wrote:

> Let me start by assuring you that Philip Morris agrees with your students, in that we do not want minors to smoke. We believe that while smoking is a legitimate life-style choice for adults, it is completely inappropriate for children. For more than three decades we have taken great care to ensure that our cigarette products are marketed to adults only. We never advertise in publications geared toward youth and have not done so since the early 1960s.

2070038936-8938 at 8936 (US 24506); see also 2077070349-0354 (US 22091); 2048370622-0641 (US 22094).

3243. At a 1999 Philip Morris shareholders meeting, in response to a shareholder inquiry regarding youth smoking, the Altria Board of Directors stated that

> [b]oth Philip Morris U.S.A. . . . and Philip Morris International . . . have programs in place, and are subject to legal restrictions, that require that marketing and advertising activities be directed only to adults who choose to smoke.

Claiming that Philip Morris goes "above and beyond" legal requirements, the Board further stated that "Philip Morris U.S.A. has a long-standing commitment to direct its advertising only to adults who choose to smoke. . . ." (no bates) (US 87738).

3244. Philip Morris's internet website www.philipmorrisusa.com, launched on October 13, 1999, stated in part: "Our goal is to be the most responsible, effective, and respected developer, manufacturer and marketer of consumer products made for adults." The website further stated that

> Philip Morris is committed to acting responsibly in marketing its tobacco products to adults who choose to smoke. We demonstrate this commitment by implementing all of our marketing programs in compliance with both the letter and the spirit of the laws, rules, policies and restrictions that govern our business practices.

TLT0450351-0360 (US 65080).

3245. At a 2000 Philip Morris shareholders meeting, in response to a shareholder inquiry regarding youth smoking, the Altria Board of Directors stated:

> [b]oth Philip Morris U.S.A. . . . and Philip Morris International . . . have programs and policies in place, and are subject to legal restrictions, that help ensure that marketing and advertising activities be directed only to adults that choose to smoke. . . . Philip Morris U.S.A. has a long-standing commitment to direct its advertising only at adults who choose to smoke [and] complies with an industry code and company policy that help ensure that its marketing efforts are directed only to adults who choose to smoke.

(no bates) (US 87739).

3246. At a 2001 shareholders meeting, in response to a shareholder inquiry regarding youth smoking, the Philip Morris Board of Directors asserted that "Philip Morris U.S.A. has a long-

standing commitment to help ensure that its marketing efforts are directed only at adults who choose to smoke . . . ." (no bates) (US 87740).

3247. In June of 2001, Philip Morris posted on its internet website a document, titled "U.S.A. Marketing Policies," which represented that "All of our brand advertising and promotions are intended for adults who choose to smoke. They serve to enhance brand awareness, recognition and loyalty among adult smokers." 2078296160-6161 (US 20534).

3248. As of January 13, 2002, a section of Philip Morris's internet website www.philipmorrisusa.com titled "Responsible Marketing" stated in part that

> we demonstrate our commitment to responsibly marketing our products to adult smokers by developing and implementing programs that comply with both the letter and the spirit of the laws, rules, policies and agreements that govern our business practices. . . . [including] PM USA's Marketing Practices. . . . Our marketing programs are designed to enhance brand awareness, recognition and loyalty among adult smokers, while honoring the Company's commitment to responsible marketing.

ARU6432619-2620 (US 78280).

3249. In describing its "marketing practices," Philip Morris states, "Philip Morris USA does not direct its advertising to underage smokers or to non-smokers." With regard to its obligations under the MSA, Philip Morris states, "Although the agreement restricts participation in promotional programs to 'Adults' (defined as eighteen years of age and older), PM USA voluntarily restricts such programs to adult smokers age 21 or older." ARU6432619-2620 (US 78280); ARU6432621-2624 (US 78281).

3250. According to "Message Points" intended for public dissemination dating to or after 1992, produced from the files of Norma Suter, currently the Vice President of Marketing, Discount

Brands: "Philip Morris does not market its products to minors and we do not want minors to smoke because smoking in [sic] an adult custom. . . . Minors do not start smoking because of cigarette advertising, promotions or sponsorship." 2048826863-6864 at 6863 (US 23992).

3251. In 1994, Philip Morris created message points intended to publicly respond to the 1994 Surgeon General Report's conclusion that cigarette advertisements contributed to youth smoking. The Philip Morris message points stated:

> No study has ever been able to draw the conclusion that advertising can cause anyone -- particularly kids -- to smoke. All that cigarette advertising does is help smokers select a brand; it does not encourage nonsmokers or kids to smoke. Brand recognition does not equate to smoking.

2062341135-1136 (US 20511).

3252. Similarly, a draft article intended to appear in an issue of PMGLOBE published close in time to the publication of the 1994 Surgeon General's Report stated that: "Philip Morris U.S.A. does not market its cigarette products to children and underage teenagers." 2078842765-2766 at 2766 (US 25039); 2078842371-2376 at 2371 (US 25037).

3253. On March 4, 1998, Geoffrey Bible, then Chairman and CEO of Philip Morris Companies, testified in the Minnesota litigation that "[w]e do not market cigarettes to teen-agers." Bible TT, Minnesota v. Philip Morris, 3/4/98, 6167: 9-10.

3254. According to Suzanne LeVan, Vice President of Marlboro and former Vice President of Philip Morris Premium Brands, who has been a Philip Morris employee since December 1991, "Philip Morris markets its brand to adults who choose to smoke" and "Philip Morris doesn't direct any of its marketing efforts to non-smokers." In response to the question: "Does Philip Morris do anything to recruit non-smokers to begin smoking?" LeVan stated, "No, sir, they do not." And in

response to the question "What percentage of Philip Morris' marketing efforts are spent trying to convince minors to smoke Philip Morris brands?" She answered, "None. Philip Morris doesn't market to minors" and testified that that was "a true statement for all of [her] years at Philip Morris." LeVan PD, United States v. Philip Morris, 6/25/02, 268-270; 2063683072-3077 (US 21870).

(3) Liggett

3255. Liggett has also made false and misleading statements about youth smoking and marketing.

3256. On July 13, 1999, Ronald S. Fulford, Chief Executive Officer of Liggett, sent an internal memorandum to all employees stating that "[i]t is Liggett's policy to scrupulously avoid any and all advertising or marketing which would appeal to children or adolescents." LDOJ2233261-3261 (US 21184).

(4) Lorillard

3257. Lorillard has also made numerous false and misleading statements about youth smoking and marketing. In a January 6, 1970 letter to Michael Pertschuk, General Counsel for the United States Senate Commerce Committee, Arthur Stevens, Lorillard General Counsel, stated: "It is Lorillard's policy and practice to avoid directing its advertising or promotions toward young people." 00486108-6109 (US 20026).

3258. In response to a shareholder inquiry regarding youth smoking at a shareholder meeting in 1996, the Lorillard Board of Directors stated that

> [f]or over 30 years, Lorillard and other cigarette manufacturers have opposed smoking by minors. The voluntary code of the cigarette industry, to which Lorillard fully subscribes, contains a variety of provisions designed to discourage youth smoking . . . and a variety of

> restrictions strictly limiting the distribution of product samples. These efforts have been supplemented and enhanced over the years.

91762567-2592 at 2585-2586 (US 22080).

3259. In response to a shareholder proposal regarding youth smoking at a shareholder meeting in 1997, the Lorillard Board of Directors stated that:

> Lorillard and other cigarette manufacturers have opposed smoking by children and underage adults for over thirty years. In an effort to deal with this and other matters, the cigarette industry has adopted a voluntary code, to which Lorillard has always fully subscribed, containing a variety of provisions designed to discourage youth smoking.

TLT1022214-2235 at 2231 (US 87742); ARU6432609-2612 (US 78277).

3260. Lorillard CEO Martin Orlowsky wrote a statement dated June 30, 1999 titled "Corporate Principles of Marketing, Promotion and Youth Smoking" saying that:

> [f]or many years, Lorillard, as a matter of corporate policy, has voluntarily and scrupulously followed the tobacco industry Cigarette Advertising and Promotion Code. . . . This Code was and is consistent with Lorillard's long-standing policy and practice that smoking is an adult custom and that children should not smoke.

Orlowsky WD, 8:23-9:11; 82225801-5805 at 5803-5805 (US 55455). Orlowsky also confirmed that he made this statement after the effective date of the MSA. Orlowsky WD, 9:12-14.

3261. In a May 6, 1999 speech at the Tobacco Merchants Association 84th Annual Meeting and Dinner in New York City, Alexander Spears, then CEO of Lorillard, stated: "We are committed to reducing underage access and consumption of cigarettes. . . ." 98427298-7301 at 7301 (US 25830).

3262. In June 2001, Lorillard posted on its internet website a statement titled "Marketing and Promotion" which promised that

> Lorillard does not and will not design or implement any marketing or promotional program intended to encourage youth to smoke cigarettes, and will continue to utilize only those advertising, promotional and marketing materials that do not, directly or indirectly, target youth.

VXA0104165-4166 (US 72746).

3263. Lorillard states on its current website:

> As clearly set forth in the Tobacco industry's Cigarette Advertising and Promotion Code (the "Code"), to which Lorillard has adhered for many years, Lorillard believes that cigarette smoking is an adult custom and that children should not smoke. Accordingly, Lorillard advertises and promotes its cigarettes only to adult smokers. . . . Lorillard does not and will not take any action the primary purpose of which is to initiate, maintain, or increase the incidence of youth smoking.

TLT0370590-0592 (US 76628); ARU6432609-2612 (US 78277).

3264. Steven C. Watson, Lorillard Vice President, External Affairs, was responsible for issuing a press release in 2001, stating "Lorillard Tobacco Company has never marketed or sold its products to youth." The release was transmitted electronically by e-mail from North Carolina to P.R. Newswire in New York, and distributed from there by wire to various news agencies, to be published in newspapers, magazines or similar publications. Watson PD, United States v. Philip Morris, 4/2/02, 190:5-191:6.

3265. According to George Telford, Vice President of Brand Marketing for Lorillard since 1990, with responsibility for developing Lorillard's annual strategic marketing plans, that the purpose of Lorillard's marketing and promotion efforts was to retain current smokers of Lorillard products and to convince competitive smokers to switch to Lorillard products. Telford also testified that Lorillard has set the target market for Newport as twenty-one to thirty-four year-olds since 1994.

Telford PD, United States v. Philip Morris, 6/26/02, 39:17-42:10, 61:9-62:2, 62:9-17, 62:22-63:14, 63:20-64:3.

(5) BATCo and Brown &Williamson

3266. BATCo and Brown & Williamson have both made numerous false and misleading statements about youth smoking and marketing.

3267. On May 4, 1979, B&W Chairman and Chief Executive Officer Charles I. McCarty wrote to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, stating that B&W had a "policy against advertising or in any way promoting the sale of cigarettes to persons under 21," and that B&W "does not have at hand the research data and other information necessary to a responsible analysis of the suggestion made in [Califano's April 26 letter]." 521038912-8912 (US 20890).

3268. On June 1, 1979, McCarty sent a second letter to Califano further responding to Califano's April 26, 1979 letter. In this letter, McCarty stated: "We maintain a strict policy against promoting cigarettes to persons under 21 years of age." McCarty further stated:

> We do not want children to smoke not because we agree with your oft-repeated slogan that smoking is "slow-motion suicide" but because the decision whether to smoke, we think, is a decision which should be made by adults, not children. . . .

660008960-8961 (US 21524).

3269. In a document, titled "Statement of Business Conduct," dated December 21, 1993, BATCo stated that "[t]obacco advertising and marketing programmes are used to cause existing adult consumers to switch from one brand to another and are not used to encourage young people to start smoking." This "Statement" indicated that it applied to "all directors, officers, and employees" at

BATCo and at "every company within the B.A.T. Industries Group of companies." 503074962-4985 at 4965, 4978 (US 21869).

3270. On August 25, 1997, the B&W Board of Directors (N.G. Brookes, R.L. Bexon, J.N. Jewell, M.J. McGraw, and C.L. Schoenbachler, Jr.) adopted a resolution stating that B&W does not market to youth and that advertising and promotion were not major determinants of tobacco use by youths:

> B&W does not agree that its actions encourage young people to use tobacco products. B&W believes that minors should not use or have access to tobacco products, and B&W does not market or advertise its products to minors. B&W does not believe that tobacco advertising or promotion are major determinants of tobacco use by minors. B&W therefore does not agree that "sweeping new restrictions" on the marketing and sale of tobacco products are necessary. Enforcement of existing laws prohibiting youth access to tobacco would be the single most effective means of reducing youth tobacco use.

321963884-3886 at 3884 (US 85173).

3271. On February 24, 1998, Nicholas G. Brookes, Chairman and CEO of B&W, testified to the United States Senate Commerce Committee that B&W had

> a policy that we do not promote our products to kids or underage smokers, and that would be a terminable offense. We would terminate somebody who clearly evaded that policy and, indeed, I think we have historically terminated contractors who have done so.

178200001-0132 at 0095 (US 35023).

3272. In 1998, B&W's internet website included a statement, titled "Marketing & Consumer Principles and Practices," which promised that:

> we conduct our business in a principled manner to assure that our cigarettes are marketed responsibly, and that our advertising, promotion and sponsorship programs are not directed toward youth.

> Although state law permits individuals under the age of twenty-one to purchase tobacco products, the intended audience for all B&W marketing programs is adults twenty-one and over. Hence, the purpose of B&W's marketing programs is to encourage smokers twenty-one and over to select B&W brands rather than competitive brands.

TLT0160001-0007 (US 65077).

3273. During 1999 and through June 2001, B&W's website included a document, titled "Hot Topics: Corporate Responsibility." The section of the document, titled "Marketing Principles and Practices: Advertising," stated: "All elements of marketing programs, including content, theme, imagery and choice of medium are to be directed at adults 21 years of age or older, not at youth." 106004419-4422 (US 76629).

3274. In a July 7, 2000 interview with Charles Gibson of ABC News, Claudia Newton, B&W Vice President of Corporate Responsibility and Youth Smoking Prevention until 2001, stated that B&W was "making very sure that our marketing programs are aimed at the audience that we want to smoke our products, and that's people who are 21 years of age and up." 520526702-6705 at 6703 (US 22111); 106004533-4534 at 4533 (US 87751).

3275. The "British American Tobacco Social Report 2001/2002," available on the British American Tobacco website, stated:

> Our companies take care to ensure that their advertising does not encourage people to start smoking, to smoke more or not to quit. Our companies' advertising aims to inform adult smokers about British American Tobacco brands so that they will switch from competitor brands to ours, or if they are already a smoker of our brands will remain so.

TLT0231830-1910 at 1859 (US 76316).

3276. B&W's most recent website contained a section titled "Marketing & Consumer Communication Principles and Practices." On it, B&W asserts,

> B&W has long taken the position that mass media advertising should be directed to *adults* 21 and over, despite the fact that 18 is the age at which most states permit the purchase of tobacco products. . . . Although we carefully screen our publications to ensure they are directed toward *adults*, we recognize that some readers may not be *adults*. Thus, when we do not know the age of a publication recipient, we restrict the content of our advertising as well as the publications in which we place advertising, using the age of 21 as our threshold rather than legal age.

B&W further stated, "[t]oday, our primary focus is on consumer relationship marketing, that is, marketing to specific individuals who have confirmed that they are both *adults* and smokers." VXB3840037-0041 (US 78678) (emphasis in original).

3277. In discussing "Corporate Responsibility" on its most recent website, B&W asserts:

> Brown &Williamson invests in advertising to generate interest in our brands among competitive brand smokers and to discourage smokers of our brands from switching to other cigarette brands. . . . In addition, we do not target children or teenagers in our advertising or other marketing programs.

TLT0770001-0065 at 0024 (US 72407).

3278. A March 18, 2004 B&W press release appearing on the company's website included the following statement by Ludo Cremers, Divisional Vice President, Brand Marketing: "B&W is a responsible company that only markets its products to adults who chose to smoke and strongly believes that anyone underage should not smoke cigarettes under any circumstances." TLT0962005-2006 (US 87745).

3279. According to Claudia Newton, advertising and marketing influence brand choice, not smoking initiation. Newton reached that conclusion based on the results of surveys in which

smokers were asked the open-ended question, "Why did you start smoking?" Newton PD, United States v. Philip Morris, 4/17/02, 150:15-20, 157:7-22, 158:17-159:4, 160:11-16.

3280. Susan Ivey, former President and Chief Executive Officer of B&W and now head of Reynolds American, stated that "B&W's policy . . . with respect to mass media advertising and market research" has been and remains "against advertising or in any way promoting the sale of cigarettes to persons under 21." Ivey WD, 4:7-16.

(6) R.J. Reynolds

3281. RJR has also made numerous false and misleading statements about marketing and youth smoking. An April 7, 1972 letter written by T. K. Cahill, an employee in RJR's Public Relations Department, responded to a letter from Santa Monica, California fifth-grade teacher Kenneth Bersinger's class regarding a Winston ad in the Los Angeles Times. Cahill's response stated that "[n]one of our cigarette advertising, either in its content or in the media used, is directed to youth." 500671015-1015 (US 66308).

3282. In a May 29, 1979 letter to Joseph A. Califano, Jr., Secretary of the Department of Health, Education and Welfare, William D. Hobbs, then Chairman and Chief Executive Officer of RJR, stated on behalf of RJR that, "we sincerely believe cigarette advertising plays no part in the process which causes teenagers to take up smoking and feel your suggestion that our Company participate in a massive campaign aimed at teenagers is misplaced." TI03972552-2554 at 2554 (US 21242).

3283. A January 17, 1984 RJR document, titled "Questions and Answers," stated:

> We do not target our advertising to minors. . . . We do not develop marketing plans against young people, we do not advertise to young people, we do not conduct consumer surveys among young people,

> and we have no intention of ever making any efforts to bring them into our market.

502276627-6637 at 6633 (US 20698).

3284. In April 1984, RJR placed an advertisement, titled "We don't advertise to children," in numerous publications nationwide, including the April 19, 1984 edition of the weekly magazine U.S. News and World Report. It stated that "we're running ads aimed specifically at young people advising them that we think smoking is strictly for adults." It further stated that

> research shows that among all the factors that can influence a young person to start smoking, advertising is insignificant. Kids just don't pay attention to cigarette ads . . . . [A]ll of our cigarette ads are what we call "brand advertising." Its purpose is to get smokers of competitive products to switch to one of our brands, and to build the loyalty of those who already smoke one of our brands. . . . Getting smokers to switch is virtually the only way a cigarette brand can meaningfully increase its business.

500638176-8176 (US 20644).

3285. James W. Johnston, then Chairman and Chief Executive Officer of RJR, sent a letter dated March 5, 1990, to Mark Green, New York City Commissioner of Consumer Affairs, in response to a letter sent by Green to Louis V. Gerstner, President of RJR. In his letter, Green had raised questions concerning the "Joe Camel" advertising campaign. Johnston stated that it "has long been an RJR policy not to induce youth to smoke . . . we have published full-page statements in national publications urging youths not to smoke." Johnston further stated that, as CEO of RJR, "I have reinforced this policy," and "I see no basis to conclude that R.J. Reynolds has conducted itself in an unethical, illegal or misleading manner." 507603767-3767 (US 20780); 507721148-1153 (US 20783).

3286. On September 18, 1990, Joan F. Cockerham of RJR's Public Relations Department, sent a letter to private citizen Joanna Brown in response to a letter from Brown expressing concern that the Joe Camel "Camel Smooth Character" appealed to youth. Cockerham stated:

> Our intention with this campaign, as with all of our advertising, is to appeal only to adult smokers. We would not have launched the current Camel campaign if we thought its appeal was to anyone other than this group. . . . [O]ur advertising is directed to adult smokers and not younger people.

Cockerham also stated that "research shows that among all the factors that might influence a young person to start smoking, advertising is insignificant." 507706384-6384 (US 20782).

3287. On January 28, 1992, Yancey W. Ford, Jr., Executive Vice President for Sales of RJR, sent a letter to James Harrison, President of the Vermont Retail Grocers Association, regarding the request by certain public health groups that the Association's members remove Camel advertising from their stores. Ford stated that "R.J. Reynolds Tobacco Co. does not want youth to smoke. We do not believe that smoking should be a part of growing up." Ford further stated that "R.J. Reynolds Tobacco Co. and the tobacco industry have long been on record against youth smoking" and that the Joe Camel advertising campaign was directed at adult smokers. Ford also criticized a study on youth smoking that had recently been published in the JAMA, that found that Camel had 33% of smokers twelve to eighteen years old, and cited Joe Camel as being widely recognized by this group of adolescents. TIMN0165921-5923 (US 22354).

3288. RJR sent an August 28, 1992 letter addressed to Dr. Francis A. Neelon, Editor of the North Carolina Medical Journal, signed by Dr. Robert G. Fletcher, Medical Director of RJR. The letter bore a handwritten notation on the copy retained by RJR stating that it was "written by SWM for Dr. Fletcher." SWM are the initials for Seth W. Moskowitz, an RJR employee responsible for

media relations. The letter criticized Dr. Adam Goldstein's "Health Watch" article titled "Youth and Tobacco: Addiction and Death" that appeared in the August 1992 volume of the North Carolina Medical Journal. The letter stated:

> [Dr. Goldstein] claims the tobacco industry spends huge sums of money promoting its products to youth. This is blatantly false. None of Reynolds Tobacco's product advertising or promotions are directed toward anyone under the legal age to smoke. . . . I strongly share Dr. Goldstein's belief that children should not smoke, as does my company.

The letter further stated that "peer pressure is the main influence prompting children to start smoking." 512024008-4011 at 4008-4009 (US 22994); (no bates) (US 76095).

3289. In a press release issued on April 21, 1998, RJR claimed, "[w]e do not want children to smoke, nor do we market this adult product to minors." ARU6432634-2635 (US 78284).

3290. An RJR Media Contact Record indicated that on May 6, 1998, Cliff Pennell, head of RJR Sports Marketing Enterprises, was interviewed by Liz Clark, a sportswriter for the Washington Post. The Contact Record revealed that Pennell stated in his introductory comments, "We don't want youth to smoke. . . . RJR brands are only interested in communicating with adult smokers 21 and over." 700033868-3869 at 3868 (US 54421).

3291. At a 1999 RJR shareholder meeting, in response to a shareholder inquiry regarding youth smoking, the RJR Board of Directors claimed that

> Reynolds has policies and practices in place to assure that its advertising is responsible, and directed to adult and not underage smokers. Reynolds's policy prohibits any advertising research involving subjects under the age of 21. In their research about proposed new advertising, consistent with good qualitative research practices, Reynolds's researchers ask study participants whether the proposed ads are perceived as being for persons younger or older than

> or about the same age as the study participants. If an ad is thought to have particular interest to persons younger than 21, it is not used.

519439239-9268 at 9262 (US 87748).

3292. As of June 2001, the RJR internet website contained a document titled "Marketing Philosophy," stating that "Reynolds Tobacco is not interested in, and does nothing aimed at, trying to persuade any nonsmokers to begin smoking." LIGS-C2507550-7554 at 7550 (US 65063).

3293. As of March 18, 2005, the RJR website stated: "We don't want children to smoke. . . . As a responsible manufacturer and marketer of adult products, we make every effort to ensure that all of our actions are guided by this basic belief." (no bates) (JD 068012). RJR also asserts on its website that RJR, "[does] not encourage nonsmokers to start smoking." ARU6432639-2640 (US 78286).

3294. According to RJR President and Chief Executive Officer Andrew Schindler, RJR adopted a policy in 1992 regarding "marketing plans or campaigns," that RJR does not "interact with" or "talk to" eighteen, nineteen, and twenty year olds, but rather "conducts its interactive marketing practices only with those 21 and older." Schindler stated that when he assumed his position as RJR President and CEO in 1994, he continued RJR' policy to "limit [RJR'] advertising and marketing efforts to smokers 21 years of age and older" in part "to create a buffer between adult smokers and minor smokers" as a defense against charges that RJR "market[s] to teenagers." Schindler also said that RJR "absolutely does not want to develop a cigarette that appeals to children," and that "Reynolds Tobacco is not interested in trying to persuade any nonsmokers to begin smoking or in persuading any smokers not to quit." Schindler WD, 76:17-77:1, 170:16-171:18, 208:16-18.

3295. According to Lynn Beasley, President and Chief Operating Officer at RJR, prior to its merger with B&W, "Reynolds only permitted those 21 and older to participate in many of our marketing programs." After the merger with B&W, "now we allow legal age adult smokers [i.e., those over eighteen] to participate in our direct mail, sampling and promotional program." Beasley WD, 118:7-17. Beasley confirmed that Reynolds has publicly stated that the company does not market to youth for her entire tenure there. Beasley TT, 17351:19-23.

8. Conclusions

3296. The evidence is clear and convincing -- and beyond any reasonable doubt -- that Defendants have marketed to young people twenty-one and under while consistently, publicly, and falsely, denying they do so. Dolan WD, 24:3-16; Krugman WD, 17:2-19:1; Chaloupka WD, 30:8-32:20; Biglan WD, 100-379.

3297. In response to the mountain of evidence to the contrary, Defendants claim that all the billions of dollars they have spent on cigarette marketing serves the primary purpose of retaining loyal customers ("brand loyalty"), and the secondary purpose of encouraging smokers to switch brands. They deny that any of their marketing efforts are aimed at encouraging young people to initiate smoking or to continue smoking. Dolan WD, 61:6-16.

3298. In fact, the overwhelming evidence set forth in this Section -- both Defendants' internal documents, testimony from extraordinarily qualified and experienced experts called by the United States, and the many pictorial and demonstrative exhibits used by the Government -- prove that, historically, as well as currently, Defendants do market to young people, including those under twenty-one, as well as those under eighteen. Defendants' marketing activities are intended to bring new, young, and hopefully long-lived smokers into the market in order to replace those who die

(largely from tobacco-caused illnesses) or quit. Defendants intensively researched and tracked young people's attitudes, preferences, and habits. As a result of those investigations, Defendants knew that youth were highly susceptible to marketing and advertising appeals, would underestimate the health risks and effects of smoking, would overestimate their ability to stop smoking, and were price sensitive. Defendants used their knowledge of young people to create highly sophisticated and appealing marketing campaigns targeted to lure them into starting smoking and later becoming nicotine addicts. Dolan WD, 24:3-16; Krugman WD, 84:1-99:23; Chaloupka WD, 30:8-32:20; Biglan WD, 100-379.

3299. As a result, 88% of youth smokers buy the three most heavily advertised brands -- Marlboro, Camel, and Newport. Fewer than half of smokers over the age of twenty-five purchase these three brands. For example, in 2003, Marlboro, the most heavily marketed brand, held 49.2% of the twelve to seventeen year old market but only 38% of smokers over age twenty-five. Eriksen WD, 52:17-54:10; (no bates) (US 17684A).

3300. Independent scientific studies published in prestigious peer-reviewed scientific journals and in official government reports have confirmed Defendants' knowledge, as demonstrated in their internal documents, that their marketing contributes substantially to the initial demand for and continuing use of cigarettes by young people. Over the past ten years, there have been a number of comprehensive reviews of the scientific evidence concerning the effects of cigarette marketing, including advertising and promotion, on smoking decisions by young people. The weight of all available evidence, including survey data, scientific studies and experiments, reports of public health and governmental bodies, and the testimony of experts in this case, supports the conclusion that

cigarette marketing is a substantial contributing factor to youth smoking initiation and continuation. Eriksen WD, 55:4-20.

3301. Defendants spent billions of dollars every year on their marketing activities in order to encourage young people to try and then continue purchasing their cigarette products in order to provide the replacement smokers they need to survive. Defendants' expenditures on cigarette advertising and promotion have increased dramatically over the past decades, and in particular since the signing of the MSA. Krugman WD, 23:10-24:4. Over the decades, Defendants have used the full range of marketing tools available to them at any particular time, including: advertising on television, radio, and billboards, and in magazines and newspapers; sponsoring events, such as sporting events, bar promotions, festivals, concerts, and contests; providing coupons, price reductions, and free packs with purchases; providing gifts with purchases (known as "continuity items") such as t-shirts, mugs, and sporting goods; direct-mail marketing by sending magazines and other materials directly to individuals' homes; distributing free cigarette samples at retail stores, public events, bars, or other locations; and strategically locating "point of sale" advertising and promotions at retail outlets young people are most likely to frequent, such as convenience stores. Krugman WD, 43:14-2; Dolan WD, 48:6-3.

3302. In the face of this evidence, Defendants have denied, over and over, with great self-righteousness, that they have marketed to youth.

G. Defendants Have Publicly Denied What They Internally Acknowledged: that ETS Is Hazardous to Nonsmokers

1. Introduction

3303. Defendants' collective effort to maintain an open question as to the health effects of cigarette smoking was not limited to whether cigarettes caused disease in smokers themselves. During the 1970s, scientific evidence suggesting that exposure to cigarette smoke was hazardous to nonsmokers began to grow, and public health authorities began to warn of a potential health risk to both adults and children. Fearing government regulation to restrict smoking in public places and sensing a decrease in the social acceptability of smoking, Defendants were faced with a major threat to their profits.

3304. In 1974, Tobacco Institute chairman Horace Kornegay warned that smoking restrictions not only impacted sales but also "could lead to the virtual elimination of cigarette smoking." TIMN0067732-7755 at 7734 (US 22047). Reynolds CEO Ed Horrigan wrote Lorillard executives in 1982: "We all know that probably the biggest threat to our industry is the issue of passive smoking." 93443843-3843 (US 32289). A 1986 BATCo document stated: "The world tobacco industry sees the ETS issue as the most serious threat to our whole business." 100993158-3165 at 3158 (US 89556). Philip Morris Companies Vice Chairman Bill Murray was advised at a presentation by Project Downunder Conference attendees, in 1987: "The situation can't get any worse. Sales are down, can't be attributed to taxes or price increases. ETS is the link between smokers and non-smokers and is, thus, the anti's [anti-smoking activists] silver bullet." 2021502671-2678 at 2678 (US 22950).

3305. In response, Defendants crafted and implemented a broad strategy to undermine and distort the evidence indicting passive smoke as a health hazard. Defendants' initiatives and public statements with respect to passive smoking attempted to deceive the public, distort the scientific record, avoid adverse findings by government agencies, and forestall indoor air restrictions. Defendants' conduct with respect to passive smoking continues to this day, when currently no Defendant publicly admits that passive exposure to cigarette smoke causes disease or other adverse health effects.

2. The Consensus of the Public Health Community Is that ETS Causes Disease in Nonsmokers

3306. Secondhand smoke, also called passive smoke or environmental tobacco smoke ("ETS"), is a mixture of mostly sidestream smoke given off by the smoldering cigarette and some mainstream smoke exhaled by smokers. Samet WD, 171:2-14; 186:10-13.

3307. Evidence of the health risks of passive smoking is derived from many sources. It comes from knowledge of the health risks of active smoking, the carcinogenicity and toxicity of the components in mainstream and sidestream smoke, the evidence that nonsmokers absorb the disease-causing components of tobacco smoke, and epidemiological studies that have assessed the association of passive exposure to tobacco smoke with disease outcomes. Samet WD, 185:21-186:23; see also TLT0240387-0537 at 0470-0480, 0485-0517 (US 60597) (1972 SGR); 03763710-3956 3804-3833 (US 34340) (1975 SGR); VXA1604926-6020 at 5418-5457 (US 64071) (1979 SGR); TLT0242222-2551 at 2468-2484 (US 60598) (1982 SGR); VXA1601456-1742 at 1649-1675 (US 64059) (1984 SGR); VXA2110670-1053 at 0806-0865 (US 63709) (1986 SGR); VXA2111054-1229 at 1072-1092 (US 63708) (1986 NRC Report); VXA1600406-0824 at 0483-0598 (US 64066)

(1986 IARC); DXA0390094-0699 at 0142-0194 (US 88654) (1992 EPA Risk Assessment); JDM1870820-1333 at 0864-0867 (US 76125) (1997 California EPA Report); 2065192422-2615 at 2438-2448 (US 22092) (1997 Australia Report); VXA1600843-0981 at 0872-0879 (US 64063) (1998 UK SCOTH Report); VXA1600982-1000 (US 64062) (1999 WHO); VXA1240568-1258 at 0928-0957 (US 64315) (2001 SGR); TLT0970001-1455 at 1191-1230 (US 86746) (2002 IARC).

3308. Conclusions about the causal relationship between secondhand smoke exposure and adverse health effects are based on the extensive evidence derived from both epidemiological and toxicological investigation of active smoking. Additionally, studies using biomarkers of exposure and dose, such as the nicotine-specific metabolite cotinine, document the absorption of known disease-causing components of secondhand smoke by exposed nonsmokers, confirming the observed associations of secondhand smoke with adverse health effects. Samet WD, 172:17-173:18; VXA2110670-1053 at 0866-0914 (US 63709) (1986 SGR); VXA2111054-1229 at 1127-1140 (US 63708) (1986 NRC Report); VXA1600406-0824 at 0563-0570 (US 64066) (1986 IARC); DXA0390094-0699 at 0181-0189 (US 88654) (1992 EPA Risk Assessment); JDM1870820-1333 at 0875-0884 (US 76125) (1997 California EPA); 2065192422-2615 at 2444-2446 (US 22092) (1997 Australia Report); TLT0970001-1455 at 1207 (US 86746) (2002 IARC).

3309. In his 1964 Report, the Surgeon General set forth the five criteria which, according to the consensus of the scientific community, describe a causal relationship:

a. Consistency of the Association. Nearly all the retrospective and prospective studies produced comparable results, despite the fact that different methods were employed for collecting data.

b. Strength of the Association: the ratio of lung cancer rates for smokers versus non-smokers. The Committee assessed the

significance of the dose effect phenomenon, finding that risk increased with amount smoked. According to the Report:

> [A]verage smokers of cigarettes have a 9- to 10-fold risk of developing lung cancer, and heavy smokers, at least a 20-fold risk. Thus it would appear that the strength of the association between cigarette smoking and lung cancer must be judged to be high.

c. Specificity of Association. This criteria, according to the Report:

> implies the precision with which one component of an associated pair can be utilized to predict the occurrence of the other, i.e., how frequently the presence of one variable (e.g., lung cancer) will predict, in the same individual, the presence of another (e.g., cigarette smoking). In a discussion of the specificity of the relationship between any factor possibly causal in character and a disease it may produce, it must be recognized that rarely, if ever, in our biologic universe, does the presence of an agent invariably predict the occurrence of a disease. Second, but not less important, is our growing recognition that a given disease may have multiple cause.

d. Temporal Relationship of Associated Variables:

> Exposure to an agent presumed to be causal must precede, temporally, the onset of a disease which it is purported to produce. . . .

e. Coherence of the Association:

> A final criterion for the appraisal of causal significance of an association is its coherence with known facts in the natural history and biology of the disease.

VSA1601844-2232, at 2033-36 (US 64057) (1964 Surgeon General Report); Brandt WD, 105:6-111:7. No one criteria is determinative or dispositive. Public health authorities view the totality of all data under consideration. Id.

3310. Individual studies of the relationship between exposure and disease result in a determination of a relative risk, i.e., the increase or decrease in exposed people. For example, if a study of ETS exposure found a 1.44 relative risk, that would mean that individuals exposed to ETS in the study had a 44% increased risk of disease than those not exposed. Scientists determine a "confidence interval" around the relative risk figure which describes the range of the risk which they believe the study has demonstrated. Scientists commonly use a 95% confidence interval, i.e., the range of risk that they believe, with 95% certainty, the study demonstrates. Hypothetically, scientists might determine the 95% confidence interval in the example cited to range between 1.36 and 1.50. While there is no specific criteria for statistical significance (i.e., the likelihood the results of the study are not simply the product of change, but actually demonstrate a real relationship), Dr. Samet noted that often, if the lower end of the confidence interval is below one, then the results of the study may not be statistically significant. The experts in this case did not, however, state a bright-line test for statistical significance. Moreover, even if the results of a study are not statistically significant, the inquiry does not end there. Again, to determine a causal association, all of the five criteria above, together with the entire collection of data about the relationship, must be considered. See Samet TT, 9/29/04, 1077:6-22. In short, there is no one "magic evidentiary bullet" that has produced the consensus in the public health community that ETS causes diseases in non-smokers. Rather, over time, many different types of studies have, block by block, built that scientific consensus.

a. The Development of the Consensus

3311. Several years after the 1964 Surgeon General's Report concluded that active smoking caused lung cancer and other diseases in smokers, the issue of the harms of exposure to secondhand smoke began to receive public attention.

3312. In January 1971, Surgeon General Jesse Steinfeld spoke before the National Interagency Council on Smoking and Health, where he advocated adoption of indoor smoking regulations to protect nonsmokers. Steinfeld stated that: "Finally, evidence is accumulating that the nonsmoker may have untoward effects from the pollution his smoking neighbor is forcing upon him," and that "it is high time to ban smoking from all confined places such as restaurants, theaters, airplanes, trains, and buses." Dr. Steinfeld's speech generated press coverage across the country. TIMN0121541-1558 (US 65632). As a result, in 1971, the Interstate Commerce Commission mandated separate smoking sections in the rear of all interstate buses. VXA2110670-1053 at 0973 (US 63709); see 37 F.R. 5700 (Mar. 18, 1972) (ICC order issued on November 8, 1971 and effective April 17, 1972).

3313. In February 1972, Surgeon General Steinfeld issued a new report to Congress that collected and reviewed the mounting body of scientific evidence concerning the risks of passive smoking. The Surgeon General described studies showing that "'tar' and nicotine levels in sidestream smoke may be significantly higher than mainstream smoke and may be harmful to the nonsmoker." TLT0240387-0537 at 0505 (US 60597) (1972 SGR); Samet TT, 09/29/04, 1044:25-1045:13.

3314. In his 1972 Report, the Surgeon General also summarized the scientific evidence on the adverse effect of ETS on nonsmoker allergies:

> Tobacco smoke can contribute to the discomfort of many individuals. It exerts complex pharmacologic, irritative, and allergic effects, the clinical manifestations of which may be indistinguishable from one another. . . . Exposure to tobacco smoke may produce exacerbation of allergic symptoms in nonsmokers who are suffering from allergies of diverse causes.

TLT0240387-0537 at 0495 (US 60597).

3315. Chapter 8 of the 1972 Report, titled "Public Exposure to Air Pollution from Tobacco Smoke," catalogued the existing scientific findings concerning carbon monoxide and other constituents of tobacco smoke that can exacerbate existing heart disease and other conditions:

> The level of carbon monoxide attained in experiments using rooms filled with tobacco smoke has been shown to equal, and at times exceed, the legal limits for maximum air pollution permitted for ambient air quality in several localities and can also exceed the occupational Threshold Limit Values for a normal work period presently in effect in the United States as a whole. The presence of such levels indicates that the effect of exposure to carbon monoxide may on occasion, depending upon the length of exposure, be sufficient to be harmful to the health of an exposed person. This would be particularly significant for people who are already suffering from chronic bronchopulmonary disease and coronary heart disease. . . .
>
> Other components of tobacco smoke, such as particulate matter and the oxides of nitrogen, have been shown in various concentrations to adversely affect animal pulmonary and cardiac structure and function. The extent of the contributions of these substances to illnesses in humans exposed to the concentrations present in an atmosphere contaminated with tobacco smoke is not presently known.

TLT0240387-0537 at 0513 (US 60597).

3316. In 1973, the Federal Aviation Authority adopted new federal regulations making nonsmoking sections in airplanes mandatory. VXA2110670-1053 at 0973 (US 63709). See 38 Fed. Reg. 12207 at 12211.

3317. Several of the earlier studies from the 1960s had focused on measuring allergic and toxic substances in sidestream smoke -- notably particulates in the form of soot and ash, but also carbon monoxide, nitrogen oxides, and other noxious/poisonous gases. A 1967 study by Czech researcher Milan Srch, for example, examined the impact of riding in a closed car with smokers and found that levels of carbon monoxide in the blood of the nonsmokers increased by 250%. TLT0240387-0537 at 0507 (US 60597) (1972 SGR).

3318. A different methodology was used in a 1973 experiment by the U.S. Department of Transportation, which measured ambient carbon monoxide in a bus where twenty-three cigarettes were smoked, compared to a situation where three cigarettes were smoked. At the driver's seat, carbon monoxide levels rose to 33 parts per million (ppm) when twenty-three cigarettes were smoked, compared to 18 ppm when three cigarettes were smoked. 03763710-3956 at 3812 (Table 2, ref. 44) (US 34340) (1975 SGR). Both situations exceeded the Surgeon General's "maximum acceptable ambient level of 9 ppm." 03763710-3956 at 3748-3749 (ref. 4) (US 34340) (1975 SGR).

3319. More generally, scientific studies documenting the health hazards of secondhand smoke increased in both quality and quantity in the 1970s. In 1970 and 1971, German researcher Hans-Peter Harke studied nonsmokers in smoky environments where there was ventilation and found a 50% increase in carbon monoxide in the blood. 03763710-3956 at 3816 (ref. 23) (US 34340).

3320. Other studies further analyzed the chemical composition of secondhand smoke. Ulrich Hoegg, in 1972, conducted one of a number of studies at this time exploring the concentration of carbon monoxide in closed, smoke-filled environments. He found that the sidestream smoke contained a concentration of carbon monoxide nearly five times as great as that derived from mainstream smoke. 03763710-3956 at 3809-3810 (ref. 32) (US 34340).

3321. The 1975 Surgeon General's Report conducted another review of the increasing scientific evidence demonstrating that secondhand smoke causes adverse health effects, particularly in children. In Chapter 4, the Surgeon General reviewed the causation of disease in newborns: "Children of parents who smoke are more likely to have bronchitis and pneumonia during the first year of life, and this is probably at least partly due to their being exposed to cigarette smoke in the atmosphere." 03763710-3956 at 3829 (US 34340).

3322. Carbon monoxide in secondhand smoke continued to pose a health risk. When discussing research on carbon monoxide levels, the Surgeon General also stated in his 1975 Report: "[E]ven in cases where the ventilation was adequate, the measured CO levels did exceed the maximum acceptable ambient level of 9 ppm". 03763710-3956 at 3811 (US 34340) (1975 SGR). The 1975 Report also warned of effects on patients with heart disease: "Levels of carbon monoxide commonly found in cigarette smoke-filled environments have been shown to decrease the exercise tolerance of patients with angina pectoris." 03763710-3956 at 3829 (US 34340).

3323. In the late 1970s and continuing thereafter, more studies focused on hazardous components in secondhand smoke, as well as links to lung cancer, heart disease, and health effects on children. There was increasing attention given to nitrosamines, a family of carcinogens already coming under scrutiny for their presence in smoked and nitrate-cured meats. Studies by Klaus Brunneman and his colleagues in the late 1970s, for example, showed the presence of n-nitrosamines (which derive from nicotine), carbon monoxide, and other substances in sidestream smoke in even far greater concentrations than in mainstream smoke. The concentrations of these substances are five to ten times higher in sidestream smoke. VXA1604926-6020 at 5422, 5633 (US 64071) (1979

SGR). In addition, scientists had reached the important conclusion that n-nitrosamines (NNN, NNK, etc.) were carcinogenic. VXA1604926-6020 at 5631-5633, 5648-5649 (US 64071) (1979 SGR).

3324. Based on these studies and others, the Surgeon General stated in his 1979 Report: "Many of the substances, including nicotine, carbon monoxide, and ammonia, are found in much higher concentrations in sidestream smoke than in mainstream smoke. Thus, the total smoke exposure of nonsmokers is quantitatively smaller than the exposure of smokers, but the smoke nonsmokers inhale may be qualitatively richer in certain compounds than mainstream smoke. This qualitative difference in smoking exposure makes the quantification of the involuntary smoking exposure in terms of 'cigarette equivalents' confusing and inaccurate." VXA1604926-6020 at 5422-5431 (US 64071).

3325. The 1979 Report, as the 1972 and 1975 Reports before it, addressed possible health effects of passive smoking. After reviewing the scientific evidence and earlier warnings about the adverse effects of secondhand smoke, and emphasizing the effects of carbon monoxide on nonsmokers and the effects of tobacco smoke on exposed children, the Surgeon General warned:

> Tobacco smoke can be a significant source of atmospheric pollution in enclosed areas. Occasionally, under conditions of heavy smoking and poor ventilation, the maximum limit for an 8-hour work exposure to carbon monoxide (50 ppm) may be exceeded. The upper limit for CO in ambient air (9 ppm) may be exceeded even in cases where ventilation is adequate. . . .
>
> Children of parents who smoke are more likely to have bronchitis and pneumonia during the first year of life, and this may be due to their being exposed to cigarette smoke in the atmosphere.
>
> Levels of carbon monoxide which can be reached in cigarette smoke-filled environments have been shown to decrease the exercise duration required to induce angina pectoris in patients with coronary

> artery disease . . . [and to] reduce the exercise time until onset of dyspnea in patients with hypoxic chronic lung disease."

VXA1604926-6020 at 5449-5450 (US 64071); see Samet TT, 9/29/04, 1045:15-24.

3326. In 1980, following the lead of earlier researchers, James Repace of the United States Environmental Protection Agency and Alfred Lowrey of the United States Naval Research Laboratory conducted measurements of respirable particulates (hazardous particles less than 4 microns in size in the air) in cocktail lounges, restaurants, and public halls in both the presence and absence of smoking. Repace and Lowery found that short-term measurements in rooms with smokers yielded high respirable particulate concentrations, varying from 100 to 1000 micrograms per cubic meter. VXA2110670-1053 at 0826, 0852 (US 63709) (1986 SGR).

3327. James White and Herman Froeb, Scientists at the University of California Department of Physical Education, published an article in the New England Journal of Medicine that same year finding that nonsmokers working in smoky environments tend to have pulmonary functions similar to light smokers. White and Froeb calculated that in terms of long-term lung (small-airway) dysfunction, nonsmokers working in a smoky environment had about the same risk of impairment as smokers who smoked between one and ten cigarettes per day. VXA2110670-1053 at 0744 (US 63709) (1986 SGR).

3328. In 1981, the results of three major epidemiological investigations were published. First, Takeshi Hirayama, Chief of Epidemiology at Tokyo's National Cancer Centre Research Institute, published a study titled "Non-Smoking Wives of Heavy Smokers Have a Higher Risk of Lung-Cancer: A Study From Japan" in the British Medical Journal. Hirayama's study showed a significant correlation between lung cancer and ETS based on his epidemiological studies of 91,540

nonsmoking Japanese women over nearly fifteen years. Hirayama's evidence demonstrated that wives of heavy smokers had "a higher risk of developing lung cancer" than wives of light smokers and nonsmokers, and that "the effect of passive smoking was most striking in younger couples and in agricultural families (ruling out the complication of urban air pollution), relative risk reaching 460% increase, probably because of the lesser extent of the exposure to passive smoking outside the family in the case of rural residents." 2046342378-2380 (US 22963); Samet WD, 176:15-177:4; US 17172 (summary chart of Hirayama study).

3329. Second, Dimitrios Trichopoulos, working with colleagues from the University of Athens School of Medicine and the Harvard School of Public Health, published a case-control study of 51 Greek women suffering from lung cancer in the International Journal of Cancer, finding that the non-smoking wives of heavy smokers had elevated lung cancer risks. 504437867-7870 (US 50615); see also Samet WD, 177:5-23; (no bates) (US 17201) (summary chart of Trichopoulos study). Trichopoulos, like Hirayama, found that lung cancer was about twice as common among nonsmoking women whose husbands smoked as among nonsmoking women whose husbands did not smoke. 504437867-7870 (US 50615).

3330. Later in 1981, the results of a third study were also reported in the Journal of the National Cancer Institute by Lawrence Garfinkel, an epidemiologist with the American Cancer Society, in a paper titled "Time trends in lung cancer mortality among nonsmokers and a note on passive smoking." Garfinkel observed risks of lung cancer of 1.27 for women married to men who smoked less than 20 cigarettes per day, and 1.10 for women married to smokers of more than 20 cigarettes per day. However, in contrast to the observed risks found by Hirayama and Trichopoulos,

the elevated risks in the Garfinkel study were not statistically significant. TLT0242222-2551 at 2478-2479 (US 60598).

3331. All three major epidemiologic studies published in 1981 showed an increased risk of lung cancer with passive smoke exposure. For the first time, the Surgeon General in his 1982 Report warned about the link between secondhand smoke and lung cancer, stating in the Foreword:

> While the nature of this [lung cancer] association is unresolved, it does raise the concern that involuntary smoking may pose a carcinogenic risk to the nonsmoker. Any health risk resulting from involuntary smoke exposure is a serious public health concern because of the large numbers of nonsmokers in the population who are potentially exposed. Therefore, for the purpose of preventive medicine, prudence dictates that nonsmokers avoid exposure to second-hand tobacco smoke to the extent possible.

TLT0242222-2551 at 2228 (US 60598).

3332. The 1982 Report reviewed the three 1981 epidemiological studies, along with evidence of carcinogens in both mainstream and sidestream smoke, and concluded that:

> 1. Mainstream and sidestream cigarette smoke contain similar chemical constituents. . . These constituents include known carcinogens, some of which are present in higher concentrations in sidestream smoke than they are in mainstream smoke. . . .
>
> 2. In two epidemiological studies, an increased risk of lung cancer in nonsmoking wives of smoking husbands was found. In these studies, the nonsmoking wife's risk of lung cancer increased in relation to the extent of the husband's smoking. In a third study, the risk of lung cancer among nonsmoking wives of smoking husbands was also increased, but the difference was not statistically significant.
>
> 3. Although the currently available evidence is not sufficient to conclude that passive or involuntary smoking causes lung cancer in nonsmokers, the evidence does raise a concern about a possible serious public health problem.

TLT0242222-2551 at 2481 (US 60598).

3333. The 1984 Surgeon General's Report continued to review the passive smoking evidence, looking specifically at the evidence of biomarkers showing exposure to and absorption of secondhand smoke components. The Surgeon General concluded, "Cigarette smoke can make a significant, measurable contribution to the level of indoor air pollution at levels of smoking and ventilation that are common in the indoor environment." The Report added that: "Nonsmokers who report exposure to environmental tobacco smoke have higher levels of urinary cotinine, a metabolite of nicotine, than those who do not report such exposure." The Report also reviewed the scientific evidence on adverse health effects on children and reiterated the conclusion from the 1982 Report: "The children of smoking parents appear to have an increased prevalence of reported respiratory symptoms, and have an increased frequency of bronchitis and pneumonia early in life." VXA1601475-11742 at 1475 (US 64059).

3334. Studies confirming the original Hirayama/Trichopoulos findings continued to accumulate in the 1980s. See, e.g., VXA2110670-1053 at 0755-0775 (US 63709). In addition, Hirayama published follow-up studies in 1983 and 1984 finding essentially identical results to those reported in his 1981 paper. VXA2110670-1053 at 0755, 0759 (US 63709) (Reported relative risks were 1.42, 1.58, and 1.91 for nonsmokers married to smokers of 1-14 cigarettes/day, 15-19 cigarettes/day, and 20+ cigarettes/day, respectively.). Trichopoulos also published a report in 1984 updating his findings. VXA2110670-1053 at 0763 (US 63709) (Reported relative risks were 1.9 and 2.5 for women married to smokers of 1-20 cigarettes/day and 21+ cigarettes/day, respectively.)

3335. Based on the mounting evidence, the Surgeon General reached the following conclusions in his 1986 Report:

1. Involuntary smoking is a cause of disease, including lung cancer, in healthy nonsmokers;

2. The children of parents who smoke, compared with the children of nonsmoking parents have an increased frequency of a respiratory infections, increased respiratory symptoms, and slightly smaller rates of increase in lung function as the lung matures; and

3. Simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, the exposure of nonsmokers to secondhand smoke.

VXA2110670-1053 at 0673 (US 63709).

3336. That same year, 1986, two separate, independent reviews also concluded that exposure to secondhand smoke was a health hazard. First, the National Research Council (NRC) of the National Academy of Sciences issued "Environmental Tobacco Smoke, Measuring Exposures and Assessing Health Effects." The 1986 NRC Report found that known toxic and carcinogenic chemicals in mainstream smoke are also found in ETS, and that respiratory effects, such as wheezing and coughing, are increased in children of smoking parents. With respect to lung cancer, the NRC Report concluded:

> Considering the evidence as a whole, exposure to ETS increases the incidence of lung cancer in nonsmokers. . . .
>
> Since carcinogenic agents contained in ETS are inhaled by nonsmokers, in the absence of a threshold for carcinogenic effects, an increased risk of lung cancer due to ETS exposure is biologically plausible.

VXA2111054-1229 at 1066 (US 63708).

3337. Second, the International Agency for Research on Cancer (IARC) of the World Health Organization, titled "Tobacco Smoking," the latest in a series of IARC "Monographs on the

Evaluation of the Carcinogenic Risk of Chemicals to Humans," which concluded that secondhand smoke was a health hazard and a carcinogen:

> Tobacco smoke affects not only people who smoke but also people who are exposed to the combustion products of other people's tobacco. The effects produced are not necessarily the same, as the constituents of smoke may vary according to its source. Three main sources exist: (I) mainstream smoke, (ii) sidestream smoke, and (iii) smoke exhaled to the general atmosphere by smokers. . . . Examination of smoke from the different sources shows that all three types contain chemicals that are both carcinogenic and mutagenic. The amounts absorbed by passive smokers are, however, small, and effects are unlikely to be detectable unless exposure is substantial and very large numbers of people are observed. The observations on nonsmokers that have been made so far are compatible with either an increased risk from "passive" smoking or an absence of risk. Knowledge of the nature of sidestream smoke and mainstream smoke, of the materials absorbed during "passive" smoking and of the quantitative relationships between dose and effect that are commonly observed from exposure to carcinogens, however, leads to the conclusion that passive smoking gives rise to some risk of cancer.

* * *

The Report concluded:

> There is sufficient evidence that tobacco smoke is carcinogenic to humans.

VXA1600406-0824 at 0714 (US 64066).

3338. In April 1987, the General Services Administration restricted smoking in Federal buildings. 41 C.F.R. §101-20.105-3, 52 Fed. Reg. 11263 at 11269 (April 8, 1987).

3339. In 1988, the Federal Aviation Administration imposed a smoking ban on all domestic commercial flights of two hours or less. See 14 C.F.R. §121.317, 52 F.R. 12358 (April 13, 1988) (effective April 23, 1988). Subsequently in 1990, the FAA's smoking ban was extended to domestic flights of six hours or less. See 55 C.F.R. 8364 (March 7, 1990).

3340. On June 25, 1990, the EPA released for public comment its draft Risk Assessment of ETS-related lung cancer in adults. The Agency's draft risk assessment classified ETS as a Group A carcinogen and attributed approximately 3800 nonsmoker lung cancer deaths per year to ETS. 2046522986-3260 at 3002-3010 (JD 004716). The draft Risk Assessment followed the Agency's release of a draft "Compendium" of passive smoking data and information in November 1989. After a period of public review and comment, EPA issued its second draft of the ETS Risk Assessment or Review Draft in May 1992, titled "Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders. 2504201767-2298W (JD 004717).

3341. The final ETS Risk Assessment was published in December 1992. The EPA concluded: "ETS is a human lung carcinogen, responsible for approximately 3,000 lung cancer deaths annually in U.S. nonsmokers." The Risk Assessment included a meta-analysis of 31 epidemiological studies that showed a relative risk of 1.19 (for lung cancer with exposure to ETS) that was statistically significant using a 90% confidence interval.[28] TLT0780160-0684 at 0175, 0180 (US 78711).

3342. The EPA Risk Assessment recited the scientific standard and the types of evidence that EPA considered in concluding that secondhand smoke was a Group A carcinogen. Except for examining six more years of scientific endeavor, the types of evidence that were evaluated by the EPA were the same as those considered by the Surgeon General, the NRC, and IARC in 1986.

> The weight-of-evidence analysis for lung cancer hazard identification is developed in accordance with U.S. EPA's Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1986a) and established principles for evaluating epidemiological studies. The analysis

[28] "Meta-analysis is an approach for combining data from different studies" or "averaging results from different studies." Samet WD 175:18-21.

> considers animal bioassays and genotoxicity studies, as well as biological measurements of human uptake of tobacco smoke components and epidemiologic data on active and passive smoking. The availability of abundant and consistent human data at actual environmental levels of exposure to the specific agent (mixture) of concern, allows a hazard identification to be made with a high degree of certainty. The conclusive evidence of the dose-related lung carcinogenicity of MS in active smokers (Chapter 4), coupled with information on the chemical similarities of MS and ETS and evidence of ETS uptake in smokers (Chapter 3), is sufficient by itself to establish ETS as a known human lung carcinogen, or "Group A" carcinogen under U.S. EPA's carcinogen classification system. In addition, the document concludes that the overall results of 30 epidemiological studies on lung cancer and passive smoking (Chapter 5), using spousal smoking as a surrogate of ETS exposure for female never smokers, similarly justify a Group A classification.

DXA0390094-0699 at 0116-0117 (US 88654).

3343. Defendants focused their extensive public criticism of the Risk Assessment's conclusion on only one of the many types of evidence considered by EPA, namely, the epidemiological data. Bradley TT, 3/14/05, 15456:7-10, 15457:17-15459:23. EPA itself acknowledged the difficulties of making a pinpoint quantification of the disease risk from the epidemiological studies:

> For lung cancer estimates among U.S. nonsmokers, the substantial epidemiology database of ETS and lung cancer among U.S. female never-smokers was considered to provide the most appropriate information. From these U.S. epidemiological studies, a pooled relative risk estimate was calculated and used in the derivation of the population risk estimates. The large number of studies available, the generally consistent results, and the condition of actual environmental levels of exposure increase the confidence in these estimates. Even under these circumstances, however, uncertainties remain . . . . Still, given the strength of the evidence for the lung carcinogenicity of tobacco smoke and the extensive human database from actual environmental exposure levels, fewer assumptions are necessary than is usual in EPA quantitative risk assessments, and confidence in these estimates is rated medium to high.

DXA0390094-0699 at 0117-0118 (US 88654); see also DXA0390094-0699 at 0120-0122 (US 88654) (executive summary of epidemiological studies); Chapters 5 and 6 (detailed analysis of epidemiological studies). EPA's evaluation of the weight of the evidence resulted in a primary finding that "Passive smoking is causally associated with lung cancer in adults, and ETS, by the total weight of evidence, belongs in the category of compounds classified by EPA as Group A (known human) carcinogens." DXA0390094-0699 at 0120-0122 (US 88654).

3344. Defendants criticized EPA's meta-analysis of U.S. epidemiological studies, particularly its use of an "unconventional 90 percent confidence interval." Bradley TT, 3/14/05, 15456:7-10. However, Dr. Burns, who participated in the EPA Risk Assessment, testified that the EPA used a one-tailed 95% confidence interval, not a two-tailed 90% confidence interval. He also explained in detail why a one-tailed test was proper:

> The EPA did not use a 90% confidence interval. They used a traditional 95% confidence interval, but they tested for that interval only in one direction. That is, rather than testing for both the possibility that exposure to ETS increased risk and the possibility that it decreased risk, the EPA only tested for the possibility that it increased the risk. It tested for that possibility using the traditional 5% chance or a P value of 0.05. It did not test for the possibility that ETS protected those exposed from developing lung cancer at the direction of the advisory panel which made that decision based on its prior decision that the evidence established that ETS was a carcinogen. What was being tested was whether the exposure was sufficient to increase lung cancer risk, not whether the agent itself, that is cigarette smoke, had the capacity to cause lung cancer with sufficient exposure. The statement that a 90% confidence interval was used comes from the observation that if you test for a 5% probability in one direction the boundary is the same as testing for a 10% probability in two directions.

Burns WD, 67:5-15. In fact, the EPA Risk Assessment stated, "Throughout this chapter, one-tailed tests of significance ($p = 0.05$) are used . . . " DXA0390094-0699 at 0223 (US 88654).

3345. In 1997, California's EPA reviewed the evidence on passive smoking and concluded that exposure to secondhand smoke causes lung cancer, heart disease, and other adverse health effects. This report was also issued as NCI Monograph 10 and stated: "Using the most up-to-date evidence available, Cal/EPA concluded that ETS causes not only lung cancer in adults and respiratory problems in children, but also low birth weight, sudden infant death syndrome, middle ear infections, nasal sinus cancer, and heart disease morbidity and mortality." JDM1870820-1333 at 0834-0836 (US 76125); DXA0581235-1694 at 1236 (US 78716).

3346. In August 1997, President William Clinton phased in the elimination of smoking in federal facilities over a one-year period. Exec. Order 13058, 62 F.R. 43451 (August 9, 1997).

3347. In June 2002, IARC released "IARC Monograph (Vol. 83), Tobacco Smoke and Involuntary Smoking." The 2002 IARC Monograph was the product of a scientific working group of 29 experts from 12 countries who "reviewed all significant published evidence related to tobacco smoking and cancer, both active and involuntary." The Monograph concluded, "There is sufficient evidence that involuntary smoking (exposure to secondhand or 'environmental' tobacco smoke) causes lung cancer in humans. . . . Involuntary smoking (exposure to secondhand or 'environmental' tobacco smoke) is carcinogenic to humans (Group 1)." TLT0970001-1455 at 1413 (US 86746).

3348. Since the 1986 Surgeon General's Report, every major scientific review and assessment of the science on passive smoking and its health effects has independently and consistently concluded that passive smoking causes disease and other adverse health effects in adults and children. See, e.g., DXA0390094-0699 (US 88654) (1992 EPA Risk Assessment); 2065192422-2615 (US 22092) (1997 Australia Report); JDM1870820-1333 (US 76125) (1997 California EPA); VXA1600843-0981 (US 64063) (1998 UK SCOTH); VXA1600982-1000 (US 64062) (1999 WHO);

VXA1240568-1258 (US 64315) (2001 SGR) (); TLT0970001-1455 (US 86746) (2002 IARC); see also Samet WD, 198:7-8 (1992 American Heart Association).

b. The Consensus

3349. Using the five criteria adopted by the Surgeon General as a framework for evaluating causality (see ¶3309, herein), scientists in the public health community view the accumulation of data to determine if a causal relationship exists. In this case, the overwhelming accumulation of data demonstrates that ETS causes disease.

3350. Passive exposure of infants and children to tobacco smoke has adverse effects on their respiratory health, including increased risk for severe lower respiratory infections, middle ear disease (otitis media), chronic respiratory symptoms, and asthma. Passive exposure also causes a reduction in the rate of lung function growth during childhood, and is linked to Sudden Infant Death Syndrome (SIDS). Samet WD, 132:10-14 (SIDS), 209:11-15 (acute respiratory infections), 220:1-6 (middle ear disease); 211:11-16 (chronic respiratory infections), 217:1-218:2 (asthma); 213:9-15 (reduced rate of lung growth), 220:11-13 (summary statement); (no bates) (US 17304); see also 03763710-3956 at 3829 (US 34340) (1975 SGR); VXA1601456-1742 at 1665-1670 (US 64059) (1984 SGR); VXA2110670-1053 at 0720-0744 (US 63709) (1986 SGR); DXA0390094-0699 at 0320-0387 (US 88654) (1992 EPA Risk Assessment); JDM1870820-1333 at 0940-1153 (US 76125) (1997 California EPA); 2065192422-2615 at 2164-2193 (US 22092) (1997 Australia Report); VXA1600843-0981 at 0876-0877 (US 64063) (1998 UK SCOTH Report); VXA1600982-1000 (US 64062) (1999 WHO).

3351. In adults, exposure to secondhand smoke causes lung cancer. Passive exposure causes two to three percent of all lung cancer cases in the United States. Compare DXA0390094-

0699 at 0118, 0309 (US 88654) (1992 EPA Risk Assessment) (over 3,000 deaths annually) with Samet WD, 63:15-64:5 (155,000 lung cancer deaths from all causes in 2000) and DXA0390094-0699 at 218 (US 88654) (98,451 lung cancer deaths in 1979); see also (no bates) (US 17140).

3352. Exposure to secondhand smoke can also cause coronary heart disease in adults. Samet WD, 198:1-21 (coronary heart disease); (no bates) (US 17304) (summary chart of authoritative scientific conclusions); JDM1870820-1333 (US 76125) (1997 California EPA Report at Table ES.1); VXA1600843-0981 (US 64063) (1998 Report of the UK Scientific Committee on Smoking and Health); VXA1240568-1258 at 0957 (US 64315) (2001 SGR at 372).

3353. Secondhand smoke is also linked to the exacerbation of asthma, reduced lung function, and respiratory symptoms in children. Samet WD, 132:10-14 (SIDS), 209:11-15 (acute respiratory infections), 220:1-6 (middle ear disease); 211:11-16 (chronic respiratory infections), 217:19-218:2 (asthma); 213:9-15 (reduced rate of lung growth), 220:11-13 (summary statement). See generally (no bates) (US 17304) (summary of authoritative conclusions).

3354. Dr. David M. Burns testified as a Government expert witness on the science of tobacco and health, disease causation, the adverse health effects of secondhand smoke, and the effects of nicotine on smokers. Dr. Burns is a professor of medicine at the University of California San Diego's School of Medicine and a licensed physician who is board certified in pulmonary and internal medicine. He is a recipient of the Surgeon General's Medallion and has participated as an author, editor, or reviewer on 18 Surgeon General's Reports. Dr. Burns was the Senior Scientific Editor and author of the 1986 Surgeon General's Report "The Health Consequences of Involuntary Smoking." Dr. Burns has been the editor of ten National Cancer Institute monographs in its series on smoking and health. He remains an active researcher and has published over 30 peer-reviewed

articles on issues involving smoking and health. He is a member of the EPA's Indoor Air Quality Board and NCI's Advisory Committee for the COMMIT trial, which researched innovative treatment for cardiopulmonary disease. Based on his superb academic credentials, his extensive experience working on Surgeon General Reports and NCI monographs, his ongoing clinical research, as well as his demeanor and responsiveness to cross-examination, the Court fully credits his testimony. VXB3740061-0081 (US 78526).

3355. Dr. Burns testified that since the 1986 Surgeon General's Report, reviews and assessments of the science on ETS conducted by other public health authorities have reviewed available evidence and consistently concluded that ETS causes lung cancer in adults. Burns WD, 12:8-14:19, 68:12-69:2. Indeed, each Surgeon General's Report is intended to represent and, as a result of an extensive peer-review process, does represent the scientific consensus on smoking and health topics. Burns WD, 13:7-15; 14:10-19; 16:12-17. Dr. Burns' expert opinion is that:

> Multiple reviews conducted by medical and governmental organizations over the years leave no doubt that environmental tobacco causes disease in nonsmokers and is particularly dangerous for children.

Burns WD, 68:12-69:2.

3356. As noted in Section V(A), supra, Dr. Jonathan M. Samet testified as a Government expert witness on the science of smoking and health, including epidemiology, pulmonary medicine, and internal medicine. Samet TT, 9/29/04, 1026:10-18. Dr. Samet is professor and chair of the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health. He is also a licensed physician who is board certified in pulmonary and internal medicine. Dr. Samet is a member of the National Academy of Sciences' Institute of Medicine, the Board of Scientific

Counselors of the National Cancer Institute, and EPA's Clean Air Scientific Advisory Committee. He is a recipient of the Surgeon General's Medallion and has participated as an author and/or editor of nine Surgeon General's Reports, including as Consulting Scientific Editor and author for the 1986 Report. He has participated in four NCI monographs in its series on smoking and health. He chaired the 2002 review of active and passive smoking and health for the International Agency for Research on Cancer of the World Health Organization. Dr. Samet remains an active researcher and has published over 80 peer-reviewed articles on topics related to smoking and health. As with Dr. Burns, after considering Dr. Samet's superb academic credentials, his vast experience working on Surgeon General Reports and NCI monographs, his continuing practice of medicine, as well as his demeanor and responsiveness to cross-examination, the Court fully credits his testimony. VXB3740316-0364 (US 78540).

3357. Defendants have recognized Dr. Samet's expertise and conservatism regarding opinions on the causal relation between adverse health effects and passive smoking in an internal litigation document that was written in approximately August 1994:

> Dr. Samet is highly respected by his professional constituency. His scientific/medical capabilities appear to be quite sophisticated and are recognized as such by the professional societies with which he is affiliated. . . . This is probably due at least in part to his scientific conservatism regarding inference and interpretations from limited information; in most instances, Dr. Samet carefully assesses the available information prior to drawing general conclusions. . . . He seems to be a believer in the 'weight-of-the-evidence' approach and, usually, does not form conclusive opinions until the available data are sufficiently consistent and of high enough quality to warrant such opinions.

2050987891-7898 at 7891 (US 76214).

3358. The Court accepts and credits Dr. Samet's conclusions, based on his expertise, as well as the other factual findings herein, that exposure to secondhand smoke causes lung cancer and coronary heart disease in adults and a number of respiratory diseases in children. The Court also accepts and credits his conclusions, based on his expertise, as well as other factual findings herein, that the knowledge gained from active smoking, the knowledge of the components of sidestream smoke, and the absence of a "safe" level of exposure to the carcinogens and toxins found in tobacco smoke, were sufficient evidence on which to conclude that the health risk posed by exposure to secondhand smoke is significant.

> [C]igarette smoke contains carcinogens and inhaling smoke causes cancer. We have no scientific evidence to postulate that there is a level of smoke exposure that does not increase lung cancer risk. On this basis alone, including our knowledge of the nature of the carcinogens in secondhand smoke and the evidence from active smokers, I conclude that exposure to secondhand smoke poses a significant health risk to nonsmokers. The association of involuntary smoking with lung cancer derives biological plausibility from the presence of carcinogens both in secondhand smoke and in sidestream smoke, its main source, and from the lack of a documented threshold dose for respiratory carcinogens in active smokers. In my opinion, therefore, the question is not whether secondhand smoke poses a risk; rather, the question is how much of a risk does secondhand smoke pose. That question has been studied by epidemiologists and public health officials over the past three decades, and they have quite consistently shown and concluded that secondhand smoke causes disease, including lung cancer, in nonsmokers. Those findings would be expected, as secondhand smoke contains the same irritants, toxicants, and carcinogens that are found in sidestream and mainstream smoke, and biomarkers of tobacco smoke, such as cotinine and the carcinogen NNAL, show that secondhand smoke is absorbed by non-smokers.

Samet WD, 186:5-21.[29]

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[29] In response to the overwhelming weight of scientific authority finding that (continued...)

[29](...continued)
secondhand smoke is a health risk to both adults and children, Defendants called only one expert witness, a statistician, Edwin Bradley. Dr. Bradley's opinion was that "the existing epidemiologic evidence does not demonstrate a valid association between ETS exposure and either lung cancer or heart disease." Bradley WD, 1:17-19. The Court rejects that opinion and finds it not credible for all the following reasons.

Dr. Bradley is not a medical doctor, epidemiologist, biologist, or toxicologist. Bradley TT, 3/15/05, 15553:2-23. Dr. Bradley is not aware of the components of tobacco smoke or what components might be carcinogens. Id. at 15538:5-15539:19. Dr. Bradley has never published on passive smoking; in fact, he has never published on smoking and health generally. He has never been the principal investigator on any grant of any kind. (no bates) (JD 025137); Bradley TT, 03/15/05, 15564:19-15566:15, 15568:3-16. None of his analyses has ever been subjected to peer review or published. Id. at 15564:19-24. He retired from his position at the University of Alabama at Birmingham in 1997 to become a full-time professional witness and litigation consultant, predominately for the Defendants. Bradley WD, 10:4-5, 11:15-19; Bradley TT, 03/15/05, 15554:12-15555:24. He has earned over $800,000 from the tobacco industry. Bradley WD, 18:14-16.

In active smoking cases, Dr. Bradley continues to dispute the overwhelming scientific consensus that smoking causes disease, conceding only that smoking "may" cause lung cancer, heart disease and emphysema. Bradley TT, 3/15/05, 15559:3-24.

Dr. Bradley's "methodology" depended on his evaluation of statistical significance. His position was that any epidemiological study whose result is not statistically significant *must* be discarded and cannot be relied upon to determine whether an association exists. Dr. Bradley stated: "If a purported association is not statistically significant, your inquiry can end there." Bradley WD, 25:8-14, 99:1-3; Bradley TT, 03/14/05, 15426:6-9.

No scientific or medical authority shares Dr. Bradley's view. Statistical significance is not one of the Surgeon General's criteria for causality. As described below, it is a statistician's term of art, a tool to evaluate the possibility of chance in a particular study. Dr. Bradley's testimony confirms that even he recognizes this. Bradley WD, 21:19-22:15.

Moreover, Dr. Bradley admits that he stands alone in adopting and applying his test. When confronted with the conclusions of Sir Richard Peto, Sir Richard Doll, the Surgeon General, the EPA, WHO, IARC, National Research Council, and the American Heart Association, Dr. Bradley responded:

> I didn't say they were wrong. I said that my opinion is that [causation of lung cancer and CHD] has not been established. Now they have other judgments and methodologies they used to come to that

(continued...)

[29](...continued)

> conclusion. Using my methodology, I cannot establish an association.

Bradley TT, 03/15/05, 15563:3-15564:4. Dr. Bradley did not testify that he consulted with any scientific or medical authority in establishing his causal criteria or reaching his conclusions.

The foundation of Dr. Bradley's opinion was his reliance on statistical significance. As already noted, his views are not shared by any scientific or medical authority. As a term of art, statistical significance is determined by whether the given confidence interval contains the value 1.0. If the interval contains 1.0, there is the possibility that the observed association is due entirely to chance. This value for 1.0 is also called the "null hypothesis." Bradley TT, 3/14/05, 15427:16-15429:6. In determining statistical significance, no other causal evidence is evaluated.

Rothman & Greenland's MODERN EPIDEMIOLOGY, identified by Dr. Bradley himself as a leading epidemiological text, specifically rejects his position that statistical significance is a bright line test by which to accept or reject results of epidemiological studies. Bradley TT, 03/14/05, 15465:8-23. Instead Rothman & Greenland state:

> Although a single confidence interval can be . . . informative, it is subject to the misinterpretation that values inside the interval are all equally compatible with the data, and all values outside it are equally incompatible. The specific level of confidence used in constru,cting a confidence interval is arbitrary, however; values of 95% or, less often, 90% are those most frequently used. A given confidence interval is but one of an infinite number of ranges nested within one another. Points nearer the center of these ranges are more compatible with the data than points further away from the center.

(no bates at 191) (JD 003150).

Indeed, as Rothman & Greenland emphasize, the point estimate found in a study is <u>always</u> the best answer to what the effect is, even if the confidence interval includes 1. Or, stated another way, "results that are not significant may be compatible with substantial effects. Lack of [statistical] significance alone provides no evidence against such effects." (no bates at 192) (JD 003150).

Rothman & Greenland specifically use active smoking and coronary disease (CHD) and secondhand smoke and lung cancer as examples of weak associations that are recognized to be causal: "Cigarette smoking is not seriously doubted as a cause of cardiovascular disease. Another example would be passive smoking and lung cancer, a weak association that few consider to be noncausal." (no bates at 24) (JD 003150).

(continued...)

3359. One of Defendants' primary criticisms of the overwhelming data demonstrating that ETS causes disease is that each study fails to account for the possibility that bias or confounding (risk factors which are not taken into account but which may be causing the documented association between exposure and disease) is responsible for the demonstrated increased risk. For example, many of the seminal epidemiological studies on ETS used a proxy to measure exposure to ETS, e.g. being married to a smoker, rather than measure actual exposure, which would be much more complicated and invasive. As to those studies, Defendants claim the demonstrated increased risk of disease may be due to something other than exposure to ETS. It was Dr. Samet's conclusion, which the Court credits, that bias and confounding did not account for the magnitude of the excess risk of passive smoking shown in the epidemiological studies. Samet WD, 176:16-177:4, 177:9-23, 180:11-19, 187:9-188:3 ("The extent to which this bias explains the numerous reports of association between spouse smoking and lung cancer has been considered and found to be an insufficient basis for explaining the association of spouse smoking with lung cancer."); Samet WD, 188:4-189:7 ("Thus, confounding cannot explain the consistent findings by researchers over the past 25 years that secondhand smoke is associated with lung cancer."); see also Samet TT, 9/30/04, 1244:7-1245:17.

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[29](...continued)

Under questioning, Dr. Bradley admitted that his methodology was in "fundamental disagreement" with Rothman & Greenland about "how much weight . . . should be given to the factor of statistical significance." Bradley also admitted that under the recognized methodology of Rothman & Greenland, secondhand smoke studies whose confidence intervals include 1, and are therefore not statistically significant as a technical matter, are nonetheless more compatible with a positive association. Bradley TT, 3/15/05, 15548:22-15549:8, 15546:9-15.

Dr. Bradley chose to limit his analysis to epidemiological studies from the United States. In so doing, he arbitrarily eliminated all foreign studies, whether statistically significant or not, including the Hirayama and Trichopoulos studies. Bradley WD, 55:4-60:6.

3360. Moreover, the scientific community has routinely addressed the issues of bias and confounding in evaluating studies of the association between lung cancer and passive smoking. All of the major reviews of the evidence on the lung cancer and heart disease risks of ETS discuss both bias and confounding at length and take both factors into consideration. See, e.g., VXA2110670-1053 at 0787 (US 63709) ("Speculation that the positive results reported in Japan and Greece were due to cultural bias against admission of smoking by women in these more traditional societies may be discounted because positive significant findings have now been observed in the United States . . . where no comparable social stigma exists."); DXA0390094-0699 at 0243-0246, 0267-0279 (US 88654) (1992 EPA Risk Assessment) ("In summary, an examination of six non-ETS factors that may affect lung cancer risk finds none that explains the association between lung cancer and ETS exposure as observed by independent investigators across several countries that vary in social and cultural behavior, diet, and other characteristics."); TLT0970001-1455 at 1264-1266, 1269, 1409 (US 86746) (2002 IARC) ("The excess risk is of the order of 20% for women and 30% for men and remains after controlling for potential sources of bias and confounding.").

3361. Scientific authorities have recognized that studies are also subject to biases and confounding that would tend to reduce reported risks. For example, the 2002 IARC Monograph stated, "Studies of the risk for lung cancer exposure to secondhand smoke have defined the reference [or control] group as never-smoking women with husbands who are nonsmokers. However, these women although not exposed at home, may be exposed to secondhand smoke outside the home. This bias will tend to underestimate the true relative risk." TLT0970001-1455 at 1264 (US 86746) (2002 IARC).

3. Internally, Defendants Recognized That ETS is Hazardous to Nonsmokers

3362. Defendants recognized that secondhand smoke contained high concentrations of carcinogens and other harmful agents. Defendants also recognized that the research from the public health community showing that ETS caused disease was persuasive evidence of the harmful effects of secondhand smoke and could be adverse to their position. Most importantly, research funded by Defendants themselves provided evidence confirming the public health authorities' warnings that nonsmokers exposure to cigarette smoke was a health hazard.

3363. Philip Morris had recognized long before the 1980s that sidestream smoke contained known carcinogens. In 1961, scientist Helmut Wakeham presented a paper to the Research & Development Committee cataloguing known gas and particulate chemicals in cigarette smoke, including those that Wakeham acknowledged had been identified as carcinogens. According to Wakeham's analysis, 84% of cigarette smoke was sidestream smoke. 2024947172-7196 (US 22891).

3364. According to a March 30, 1980 document, a Philip Morris scientist reviewed the 1980 paper by James White and Herman Froeb, titled "Small Airway Dysfunction in Nonsmokers Chronically Exposed to Tobacco Smoke." White and Froeb concluded in their study that nonsmokers exposed to secondhand smoke suffer significant damage to airway function. The Philip Morris scientist wrote to Tom Osdene and Jim Charles, "I have reviewed the above paper and find it to be an excellent piece of work which could be very damaging to our business." The scientist suggested several ways to attack the study, but concluded, "I can find little to criticize. The authors have put together an excellent paper in my opinion." 1002641904-1907 (US 22933).

a. ETS Research at Philip Morris's Institut für Biologische Forschung (INBIFO)

3365. Since 1971, Philip Morris has wholly owned a lab in Cologne, Germany, called INBIFO, a German acronym for Institut für Biologische Forschung, or Institute for Biological Research.

3366. In a February 24, 1970 memorandum from Philip Morris CEO Joseph Cullman to his Vice President of Research & Development Helmut Wakeham, Cullman stated, "The possibility of getting answers to certain problems on a contractual basis in Europe appeals to me and I feel presents an opportunity that is relatively lacking in risk and unattractive repercussions in this country." 1000216742-6742A (US 35183).

3367. A May 7, 1970 memorandum from Philip Morris President Ross Millhiser to Cullman attached an April 15, 1970 memorandum from Wakeham recommending the INBIFO purchase. Wakeham's recommendation included the following more candid assessment:

> It has been confirmed to me . . . that TRW has definitely decided to sell INBIFO in Cologne, Germany. The asking price is about $190,000. . . .
>
> Since we have a major program at INBIFO, and since this is a locale where we might do some of the things which we are reluctant to do in this country, I recommend that we acquire INBIFO. . . Mr. Hugh Cullman and Mr. John Murphy of Philip Morris International have offered their services in acquiring INBIFO so that its ownership would be achieved through some Swiss subsidiary of FTR [the Philip Morris subsidiary in Neuchatel, Switzerland]. In this way, our involvement would not be unduly exposed. On the other hand, International has stated a complete disinterest in operating INBIFO, and wish to leave that completely to the [Philip Morris] Research Department [in Richmond].

2012580900-0906 at 0902-0903 (US 89328).

3368. Wakeham's April 15, 1970 memorandum also included a chart listing the following advantages of owning INBIFO over simply contracting out the research.

> 1. Better security - research projects and research results are more likely to be kept confidential.
>
> * * *
>
> 7. Location near major airport in Germany makes access easy and obviates the necessity of doing controversial biological work in United States.
>
> * * *
>
> 10. Records of work in Germany cannot readily be subpoenaed for use in the United States.

2012580900-0906 at 0904 (US 89328).

3369. In July, 1971, Philip Morris purchased INBIFO through FTR as Wakeman suggested. 2023226100-6118 (US 89415).

3370. In December 1972, Philip Morris hired Ragnar Rylander to serve as the company's intermediary and "representative at INBIFO." 2081912524-2525 (US 89358). Rylander reported to Philip Morris Research & Development in Richmond, with whom his contract was signed, while FTR approved and paid INBIFO bills. 2501368665-8668 (US 89327). A December 9, 1986 report by Reynolds scientist Charles Green recorded the following from a conversation with Thomas Osdene, Director of Research at Philip Morris, during a 14-hour flight to Tokyo: "Dr. Osdene is in charge of the INBIFO laboratory in Cologne. The managing director, $150K/year, reports directly to Osdene." 505491406-1410 at 1406 (US 50835).

3371. Philip Morris's Bob Seligman advised Philip Morris Europe's Max Hausermann in a letter dated March 31, 1977:

> As you were copied, you know that Helmut [Gaisch, of FTR] was requesting that we send samples directly to INBIFO. This suggested procedure is in direct conflict with our communications from the New York office. We have gone to great pains to eliminate any written contact with INBIFO, and I would like to maintain this structure.
>
> Therefore, I am advising Jerry Osmalov to continue sending samples to Neuchatel [i.e., FTR] for transshipment to INBIFO. If this is unacceptable to you, perhaps we should consider a "dummy" mailing address in Köln [Cologne] for the receipt of samples.

2000512794-2795 (US 20295).

3372. Repeated experiments carried out by Philip Morris at INBIFO in the early 1980s were suggestive of adverse health effects associated with ETS. In a January 26, 1982 letter to Tom Osdene in Richmond, Rylander reported the following:

> Last week I visited with INBIFO. The results from the first side stream smoke experiment are available and confirm the previous observation that this smoke on equal TPM is more irritating and/or toxic**.** The histology demonstrates more advanced lesions in the nasal epithelium and hyper and metaplasia in areas which are not affected by main stream smoke. The extent of cornification observed in these animals has never been seen before.

1000081782-1783 (US 89174).

3373. Rylander had previously informed Shook, Hardy & Bacon attorney Don Hoel in August 1981 that he was not "in a position to give ‘environmental tobacco smoke’ a clean bill of health." 680542957-2962 at 2958 (US 85718).

3374. Rylander also advised Osdene in his January 1982 letter that INBIFO was planning a series of new sidestream smoke studies utilizing two dose levels. 1000081782-1783 (US 89174).

3375. From the early 1980s onward, INBIFO ETS studies began generating results “strongly suggesting” increased harm incurred from passive smoke. A July 29, 1982 INBIFO report, titled

"21-Day Smoke Inhalation Study with Mainstream and Sidestream Cigarette Smoke of Standard Reference Cigarette Type 2R1 on Rats" recorded the following in the "Results" section:

- The experiments used ETS-like smoke, namely "[d]iluted mainstream and sidestream smoke from puffed and nonpuffed cigarettes."

- A number of "gas/vapor phase components were distinctly higher in diluted sidestream smoke than in diluted mainstream smoke: carbon monoxide (4 times), carbon dioxide (3 to 4 times), nitric oxide (6 to 7 times) and acetaldehyde (2 to 3 times)."

- By and large, the rats of the sidestream groups reacted more vigorously than those of the mainstream group. All rats showed general signs of exhaustion after the end of the daily exposure. In contrast to the rats of the mainstream group, which recovered by the next morning, the rats of the sidestream group continued to show shaggy fur and some pronounced respiratory symptoms characterized by whistling and rattling sounds.

- While the rats in the control group increased their body weight approximately 50% and those of the mainstream group increased their body weight 30%, the rats in the sidestream group "showed a decrease to approximately 80% of their initial body weight."

- Rats in the sidestream group also showed a decrease in water consumption and body temperature as compared to the control and mainstream groups.

- All of the examined sidestream-exposed rats showed slight to severe atrophic or necrotic lesions of the olfactory epithelium, in some cases together with reactive inflammation. The ciliated epithelium of all sidestream-exposed rats showed squamous-cell metaplasia, with cornification in some cases.

- Exposure to diluted side- and mainstream produced histological changes in the nasal cavity and larynx.

- Generally spoken, sidestream exposure induced more frequent and more severe epithelial lesions in the olfactory and ciliated epithelium of the nasal cavity than mainstream of equal TPM concentration.

- Sidestream smoke exposure invoked atrophy of the olfactory and metaplasia of the ciliated epithelium.

2029190329-0354 at 0335-0340 (US 89331).

3376. INBIFO scientists drew the following conclusions in their July 29, 1982 report of the inhalation study:

> The systemic toxicity of mainstream and sidestream smoke impaired the body temperature, food and water uptake, body weight development and increased mortality . . . . Puffed and nonpuffed sidestream caused almost identical reactions, but the reaction to mainstream was much less pronounced than to sidestream exposure.
>
> If one extrapolates from the experience of previous mainstream inhalation studies, the mainstream TPM concentration of this study would have to be increased by a factor of 3 to produce similar strong reactions [to those] seen with sidestream exposure in this study.

2029190329-0354 at 0344 (US 89331).

3377. The introductory section of the July 29, 1982 report, written by Ragnar Rylander, acknowledged that sidestream and mainstream cigarette smoke were "qualitatively similar" and that sidestream smoke condensate had "higher tumorigenic activity than mainstream condensate" in previous INBIFO skin-painting studies. 2029190329-0354 at 0331 (US 89331).

3378. Smoke condensate experiments at INBIFO continued to confirm that sidestream smoke was "more active" than mainstream smoke. In a July 6, 1984 INBIFO report, titled "Comparison of 2R1 Mainstream and Sidestream Dry Impaction Cigarette Smoke Condensates, Base

Fractions, and Neutral Fractions Activities in the Salmonella/Microsome Assay," scientists concluded that:

> In [Salmonella strain] TA98, the specific activity of MS [mainstream] and SS [sidestream] CSC [cigarette smoke condensate] suggest that MS CSC may be slightly more active than SS CSC. The reverse was true for total activity, i.e., MS CSC was less active than SS CSC. In [Salmonella strain] TA100, MS CSC specific activity appears to be less than or equal to SS CSC specific activity; however, SS CSC total activity is greater that MS CSC total activity.

2501656104-6125 at 6123 (US 89335).

3379. Another study was carried out at INBIFO in 1985 to identify the "components causing biological effects of sidestream smoke." According to an INBIFO memorandum, the study results were presented to Philip Morris Incorporated scientist Robert Pages in November 1985 and included the following:

> The last report gave you a survey of the irritative effects caused by inhalation of sidestream smoke (SS), such as reduced body weight development, histological changes in the respiratory tract, as well as biochemical changes.
>
> In addition to the listed effects, SS causes a stimulation of the nerves. . . . Furthermore, this nervous stimulation causes a reduced CO2 [carbon dioxide] exhalation and a decrease of body temperature. The observed irritative effects of SS are relevant to humans exposed to SS.
>
> In this context the most important question is: which SS-components are responsible for the irritative (biological) effects of SS. . . .
>
> Our 1st starting point to clarify these questions came from previous inhalation studies which showed that the irritative activity of SS was nearly 4 times higher than that of mainstream smoke (MS), based on body weight development and histological changes in the nasal mucosa and the larynx. The comparison of the smoke composition of MS with SS shows that in SS the concentrations of aldehydes and

> ammonia are much higher than in MS. Therefore, it was supposed that these components are responsible for the irritative effects of SS.

2028986635-6654 at 6635-6636 (US 89330).

3380. Later in the presentation, Pages was told of the results of examinations of animals exposed to sidestream smoke. These results included atrophy of the olfactory epithelium (nasal cavity), "reserve cell hyperplasia of the respiratory epithelium," "squamous metaplasia of the respiratory epithelium," and hyperplasia and squamous metaplasia in the larynx/vocal cords. Pages was also told that these effects were "concentration-dependent." 2028986635-6654 at 6646, 6648 (US 89330).

3381. A 110-page report, titled "ETS-Related INBIFO Projects, Status: Dec. 94" is a summary of ETS-related work at INBIFO throughout the 1980s and 1990s, listing project names, dates of commission, a summary of the main results of each study, and an indication of whether the study was ever published. Very few INBIFO ETS studies were ever published. 2057077801-7911 (US 89333).

3382. The following is a small sample of the ETS-related inhalation, genotoxicity, and skin-painting projects summarized in the December 1994 INBIFO report. 2057077801-77911 (US 89333). According to the report, none of these projects were ever published.

Project Number	**Date**	**Objective**	**Main Results**
5223 (page 7808)	7/22/91	Analyze fresh and room-aged sidestream smoke for polycyclic aromatic hydrocarbons (PAH), nitrosamines, and heavy metals).	"Data on cadmium and nitrosamines were generated. 24-h profile of several components in a smoke-filled room during ventilation showed persistence of formaldehyde, ammonia, and nicotine in the room."

5228 (page 7809)	8/02/91	Study of persistence of nicotine and n-nitrosamines absorbed on materials.	"TSNA [tobacco specific nitrosamines] and nicotine are still detectable after 50 days.
2126 (page 7811)	7/22/85	Determination of mainstream and sidestream smoke PAH in condensate from test cigarettes.	"PAH concentrations in the condensates similar for both cigarette types and both kinds of condensates (MS/SS); highest concentration found for phenanthrene."
3199 (page 7832)	10/13/83	Comparison of the cytotoxicity in human lung cells using mainstream and sidestream smoke from reference cigarette.	Sidestream smoke found approximately three times more cytotoxic than mainstream smoke.
3113 (page 7868)	11/27/84	Inhalation study of effects of diluted mainstream and sidestream smoke on the rat respiratory tract.	"In comparison to MS, SS caused a greater reduction in body weight gain and in weight of thymus and spleen as well as more pronounced histopathological changes in the nose and lungs. Only in the SS group atrophy and ulceration of the nasal olfactory epithelium were seen. Equally strong changes for MS and SS were seen in the trachea, and for SS less pronounced changes than for MS in the larynx."
3069 (page 7889)	11/04/82	Inhalation study of effects of diluted mainstream and sidestream smoke on the rat respiratory tract.	"Lung: Foam cells in alveoli, hyperplasia of bronchial epithelium; numerically higher incidence in SS-exposed rats. Larynx: Increased thickness of laryngeal epithelium, MS: Squamous metaplasia without or with cornification; SS: basal-cell hyperplasia; changes in MS-exposed rats stronger than in SS-exposed rats."
3068 (page 7897)	10/18/82	Tumorogenicity study of mainstream and sidestream smoke condensate on mice.	"Sidestream condensate showed a 2- to 6-fold higher tumorigenicity than mainstream condensate."

3070 (page 7898)	11/10/82	Acute toxicity (mortality) study of mainstream and sidestream condensate on mice.	"(SS = More Toxic)."

3383. Philip Morris also knew that sidestream smoke effects were produced at very low concentrations. A 1994 written "short survey" of INBIFO ETS-related inhalation studies research, sent from INBIFO to Philip Morris, stated that INBIFO inhalation research showed:

> In general, the biological activity of SS (e.g., respiratory tract irritancy and mouse skin tumorigenicity as well as in vitro cytotoxicity, mutagenicity, and clastogenicity) has been found to match or to slightly exceed that of mainstream smoke. . . .
>
> In order to allow extrapolations to possible environmental concentrations of SS, lowest observable effect concentrations for various biological responses to fresh SS have been established in subchronic inhalation studies on rats and hamsters. . . .
>
> Morphological changes (hyperplasia and metaplasia of airway epithelia) were detected in the rat larynx down to concentrations of 1 ug TPM/l. In the rat nose, hyperplasia was seen down to 6 ug TPM/l. . . . Biochemical changes, i.e., the induction of the aryl hydrocarbon monoxygenase, was observed down to 0.5 ug TPM/l in the lungs. . . .
>
> Comparing the fresh and room-aged SS, the respiratory tract irritancy as well as the enzyme induction is mainly dependent on the total particulate matter concentration of the smoke regardless of the aging-related changes in the chemical composition.

2029221119-1120 (US 89417).

3384. In an undated 1984 document, Director of Science & Technology Tom Osdene listed the following steps to be taken with respect to INBIFO documents:

1. Ship all documents to Cologne by Tom.

2. Keep in Cologne.

3. OK to phone and telex (these will be destroyed) . . . .

5. We will monitor in person every 2 - 3 months.

6. If important letters or documents have to be sent, please send to home - I will act on them + destroy.

7. Advise Rylander - when writing re INBIFO.

1000130803 (US 34424).

3385. In May 1986, Philip Morris barred INBIFO scientists from presenting findings of a sidestream and mainstream smoke condensate study and an inhalation study to an upcoming symposium in Essen, Germany. In a May 9, 1986 telex to INBIFO director Ulrich Hackenberg, Dr. Pages advised the following:

> We have not yet reached a conclusion on what (if anything) could be presented. I should have something definitive to say by this time next week. . . .
>
> We are having real problems with the presentation of the inhalation methodology in light of the fact that we almost assuredly [will] not authorize you to present any inhalation results. Thus the idea occurred to try to focus on SS CSC [sidestream cigarette smoke condensate] with an emphasis on comparison to MS SCS [mainstream cigarette smoke condensate]. Strictly in vitro results and/or analytical chemistry. That type of thinking prompts the above questions. This idea would not allow you to illustrate the INBIFO specialty, but it might be better than not presenting anything.

2501459834 (US 87035).

3386. In a memorandum dated May 20, 1986, Tom Osdene requested approval from management for the INBIFO scientists to present their smoke condensate results at the Essen symposium on ETS. The smoke inhalation studies were no longer under consideration in Osdene's

memorandum. Osdene wrote the following in support of what he knew was still a controversial request:

> The principal reasons for allowing INBIFO to participate in the symposium are:
>
> 1) I have discussed the three papers with Don Hoel of Shook, Hardy & Bacon and he feels that we would not be assuming a major risk in having this material presented by INBIFO.
>
> 2) The presentation of these papers would be helpful to us on some aspects of the ETS issue. (Hoel also concurs with this view.)
>
> 4) The presentations would be identified as coming only from INBIFO; there would be no mention of PM whatsoever. . .
>
> 6) The subject matter of the presentations would be restricted solely to the collection, chemical analysis, and in vitro testing of sidestream (SS) cigarette smoke condensate (CSC) from the University of Kentucky Reference Research Cigarette. . . .

2001225907-5911 (US 87033).

3387. Philip Morris shared the adverse results of some of its INBIFO studies with other Defendants. B&W's Gil Esterle recorded the following at the May 22, 1986 meeting of the Tobacco Institute ETS Advisory Group:

> Toxicity Testing. At the April meeting, Dr. Osdene (PM) requested delaying further discussions on the Deskin (RJR) proposal until May. Dr. Pages (PM) now reports that PM has had a toxicity project on ETS going on for three years in a Cologne, Germany laboratory. . . . Animals are whole body exposed to sidestream smoke greatly diluted with air. Exposure is carried out in a chamber in which diluted sidestream smoke is continuously fed while exhausting an equal volume of chamber air. Both rats and hamsters are being exposed. Animals are exposed seven hours/day for 21 consecutive days. . . .
>
> At higher concentrations of particulate, 20 ug/m3 and 60 ug/m3, histological changes occur. The changes at 60 ug/m3 are greater than

> at 20 ug/m3. Changes are reversible with cessation of exposure. PM estimates that the diluted sidestream is about three times as active as mainstream smoke at some concentrations of particulate.

655042500-2503 at 2502 (US 22921*); 505347180-7186 at 7185 (US 85779); 504933596-3702 (US 24219).

3388. Philip Morris President and CEO Frank Resnik barred the INBIFO presentations. Dr. Pages wrote Dr. Hackenberg a May 28, 1986 telex informing him of the news:

> Regret to inform you that we were unsuccessful in obtaining approval for INBIFO to present any of the proposed abstracts at the Norpoth Symposium. . . .
>
> I want you to know that Tom [Osdene] personally discussed the abstracts with both Serrano and Resnik. We even wrote a short memo to put forth all of the reasons why it would be helpful and beneficial to have the papers presented. . . . Resnik was hesitant: he said he wanted to run it by the New York lawyers (Fred Newman). Newman said no. Resnik decided to go along with Newman and that was the end of that.

2501459823-9823 (US 87034).

3389. A December 2, 1993 memorandum written by Shook, Hardy & Bacon attorney Lee Stanford recorded a conversation with fellow Shook, Hardy attorney Tony Andrade:

> On November 30, 1993, I talked with Tony Andrade about records at INBIFO. . . . According to Tony, final reports on PM USA product research are sent to Richmond for a review and are then returned to INBIFO. Supporting data and documents are kept at INBIFO.

2043725390-5391 (US 20449).

3390. In a February, 1994 presentation by Franz Adlkofer, director of VdC (Verband, or German manufacturers association) to an industry sidestream smoke meeting attended by representatives of Philip Morris, Reynolds, and BATCo, he said that his ninety-day study finding

both dysplasia and metaplasia in exposed rats was not permitted to be extended to a longer-term study: "Dr. Adlkofer then told us that he wanted to do a two-year study in rats, but the industry would not support the study because they were afraid of the results." 508793116-3129 at 3117 (US 88577).

3391. A 1990 Philip Morris memorandum written by Philip Morris Companies General Counsel Chuck Wall estimated that "INBIFO's work comes approximately 80% from PM-Richmond and 20% from FTR." 2023223372-3383 at 3383 (US 22337).

3392. Rylander himself wrote in a June 23, 1997 letter to Philip Morris's Richard Carchman: "I have never been involved with any Philip Morris executive in meetings or contacts with outside persons, to retain as far as possible the image of an independent scientist." 2063590609-0610 (US 85731).

3393. The November 1994 INBIFO Status Report reveals that the few studies that produced industry-favorable results were generally published. For example, the one published INBIFO short-term inhalation study found that all but one of the observed effects of ETS on the rat respiratory tract reversed completely during the post-inhalation period. Two studies finding that nicotine and particulate matter in fresh sidestream smoke were significantly reduced when the smoke aged and made contact with certain surfaces also resulted in a publication. 2057077801-7911 at 7810, 7884, 7908 (US 89333). Of the 106 studies identified in the 1994 Status Report, only four were published. Id.

3394. According to one record of this May 22, 1986 meeting of the TI ETS Advisory Group, Covington & Burling attorney John Rupp told the Advisory Group that ETS was the "Achilles heel of the industry." TIBU28843-8845 at 8845 (US 75440).

b. Defendants' Recognition of the Validity of the Hirayama Study

3395. As noted earlier, in January 1981, Takeshi Hirayama published his epidemiological study in the British Medical Journal showing a significant correlation between lung cancer and secondhand smoke based on his studies of 91,540 nonsmoking Japanese women. Hirayama showed that wives of heavy smokers had "a higher risk of developing lung cancer" and that "the effect of passive smoking was most striking in younger couples in agricultural families (ruling out the complication of urban air pollution), relative risk reaching 4.6, probably because of the lesser extent of the exposure to passive smoking outside the family in the case of rural residents." 2046342378-2380 (US 22963).

3396. On or about June 14, 1981, the Tobacco Institute issued a press release claiming that professor Nathan Mantel had found a mathematical error in the Hirayama study that invalidated its conclusions. 03739919-9920 (US 22958). The Tobacco Institute media initiatives to discredit Hirayama -- including a press kit, press releases, and several letters from Tobacco Institute consultants, Tsokos and Kastenbaum -- were the subject of at least one Committee of Counsel meeting on June 24, 1981. ATX9275490311-0324 at 0316 (US 36232). A lengthy Tobacco Institute document summarizing the June/July initiatives reveals that Defendants' statisticians found a statistical error in the Hirayama study, that the Tobacco Institute and Burson-Marsteller publicized the error to the press, and that the error received widespread coverage in the national media. TITX0027702-7826 at 7707, 7803, 7814 (US 22332).

3397. In August 1981, the Tobacco Institute published an advertisement proclaiming: "Here's what's now being said about tobacco smoke in the air. . . . Scientist disputes findings of cancer risk to nonsmokers." In the ad, the Tobacco Institute declared that newspapers were reporting

that "several eminent biostatisticians" had found a "statistical error" in Hirayama's calculations that raised "serious questions about the study." TIMN0019293-9293 (US 21575).

3398. The Tobacco Institute knew, however, that the Hirayama data was correct and that the statistical error did not exist. In June 1981, industry consultant Peter Lee reviewed Hirayama's data and the Tobacco Institute statisticians' allegations. Lee concluded that the Tobacco Institute's claim of a statistical error in the study was "wrong and that Hirayama was right." 501622432-2433 (US 88150). RJR's Frank Colby wrote to general counsel Sam Witt on June 12, 1981 that Lee's conduct constituted an "act of extreme disloyalty." 501622432-2433 (US 88150).

3399. In early June 1981, both Lee and Mantel made it clear in writing to the Tobacco Institute that any error, even if an error existed, did not invalidate Hirayama's results. Lee wrote in a June 10, 1981 telex that:

> Mantel's suspicions . . . are in my opinion definitely unfounded.
>
> Even if they were correct, T.I. should not quote Mantel as saying there is an arithmetical error which invalidates the claim of a high level of significance . . . I have talked to Mantel and he feels it probable that the best analysis methods would not significantly alter Hirayama's conclusions. . . .
>
> Please show this to T.I. and try to persuade them not to do the press release. If it is released and it is proved that Hirayama was not in error, they will be in danger of implicitly agreeing passive smoking causes lung cancer.

03029460-9461 (US 22830*).

3400. By July 15, 1981, Franz Adlkofer, Scientific Director of the German Verband, had reviewed Hirayama's data and, after discussions with Lee, also expressed internally his opinion that the Japanese study was accurate and that the Tobacco Institute had issued its press release despite

knowing that the study was accurate. B&W in-house counsel Kendrick Wells summarized the events to Ernie Pepples, Senior Vice President and General Counsel at B&W, in a July 24, 1981 memorandum as follows:

> Dr. Adlkofer . . . has committed himself to the position that Lee and Hirayama are correct and Mantel and TI are wrong. Adlkofer called Frank Colby at Reynolds and said that Germany has received new data from Japan which confirms the Hirayama work. Adlkofer and Lee and another German associate were all asked to review Hirayama's work and did not find the error picked up by Kastenbaum. They believe that Hirayama is a good scientist and that his nonsmoking wives publication was correct. . . .
>
> [Adlkofer] replied with a strong statement that Hirayama was correct, that the TI knew it and that TI published its statement about Hirayama knowing that the work was correct."

2050987570-7571 at 7571 (US 22318); see also Rupp TT, 10/28/04, 4343:1-4346:6.

3401. The Tobacco Institute published its press release with the claim of a statistical error as part of a campaign that reached an estimated 56.7 million people by July 31, 1981. TITX0027702-7826 at 7707 (US 22332). In an advertising campaign that ran through October 1981, the Tobacco Institute continued to insist the study was flawed. TIMN0073499-3499 (US 77049). Reynolds was running a similar ad as late as 1984. 504100136-0136 (US 50882).

c. Other Internal Research and Statements Revealing Defendants' Knowledge of the Health Risks of Passive Smoking

3402. While Philip Morris used INBIFO to carry out the bulk of its ETS research, the company also conducted a limited amount of internal research suggestive of adverse ETS health effects at its FTR affiliate in Neuchatel, Switzerland. 2057077653-7661 (US 66809). According to former Philip Morris scientist William Farone, Philip Morris initiated a study in 1985 code-named "Project Tasso" to determine the levels of tobacco-specific nitrosamines such as NNK (nicotine-

derived nitrosaminoketone) in sidestream smoke. Farone WD, 175:17-19. Tobacco-specific nitrosamines are known toxic substances generated by the smoking of tobacco, and are known components of secondhand smoke. Farone WD, 175:17-176:17; (US 17108); Samet WD, 171:15-172:16.

3403. The objective of Project Tasso was:

> OBJECTIVE
>
> Previous test chamber experiments had shown that NNK concentration in SS increased after smoking and reached a maximum concentration about four hours after smoking. The objective of project TASSO is to investigate the mechanism of NNK formation, to determine the reason for the increase of NNK concentration in SS with time and to attempt to suppress NNK formation by cigarette filler or paper modifications.

2028638794-8803 at 8794 (US 37424); 2024770266-0267 (US 37155).

3404. Researchers wrote in the "Project TASSO" Intermediate Report dated November 24, 1986, that: "Commercial cigarettes present a wide range of NNK formation in aging SS. . . . Because these compounds [TSNAs] could pose a health risk, reducing their levels in cigarette smoke is therefore a primary goal." 2026209210-9269 at 9212-9213 (US 89557).

3405. In the 1980s, Philip Morris also carried out a study, code-named "Project POLDI," to determine the levels of toxic compounds in sidestream smoke. A 1985 interim report on Project POLDI recorded that the levels of NNK "rose sharply" in the secondhand smoke until four hours after smoking; the levels of other TSNAs rose as well. 2028639730-9731 (US 37427).

3406. Philip Morris studied the concentrations of numerous compounds in ETS at its Neuchatel facility. A report, titled "Quantitative Evaluation of Cigarette Sidestream Smoke Components Under Controlled Experimental Conditions," summarized the measurements of known

harmful components as a function of time and number of cigarettes smoked. Researchers generated sidestream smoke in ambient air, then measured nicotine, carbon monoxide, ammonia, cyanide, and nitrogen oxides over time in an experimental chamber. 2029269056-9126 (US 20432).

3407. BATCo also conducted internal research on the adverse health effects of ETS. The summary/minutes of the 1982 BAT Group Research Conference in Montebello, Canada recorded the following with respect to ETS:

> (a) We must get hard data both to help counter anti-smoking attacks, and to support the design of future products . . . .
>
> (b) We should keep within BAT:
>
> I) animal results on sidestream activity
>
> ii) thoughts on the biological activity of sidestream
>
> iii) research findings on the consumer annoyance aspects of environmental smoke -- since these have potential commercial value.

100448162-8184 at 8170 (US 34661).

3408. Similarly, B&W recognized the scientific evidence demonstrating that passive smoking is harmful to nonsmokers. In a November 16, 1982 memorandum from B&W in-house counsel Bob Sachs to company scientists and lawyers, Sachs questioned the role of the Tobacco Institute in affecting the "public smoking" issue given "the overwhelming weight of scientific literature pointing toward [the] toxicity" of tobacco smoke. 680546750-6752 (US 21001).

3409. R.J. Reynolds also conducted internal research which suggested that ETS is harmful. In 1988, Reynolds partially funded a comprehensive assessment of the health risks of passive smoking. The assessment, conducted by a working group led by Professor Walter Spitzer at the

University of Toronto, was published in 1990 in Clinical and Investigative Medicine under the title "Links Between Passive Smoking and Disease: A Best-Evidence Synthesis." 515251440-1465 (US 92103).

3410. The 1990 Spitzer study funded by Reynolds concluded that "[t]he weight of the evidence is compatible with a positive association between residential exposure to environmental tobacco smoke (primarily from spousal smoking) and the risk of lung cancer." The study also found links between passive smoking and respiratory illness and reduced lung function in both adults and children, as well as childhood hospitalization and asthma in children. 515251440-1465 at 1441 (US 92103).

3411. Reynolds in-house counsel Mary Ward recognized the impact of the Canadian study even before it was published. Ward wrote to fellow counsel in a memorandum dated March 15, 1989, that "this document can be very damaging when we are confronted with it in a legislative or litigation context." She also recommended that Reynolds not fund the publication of the final study. 515541733-1736 at 1733, 1736 (US 51950).

3412. On July 6, 1994, the Majority Staff of the Health and Environment Subcommittee of the Committee on Energy and Commerce in the United States House of Representatives sent members of Defendants' CIAR Science Advisory Board (SAB) a survey on the health effects of passive smoking. Six of the seven SAB members who responded agreed that ETS "presents a serious and substantial public health threat to children" and five of the seven members agreed that ETS is "a human lung carcinogen." 2044436543-6544 (US 21991).

4. Internally, Defendants Expressed Concern that the Mounting Evidence on ETS Posed a Grave Threat to Their Industry

3413. On January 31, 1974, at the 1974 Tobacco Institute's annual meeting in New York, Tobacco Institute president Horace Kornegay described the gradual acceleration of indoor air restrictions, stating that these restrictions not only impacted sales but also "could lead to the virtual elimination of cigarette smoking." TIMN0067732-7755 at 7734 (US 22047).

3414. Two years later, BAT held its Chairman's Conference in Hot Springs, Virginia. The conference gathered BAT executives from its subsidiaries around the world, including BATCo and Brown & Williamson. At this June 1976 conference, there was "unanimous agreement" that the social unacceptability issue resulting from evidence that cigarette smoke harmed nonsmokers "constitutes 'a more serious threat to the industry's future than any other aspect of the attack on smoking.'" 2025025481-5494 at 5481 (US 37220). The minutes of the Chairman's Conference recorded: "It had been estimated that the issue of passive smoking had already lost the industry cigarette sales of 1,000 million a year" in Germany alone. 680040485-0502 at 0489 (US 25437); 110069862-9862 (US 88580).

3415. BATCo understood that the passive smoking issue not only risked an increasing number of smoking restrictions, but even threatened to reduce the number of starting smokers. Without such starting smokers, the industry could not survive. Papers from Australia, the United States, Canada, and Germany presented at the 1976 Hot Springs conference emphasized that the threat of "social unacceptability" emanating from the health risks to nonsmokers "threatens to undermine smokers' confidence and to dissuade people not to take up the habit." 2025025457-5460 at 5457 (US 75152).

3416. In preparation for the 1976 Chairman's Conference, former BATCo chairman T.J.N. Foley described the relationship between the health effects of passive smoking and the "social unacceptability" issue in these terms:

> Social Unacceptability of Smoking
>
> The subject is inseparably linked with passive smoking and presents a major danger and challenge to the industry. The danger exists in the clearly evident snowballing effect of the tactics aimed at making smoking a distasteful practice. The challenge lies in the industry's need to devise a counter-campaign.

110069860-9875 at 9863 (US 34951*).

3417. In 1978, the Roper Organization conducted a study for the industry, titled "A Study of Public Attitudes Toward Cigarette Smoking and the Tobacco Industry in 1978." Roper advised that:

> What the smoker does to himself may be his business, but what the smoker does to the non-smoker is quite a different matter. . . . This we see as the most dangerous development to the viability of the tobacco industry that has yet occurred. While there is little sentiment for an out-right ban on smoking in public gathering places, there is already majority sentiment for providing separate facilities for smokers and non-smokers. As the anti-smoking forces succeed in their efforts to convince non-smokers that their health is at stake too, the pressure for segregated facilities will change from a ripple to a tide as we see it.

TITX0000963-1015 at 0968 (US 88582).

3418. In January 1980, R. J. Reynolds scientist Frank Colby wrote in a draft memorandum addressing the activities of the precursor to the Hoel Committee, "The public smoking issue is, in my judgment, the issue most threatening to the Industry, not only in the United States and Canada, but also in Western Europe and elsewhere." The threat was to sales and profits:

> The "public smoking" activities of the anti-smoking forces do not only tarnish the "image" of the Industry, but they also represent a very substantive threat to sales. A cigarette which a smoker is prevented from smoking because of restrictions to smoke in public areas, is a cigarette not smoked.

502668016-8018 at 8016, 8018 (US 75399).

3419. In a June 29, 1982 letter from Reynolds CEO Ed Horrigan to Lorillard Executive Vice President of Sales Robert Ave, Horrigan stated outright, "We all know that probably the biggest threat to our industry is the issue of passive smoking." 93443843 (US 32289).

3420. In September 1986, William Kloepfer, Senior Vice President of Tobacco Institute Public Relations, acknowledged that ETS "is our biggest public/political issue and deserves top-level navigation." TI10191292-1293 (US 62270).

3421. In 1987, a Philip Morris strategic planning memorandum on "social acceptability" stated that "the effects of ETS on others is now the most powerful anti-smoking weapon being employed against the industry." 2021553739-3926 at 3901-3905 (US 36767).

3422. The BATCo October 23, 1986 "ETS Action Plan" stated: "The world tobacco industry sees the ETS issue as the most serious threat to our whole business." 100993158-3165 at 3158 (US 89556).

3423. In June 1987, Philip Morris Companies held its conference called "Operation Downunder," described in detail in Section V(G)(6)(a)((3)), infra, to formulate a worldwide strategy on passive smoking. Covington & Burling's John Rupp told the group that the industry was "in deep shit" as a result of the 1986 reports and the industry's "serious credibility problem." 2021502102-2134 at 2105-2106 (US 20346).

3424. The following typed notes (author unknown) were taken at the June 1987 "Downunder" meeting:

> Business Trends
>
> -- 2% annual decline in sales in U.S. . .
>
> -- Decline in U.S. not explained by price increase . . .
>
> In U.S., ETS issue will have devastating effect on sales . . .
>
> We are just at beginning of impact of ETS issue. . .
>
> 1. Problem -- threatens number of smokers and numbers of cigarettes they smoke.
>
> 2. How to alter public perception that ETS is damaging. . .
>
> (Assume that #2 causes #1)

2021502102-2134 at 2109-2110 (US 20346).

3425. At the close of "Operation Downunder," Philip Morris Companies Vice Chairman Bill Murray asked about the risks of the proposals, and whether the proposals would "make the situation worse." The presenters responded: "The situation can't get any worse. Sales are down, can't be attributed to taxes or price increases. ETS is the link between smokers and non-smokers and is, thus, the anti's silver bullet." 2021502671-2678 at 2678 (US 22950).

3426. An undated Philip Morris report from the 1990s stated, "Without a doubt, the social acceptability of smoking practices is the most critical issue that our industry is facing today. . . The consequences of any decrease in social acceptability are extremely important because of their direct effect on the total volume of sales . . . Attacks on acceptability are almost exclusively based on

claims that ETS can cause diseases in the exposed population." 2026226012-6021 at 6012 (US 88583).

3427. The actual impact of smoking restrictions on cigarette sales was so substantial that by January 1992, Philip Morris was measuring past impacts on sales and modeling the future sales impact of the possible workplace smoking restrictions resulting from public concerns about the significant health impacts of secondhand smoke on non-smokers. John Heironimus, who was directed to study the impact, wrote the following in a January 22, 1992 memorandum to Louis Suwarna, copied to David Beran:

> Summary of Major Findings
>
> 1. Total prohibition of smoking in the workplace strongly affects industry volume. Smokers facing these restrictions consume 11%-15% less than average and quit at a rate that is 84% higher than average. . . .
>
> 4. From 1987 to 1991, the industry lost an estimated incremental 1.7% (9.5 billion units) due to increasing workplace restrictions [alone]. If these trends continue, the industry will lose an additional 1.3% to 1.9% (8.4 to 11.4 billion units) from 1991 to 1996.
>
> 5. If smoking were banned in all workplaces, the industry's average consumption would decline 8.7%-10.1% from 1991 levels and the quitting rate would increase 74% (e.g., from 2.5% to 4.4%).

2023914279-4284 at 4280 (US 88584).

3428. In a July 1994 presentation, Philip Morris's Tina Walls stated: "[T]he rights of smokers to smoke where they work, play -- and even where they live -- is under attack as it has never been before. The immediate implications for our business are clear: if our consumers have fewer

opportunities to enjoy our products, they will use them less frequently and the result will be an adverse impact on our bottom line." 2041183751-3790 at 3752 (US 37924).

3429. BATCo counsel, Andrew Foyle, wrote to representatives of the British manufacturers in 1993: "There is a view that the industry now finds itself in the same position in relation to ETS that it was thirty-to-forty years ago in relation to active smoking." 503055325-5326 (US 20712). At a 1987 meeting of the industry's international ETS groups and manufacturer associations, a Philip Morris representative similarly remarked: "I am reminded of the situation 20-30 years ago and all the research we put into active smoking." 2501458142-8148 (US 27951).

5. Defendants Made Public Promises to Support Independent Research on the Link Betwen ETS and Disease

3430. In 1982, the Tobacco Institute ran the fifth in its series of advertisements called "Answers to the most asked questions about cigarettes." The advertisements ran in major magazines nationwide, including Newsweek, People, and Sports Illustrated. The advertisement asked, "Does Cigarette Smoke Endanger Nonsmokers?" After disputing the evidence linking passive smoking to lung cancer, the advertisement stated:

> Like you, we seek answers.
>
> The tobacco industry has committed more funds for independent research on smoking and health than any non-governmental group. More than the American Cancer Society, the American Heart Association, and the American Lung Association combined. The researchers we fund are encouraged to publish whatever they find. Whatever the outcome.
>
> If you'd like more information, write for our booklet, “Answers to the most asked questions about cigarettes.”

TIMN0121194-1205 at 1196 (US 85358); see also 93852922-2933 at 2931 (US 21118); TI04591849-1855 at 1853 (US 22028).

3431. In October 1983, the Tobacco Institute ran another advertisement in the series called "Answers to the most asked questions about cigarettes," posing the question "What happens to cigarette smoke in the air?" The 1983 ad, which ran in the Wall Street Journal and other news media, also publicly reiterated Defendants' representation that the industry was funding independent research and was committed to finding scientific answers to questions about smoking and health:

> The tobacco industry has committed more funds for independent research on smoking and health than any nongovernmental group. . . . Researchers funded by the tobacco industry are encouraged to publish whatever they find. Whatever the outcome.

TLT0601093-1095 at 1094 (US 65131); TLT0601100-1104 at 1101-1102 (US 65133).

3432. Reynolds ran an advertisement in 1984, titled "Smoking and health: some facts you've never heard about." In the ad, Reynolds criticized the Hirayama study and stated:

> No one wants to know the answers more than R.J. Reynolds. This is why we are providing major funding for scientific research. The funds are given at arms length to independent scientists who are free to publish whatever they find.
>
> We don't know where such research may lead. But this much we can promise: when we find the answers, you'll hear about it.

506100136 (US 50882).

3433. In or about 1987, a Tobacco Institute brochure called "Tobacco Smoke and The Nonsmoker: Scientific Integrity at The Crossroads" asserted: "The tobacco industry is therefore devoting substantial resources to the investigation of indoor air quality generally and to the ways in

which particular constituents of indoor air -- including tobacco smoke -- may affect human health." 2025364951-5007 at 4954 (US 22173).[30]

3434. These public promises were intended to deceive the American public into believing that there was no risk associated with passive smoking and that Defendants would fund objective research to find definitive answers. Instead, over the decades that followed, Defendants took steps to undermine independent research, to fund research designed and controlled to generate industry-favorable results, and to suppress adverse research results.

6. Defendants Undertook Joint Efforts to Undermine and Discredit the Scientific Consensus That ETS Causes Disease

3435. As described above, Defendants recognized from the mid-1970s forward that the health effects of passive smoking posed a profound threat to industry viability and cigarette profits, through (1) increasing numbers of smoking restrictions; (2) making smoking "socially unacceptable"; and (3) reducing the number of starter smokers. This recognition resulted in concerted, international action by Defendants and other members of the industry to meet the passive smoking threat head on.

a. Defendants Acted Through a Web of Coordinated and Interrelated International and Domestic Organizations

(1) 1975-1980: The Tobacco Institute ETS Advisory Group

3436. Defendants set up the Research Liaison Committee ("RLC") in 1974 to collectively assess and guide research that was jointly funded and managed by the companies. The RLC was comprised of senior executives and industry attorneys. A subcommittee or "Advisory Group" to the RLC, including outside attorneys Don Hoel and Ed Jacob, was directed in 1975 to consider and

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[30] Defendants claim that these statements are protected under the Noerr-Pennington doctrine. That is a legal issue which is resolved in the Conclusions of Law, herein.

recommend research related to the emerging issue of passive smoking. The RLC meetings in 1976 were staffed by company general counsel such as Cy Hetsko (American Brands) and Alex Holtzman (Philip Morris). BWX0007549-BWX0007588 at 7575-7576 (US 20286); 1003293761-3763 (US 86502); 500294698-4698 (US 24145); 1003293752-3753 (US 20169).

3437. Projects recommended by this Advisory Group to the RLC were presented to and approved for funding by the Tobacco Institute's Committee of Counsel, and funded by Defendants as both CTR Special Projects and Special Account #4 projects. 1003294930-4933 at 4931-4932 (US 23416); 503673145-3146 (US 86405); 1000255997-6001 (US 20086).

3438. The activities of the Advisory Group, referred to in some documents as the "Public Smoking Advisory Group," were kept confidential. According to Hoel's summary of the October 2, 1975 meeting of the group, and confirmed in the notes of the same meeting by Philip Morris's Bill Dunn and Ray Fagan:

> All communications with potential researchers should be kept in strict confidence (i.e., the submission of a proposal should not later appear in a researcher's curriculum vitae). Potential researchers should be instructed not to place individual company names on proposals. Finally, the proposals should be labeled "DRAFT" and should not contain language of the type discussed.

1003294930-4933 at 4931-4932 (US 23416); 1000205071-5073 (US 20079).

3439. A handwritten Philip Morris summary of the November 5, 1975 meeting of the Advisory Group recorded that: "Ed Jacob suggested that no further formal minutes [of meetings] be made -- also all should destroy [crossed-out] remove notes and previous minutes from corporate files." 1003294811-4814 at 4811 (US 23402).

3440. Other documents establish that the actions of the Advisory Group resulted in the funding of several ETS-related projects through CTR Special Projects and Special Account 4 throughout the late 1970s and into the early 1980s. These projects included work by John Salvaggio, Response Analysis, Stanford Research Institute (SRI) and others. 1005122237-2240 (US 20215); 1005122267-2271 (US 20219).

3441. In September 1984, the Committee of Counsel directed Donald Hoel to reconstitute and reconvene the committee he had helped coordinate in the 1970s to manage Defendants' passive smoking efforts. This new group was called the Tobacco Institute ETS Advisory Group (TI-ETSAG), sometimes referred to as the "Hoel Committee" after its chairman. 2015029667 (US 20315); Green TT, 11/15/04, 5975:23-5976:7.

3442. The TI-ETSAG existed from 1984 to 1988, when its mission was transferred to the Center for Indoor Air Research, or CIAR. 2023054167-4167 (US 75232); 511252621-2626 (US 51554).

3443. The TI-ETSAG was made up of representatives from the cigarette manufacturer Defendants, in-house counsel, outside law firm attorneys, and public relations experts from the Tobacco Institute. In addition to Hoel, some of the committee members included John Rupp of Covington & Burling, Lorillard's Alexander Spears, Reynolds scientists Charles Green and Guy Oldaker, Reynolds in-house counsel Mary Ward, Philip Morris scientists Tom Osdene and Bob Pages, Brown & Williamson scientist Gil Esterle, and Marvin Kastenbaum, and the Tobacco Institute's Bill Kloepfer and Charles Waite. The group met monthly. 2021004058-4064 (US 20339); TI00610153-TI00610154 (US 62064).

3444. Liggett and American Tobacco did not participate directly, but they contributed funding to the committee activities. 2021004058-4064 at 4058 (US 20339); Rupp TT, 10/27/04, 4009:4-16.

3445. A Philip Morris document dated February 25, 1986 stated the mission of the ETSAG in these terms: "Solicit and review proposals for the conduct of ETS-related research that will be helpful to the industry. Recommend (to the Committee of Counsel) that approved projects be funded as CTR Special Projects." 2021004058-4064 at 4058 (US 20339).

3446. One goal of the ETSAG was to generate data and conclusions from independent scientists. The same Philip Morris report noted, "To be useful and effective, approved research projects: 1) should be conducted in independent, outside laboratories (not obviously connected with the tobacco industry) . . . ." 2021004058-4064 at 4058 (US 20339).

3447. The purpose of the TI-ETSAG was to generate data to resist smoking restrictions and conclusions that supported the industry's public position that ETS posed no proven health risk to nonsmokers. Tom Osdene wrote the following in an April 25, 1988 letter to Tobacco Institute president Sam Chilcote:

> I think many of us have conceptualized the ETS issue as a battlefield in which the arena is dominated by public relations and legal issues while the ammunition which is used happens to be science. It has been the purpose of CIAR as well as its precursor, the ETS Advisory Committee, to provide ammunition in this fight.

2021012384-2388 at 2384 (US 20340).

3448. ETSAG funded projects as CTR Special Projects, with no SAB review, because the ETSAG "was more litigation oriented." Another purpose of the ETSAG was to fund projects in

order to "get scientific publications that would be of use in litigation." Donald Hoel PD, United States v. Philip Morris, 6/27/02, 58:20-59:19.

3449. The Hoel Committee reported to and provided updates to the Committee of Counsel, which was authorized to approve ETS projects for funding. 521028862-8863 (U.S. 52693*); 680542518-2522 at 2520-2521 (US 30899); 91821775 (US 57128); 91820443 (US 57123); Donald Hoel PD, United States v. Philip Morris, 6/27/02, 129:3-10, 129:24-130:7; Ward TT, 11/3/04, 4961:11-4962:5.

3450. From 1984 to 1988, the ETSAG was responsible for developing and managing the following passive smoking projects, all funded through CTR as Special Projects, without the approval of its Scientific Advisory Board:

> **ORNL Personal Nicotine Monitor**, developed by Roger Jenkins and Michael Guerin at the Oak Ridge National Laboratory (ORNL) and Reynolds. The project involved the development and field testing of the personal nicotine monitor originally designed and developed by Dr. Muramatsu of the Japan Tobacco and Salt Public Corporation [JTI]. The method of measurement was intended to reveal that nicotine levels in ambient air were very low. Approved funding via ETSAG: $855,000.
>
> **Indoor air particulate sampling**, by Salvatore DiNardi. The purpose of this project was to "refute [the] oft-cited paper of Repace and Lowery (1980)," concluding that nonsmokers were exposed to high levels of airborne particulate due to ETS. Approved funding via ETSAG: $688,878.
>
> **Indoor air testing/surveys**, by ACVA. The purpose of the project was to show that the "vast majority of [indoor air] complaints are directly caused by airborne dust, bacteria, and/or fungi" as well as poor ventilation, "and not to the presence of ETS." Approved funding via ETSAG: $13,800.
>
> **Portable air sampler**, developed by Reynolds. The purpose of the sampler was to take "measurements" of air in aircraft, restaurants,

> homes, and workplaces, to show that everyday indoor air contains very small amounts of ETS. While the sampler was created by Reynolds, "scientists from PM, B&W, Lorillard and Reynolds will participate." Testing was carried out in numerous cities -- including New York, Ottawa, Dallas, and others -- using the Reynolds apparatus. The results were then used to resist smoking restrictions in those cities.
>
> **Epidemiological and other scientific critiques**, by industry consultants Lee Husting, Theodor Sterling, David Sterling, Demetrios Moschandreas, Marvin Kastenbaum, and James Kilpatrick. The purpose of these critiques was to cast doubt on the epidemiological studies showing an association between passive smoking and lung cancer. Known approved funding via ETSAG: $198,034 (Husting); $70,000 (D. Sterling).
>
> **ETS allergy testing**, by Tulane University researchers John Salvaggio and Samuel Lehrer. In Hoel's words, "it is expected that even the extreme case of the allergic asthmatic will not show physiological responses to ETS." Approved funding via ETSAG: $263,117.
>
> **Aircraft cabin air quality measurements**, by R.J. Reynolds using the R.J. Reynolds sampler apparatus described above.

2021004058-4064 (US 20339); 507734379-4380 (US 29905); TIDN0008191-8194 (US 62592); 86024167-4167 (US 56093); 86024168-4172 (US 21089); 92613920-4198 (US 32132); 2028343885-3890 at 3887 (US 75166); 504933703-3707 (US 24220); 512252621-2626 (US 51554); 521028861 (US 27065).

3451. Lawyers reviewed all project proposals prior to funding and papers prior to publication. For example, a November 21, 1986 legal bill from Shook, Hardy & Bacon to Philip Morris, Reynolds, Lorillard, and B&W listed the following work under the heading of "Science and Research":

> [R]eview Sterling memorandum re Vancouver ETS seminar; attorneys and analysts conference re Dr. First and ETS Advisory

> Group projects . . . review Koo manuscript . . . review DiNardi proposal . . . review ORNL paper submission on ETS; review IITRI project proposals and abstract . . . telephone conference with Dr. Sterling regarding clearance of manuscript . . . review and analyze ETS Advisory Group agenda . . . review research project and send to general counsel . . . correspondence and telex to Dr. Rylander . . . telephone conference with Dr. Sterling regarding clearance of paper on smoking by occupation. . . ."

682174838-4844 at 4839-4840 (US 69159).

3452. Numerous meeting minutes and summaries illustrate the extent to which ETSAG group members, particularly attorneys from Shook, Hardy & Bacon and Covington & Burling, designed, monitored, and carefully controlled projects initiated by the group. See, e.g., 2021003952-3957 (US 25563); 2021004054-4057 (US 25564); 2021004286-4290 (US 25565); 2021003620-3625 (US 25562); 504933596-3702 (US 24219); 512309183-9189 (US 24751); 505491303-1308 (US 50834); TIBU0030330-0331 (US 62566); TI05440380-0380 (US 62214); 2021001009-1009 (US 25533); 511252621-2626 (US 51554).

3453. The ETSAG reviewed and edited papers written by researchers it had not funded, but were funded by other industry organizations. For example, a record of the May 22, 1986 ETSAG meeting recorded the following with respect to a paper by long-time industry consultant Theodor Sterling critiquing the model used by Repace in estimating annual deaths attributable to ETS:

> Sterling on Repace -- Kastenbaum (TI) has had a conversation with Sterling suggesting he rewrite his papers before submitting for publication. The consensus is that Sterling has a good series of papers on Repace but needs to rewrite. Especially noted is the need not to appear to support the Repace model. . . . Hoel will follow up.

655042500-2503 at 2501 (US 22921*).

3454. Defendants coordinated the actions of the ETSAG with those of other international industry bodies. For example, on April 8, 1986, a joint meeting of the ETS Advisory Groups from the United States, the United Kingdom, Germany, and INFOTAB took place in London "to discuss scientific and public relations problems relating to environmental tobacco smoke" and to "avoid duplication of the various efforts." Osdene and Green presented a summary of ETSAG projects to the assembled group. 505347172-7174 (US 20739).

3455. For two days in March 1987, the entire ETSAG met with representatives of the U.K. Tobacco Advisory Council (TAC), the German Verband der Cigarettenindustrie (VdC), and Japan Tobacco (JTI) at the L'Enfant Plaza Hotel in Washington, D.C. Each group presented its projects for discussion at this meeting. A public affairs presentation at this joint meeting stated that the industry needed to have a "systematic programme of research designed to refute the major allegations made against us." In addition, "Successful PA work on ETS will depend on the case remaining 'not proven,' and the need to ask you to keep producing work that challenges the anti-smokers' argument." Participants also agreed that the ETS research needed to utilize "neutral scientists" and the ETS issue needed to be expanded into overall "ambient air quality." TI00682162-2163 at 2162 (US 21240); 2501458142-8148 at 8142 (US 27951).

(2) 1977-1991: "Operation Berkshire"

3456. According to a Philip Morris memorandum dated December 3, 1976, Imperial Tobacco Chairman Tony Garrett called Hugh Cullman, then Executive Vice President of Philip Morris Incorporated and President of Philip Morris International, to explore whether several of the world's largest manufacturers, including Philip Morris, BATCo, Reynolds, Reemtsma, and Rothmans "might be prepared to meet discreetly to develop a defensive smoking and health strategy for major

markets such as the UK, Germany, Canada, US and possibly others." 2025025286-5286 (US 20407).

3457. The initial objective of Garrett's proposal was

> to develop a defensive smoking and health strategy which would include a voluntary agreement, that no concessions beyond a certain point would be voluntarily made by the members [of the group] and if further concessions were required by respective governments, that these not be agreed to and that governments be forced to legislate.

The stated concern was that "the companies and countries would be picked off one by one and that the Domino theory would impact on all of us." 2025025286-5286 (US 20407).

3458. Garrett memorialized the conversation in a December 3, 1976 letter to Cullman in which he reiterated the objective "to form a defensive smoking and health strategy, to avoid our countries and/or companies being picked off one by one, with a resultant domino effect." Garrett also reported that BATCo, Reynolds, Reemtsma, Rothmans, and Imperial were prepared to consider such a unified strategy, and suggested that a meeting take place in April or May 1977 with company representatives and CEOs. 2025025290-5291 (US 22980).

3459. According to a February 23, 1977 letter from Cullman to Garrett confirming the participation of Philip Morris, the meeting became known as "Operation Berkshire." 2025025288-5289 (US 20408). Garrett wrote in his March 7, 1977 letter to Philip Morris general counsel Alex Holtzman that "Operation Berkshire" was scheduled to be held on June 2-4, 1977, at an English manor called Shockerwick House near Bath. The goal was to allow executives an opportunity to "have a frank, informal, exchange of views on political strategy in respect of smoking and health." 2025025347-5348 (US 20410).

3460. In preparation for the June 1977 "Operation Berkshire" meeting, BATCo and Philip Morris drafted and circulated a confidential "Position Paper" for the companies to discuss at the meeting. BATCo forwarded the "Position Paper" to Garrett under cover letter dated April 28, 1977. The "Position Paper" set out a number of guiding principles relating to smoking and health, as part of the maintaining "controversy" or open question:

> We acknowledge the fact that there is a continuing smoking and health controversy but we do not accept as proven that there is a causal relationship between smoking and various diseases . . . . In our view the issue of causation remains controversial and unresolved. . . .
>
> [W]e believe it is better to speak as an industry with one voice on such matters and that this can be accomplished through national associations of manufacturers.
>
> We take the view that to date there is no persuasive scientific evidence to support the contention that the non-smoker is harmed by the tobacco smoke of others . . . .

2501024571-4575 at 4572-4573 (US 21904); 2025025313-5318 (US 23741).

3461. Executives of the seven companies met at Shockerwick House in June 1977. Attendees included Holtzman from Philip Morris Incorporated, BATCo chairman Patrick Sheehy, BATCo deputy chairman Kit Lockhart, and Reynolds chairman Bill Hobbs. The companies established three "working parties" at the meeting, the first one to address the "social acceptability of smoking." Each of the working groups was tasked to develop an industry "position paper" to serve as a "vehicle to activate Industry Associations throughout the world." 2025024797-4803 (US 20406). According to a Philip Morris record of the meeting, Reynolds' counsel Sam Witt explained that the working parties would examine the areas of interest and "develop strategy" to collectively

address smoking and health issues. Reynolds was tasked to "spearhead the Social Acceptability Working Party," or SAWP. 502948580-8591 at 8587 (US 21908); 2025025295-5300 (US 75146).

3462. To guide the efforts of the "working parties" and coordinate the positions of the companies under an umbrella organization, the seven "Operation Berkshire" participants/companies formed the International Committee on Smoking Issues (ICOSI). 502948580-8591 (US 21908). The executives met again in November 1977 and March 1978, agreeing thereafter "that ICOSI should continue on a permanent basis." 2501020298-0308 at 0299 (US 21903). The participating companies established a $2 million budget for ICOSI to carry out its mandate. 2501024103-4107 (US 21909).

3463. A Philip Morris report on ICOSI dated April 1979 reviewed the history and goals of the organization, stating, "The whole industry, companies and Trade Associations alike must unite with common targets and common approaches." The report later stated: "ICOSI will thus be more involved in world, or perhaps regional, strategy and in achieving a truly united industry approach on problems affecting or likely to influence several countries." 1003717317-7330 (US 86518) (emphasis in original); see also Proctor PD, United States v. Philip Morris, 8/27/02, 48:13-49:19, 50:21-52:7.

3464. Through BATCO, B&W also participated in ICOSI. B&W general counsel Ernie Pepples reported in an April 12, 1978 memorandum to company leadership that ICOSI had been set up "on a formal basis in Brussels." Pepples recommended that B&W increase its participation in the organization given that the passive smoking issue had "reached a fever pitch here" in the United States. Pepples cautioned, "The things ICOSI will do or fail to do will have impacts in this market as well as in others." 503143820-4106 at 3909 (US 75974).

3465. In October 1977, the ICOSI Social Acceptability Working Party (SAWP) distributed its first report to member companies. The first report listed BATCo public relations manager Richard Haddon and representatives from Philip Morris, Rothmans, Gallaher, and Reemtsma among the members of the SAWP, chaired by Reynolds. 501472756-2794 (US 66342). The first report also drew an explicit link between the health risks associated with passive smoking and the larger issue of "social acceptability" and warned that the trend in decreasing "social acceptability" had "serious long-term implications for the industry." The group identified the two most important basic influences on social acceptability issues: (1) the health effects to smokers and (2) government regulations of smoking resulting from the health effects of passive smoking. The SAWP gave the passive smoking issue "top priority," finding that "passive smoking is the most critical one of the social acceptability issues facing the industry today." To respond to the threat, the group recommended sustained "countermeasures," and emphasized the "need to act, not just react." 501472756-2794 at 2762-2772 (US 66342). The SAWP further concluded that

> national trade associations (rather than individual companies) are key vehicles for launching countermeasures on social acceptability issues. Such association countermeasures become even more effective when they carry "third party" endorsements.

501472756-2794 at 2772-2773 (US 66342).

3466. The SAWP finalized its second report and forwarded it to members under a Reynolds cover memorandum dated February 7, 1978. In the second report, the SAWP again stated that passive smoking must be given "first priority" in resolving the "social acceptability" issues. The group also recommended that future coverage of ICOSI activities be centered on the United States,

the United Kingdom, Australia, Belgium, Canada, Ireland, the Netherlands, Switzerland, and Germany. 980037079-7167 at 7082, 7085, 7161 (US 32445).

3467. The second report also included a "policy statement on passive smoking," drafted by a law firm, for the ratification of the member companies. The ultimate conclusion of the "policy statement" was that "tobacco smoke in the atmosphere does not cause disease in non-smokers." 980037079-7167 at 7086-7088 (US 32445).

3468. A March 1978 BATCo document stated: "The aim of ICOSI is defensive research aimed at throwing up a smoke screen and to throw doubt on smoking research findings which show smoke causes diseases." 321588692-8692 (US 28544).

3469. ICOSI and the SAWP held a major meeting of member company representatives and international industry manufacturer associations on May 20-23, 1979 in Zurich. A Reynolds meeting summary recorded the "agreement that smoking does not pose a health hazard to non-smokers." The ICOSI chairman emphasized to the group that "member companies and associations should speak with one voice." 500876807-6812 at 6808, 6810 (US 24168).

3470. The Board of Directors of ICOSI met in Bermuda in October 1980. At this meeting the member companies decided that ICOSI would change its name to the International Tobacco Information Center, or INFOTAB. 503143820-4106 at 3910 (US 75974); 2501017220-7226 (US 45873).

3471. INFOTAB, the successor to ICOSI, was formed "to provide a unified forum amongst members of the industry to defend itself in the face of attack." It would monitor public health organizations, prepare unified positions and strategies on a global basis. 300528729-8731 at 8729 (US 46572). The INFOTAB Board of Directors included, at various times, Philip Morris Executive

Vice President Hugh Cullman, Philip Morris general counsel Alex Holtzman, and Reynolds CEO Ed Horrigan, (who was also at the time the chairman of the Tobacco Institute Executive Committee). Don Hoel continued to attend meetings. 2025013308-3308 (US 21585).

3472. Defendant B&W produced a "Conspiracy Notebook," a July 17, 1990 binder prepared for the company by outside counsel at Lovell, White, Durrant and King & Spalding in preparation for defending conspiracy cases. In this binder, the mission of INFOTAB (as well as its predecessor ICOSI) was described by B&W's counsel as follows:

> The American tobacco industry, working with its counterparts in other countries around the world, organised ICOSI, later renamed INFOTAB for the purpose of coordinating the worldwide response of the industry to anti-tobacco activities. INFOTAB was used to formulate and publish a consensus position on the part of the industry. It monitored anti-tobacco organizations. It created an information service for the purpose of accumulating and disseminating intelligence on anti-smoking activities. It was used to identify and enlist allies around the world for the tobacco industry, to perform studies and research whose results would be helpful, and to rebut data and allegations from anti-smoking forces. The organization worked closely with TI in carrying out this mission.

503143820-4106 at 3909 (US 75974).

3473. Members of the Tobacco Institute met and coordinated with members of INFOTAB. The chairman of INFOTAB gave a speech at the Tobacco Institute on November 16, 1981, in which he recalled how the Tobacco Institute provided INFOTAB with its communications plans regarding the Hirayama study linking passive smoking and lung cancer. INFOTAB then alerted 28 national associations around the world; as soon as the Tobacco Institute had its press releases prepared, it telexed them to INFOTAB; INFOTAB then transmitted them by telex to the other associations for their use in generating similar press coverage in other countries. 2501029891-9901 at 9898 (US

20557). Don Hoel was recorded in the minutes of the October 1981 meeting as pointing to "passive smoking as an example of where NMAs [national manufacturer associations, such as the Tobacco Institute] in the U.S. and Europe had taken coordinated action." 502738346-8371 (US 24212).

3474. INFOTAB members and the Tobacco Institute held a joint meeting in Brussels in October 1984. Hoel -- a lawyer -- provided an update on ETS science issues. Tobacco Institute vice president Bill Kloepfer made a presentation, titled "Ambient Tobacco Smoke -- Political Action" to the group; Tobacco Institute president Sam Chilcote spoke on the economic implications of smoking restrictions, and the industry's initiatives to defeat them. A representative from the UK Tobacco Advisory Council (TAC) made a presentation as well. TI12820001-0290 (US 62398); TIOK0029713-9723 (US 86547); TIOK0029724-9734 (US 86548).

3475. On April 8, 1986, INFOTAB's Board of Directors met in London with industry scientists and lawyers to review the member companies' current and planned passive smoking research, as well as to discuss the industry's "public relations problems relating to environmental tobacco smoke." At this time, the Board of Directors continued to include senior executives from BATCo (Robert Ely), Philip Morris (Hugh Cullman), and Reynolds (Richard Marcotullio). Members of the ETSAG (Green and Osdene) attended and made a presentation on ongoing projects. Hoel and Rupp were present as well. 505347172-7174 at 7172-7173 (US 20739); 2022932502-2506 (US 22828).

3476. The 1986 INFOTAB "ETS Action Plan" recognized "the ETS issue as the most serious threat" to the industry and called for a plan "to slow down the wheel that is turning against us.":

General Approach

> This will be to provide a body of authoritative scientific evidence, based on existing and possibly future research programmes, and to use this as the core argument for addressing specific sub-issues with a range of PR and advertising techniques. . . . The PR and advertising techniques can then be used as appropriate to a particular country's position. . . .

100993158-3165 at 3158, 3159, 3161 (US 89556).

3477. INFOTAB also prepared an "ETS Kitset" for the industry to coordinate the companies' public positions on ETS. The "Kitset" identified two key strategy objectives for its members:

> Objective 1 To demonstrate the inconclusive nature of claims that ETS has harmful effects, by bringing to light the scientific controversy over such claims.
>
> Objective 2 To position ETS as just one (and a very minor) factor in a complex atmospheric mix which also includes petrol/diesel fumes, dust, bacteria (particularly in air conditioned environments), pollen, and in industrial situations an enormous variety of chemical fumes and substances.

2501155644-5648 at 5646 (US 45901*).

3478. The INFOTAB "Kitset" also contained "Campaign Resource Materials" that instructed members on the best ways to run publicity campaigns, and publicity leaflets addressing six "sub-issues" created by INFOTAB for use by recipients, with the aim that the "scientific" presentations therein reach the "target audience." To that end, INFOTAB provided a Public Affairs Guide ("for use with politicians, civil servants, journalists and other opinion-leaders") and a "general leaflet" that addressed "the two major strategic themes of 'demonstrating scientific controversy' and 'ambient air quality.'" 2501155644-5648 at 5648 (US 45901*).

3479. At the same time, the "Kitset" introduction made clear the INFOTAB Board's desire to keep its control and influence over the campaign secret:

> This kitset contains two distinct types of document[s]. The leaflets have been written for publication outside the industry and have been scrutinized by industry experts. They are clearly distinguished as printed, two-colour publications, and do not carry either the Infotab name or the ETS campaign logo.
>
> IN CONTRAST, THE INTERNAL PAPERS -- OF WHICH THIS INTRODUCTION IS ONE -- ARE FOR USE INSIDE THE INDUSTRY ONLY AND SHOULD BE TREATED AS CONFIDENTIAL. FOR THIS REASON, THE INTERNAL PAPERS HAVE BEEN PRODUCED IN A FORM WHICH IS INAPPROPRIATE FOR PUBLIC USE AND ARE CLEARLY MARKED AS CONFIDENTIAL INFOTAB DOCUMENTS.

2501155644-5648 at 5648 (US 45901*) (emphasis in original).

3480. INFOTAB was dissolved in 1991. In 1992, the Tobacco Documentation Centre (TDC) was formed to carry forward the information collection and database functions of INFOTAB. Proctor PD, United States v. Philip Morris, 6/12/02, 16:13-18. As described infra, the international coordination of Defendants' passive smoking strategy, positions, and research was taken over in 1992 by an industry committee of lawyers and scientists called the International ETS Management Committee, or IEMC. 502601564-1567 at 1565 (US 29570).

(3) 1987: Operation Downunder

3481. In a June 8, 1987 letter, Philip Morris Companies Vice Chairman Bill Murray invited a small group of executives to attend a conference on Hilton Head Island, South Carolina, to assess the ETS problem and formulate solutions. The conference would come to be known as "Operation Downunder." 2023551340-1343 (US 85518).

3482. In his June 8, 1987 letter to invitees, Murray emphasized the gravity of the passive smoking problem, and his belief that the problem had to be addressed both as a company and as an industry:

> It will come as no surprise to you that the public policy situation affecting our industry and our company has deteriorated in recent months. This is largely due to the recent Surgeon General's report dealing with environmental tobacco smoke and its alleged harmfulness to nonsmokers. Clearly the climate in which we are now operating requires that we, as a company and as an industry, take action to at a minimum slow down the anti-smoking forces and at best actually reverse some of their advances. . . .
>
> Your personal participation in this vital activity is extremely important. I cannot overemphasize the importance of this activity. . . .
>
> It is important to point out that we are not embarking on this exercise to simply exchange ideas on the ETS problem. Rather, we have been instructed to examine the problem and to arrive at solutions that can be immediately implemented.

2023551340-1343 (US 85518).

3483. Murray, who was involved in Operation Berkshire in 1977, was on the CTR Board of Directors at the time of Downunder. His letter was copied to the Chairman of Philip Morris Companies, Hamish Maxwell. According to the Downunder agenda, the conference began on June 23, 1987, and ended on the afternoon of June 26 with the presentation of a plan to senior management. All expenses were paid by Philip Morris. 2024270524-0527 (US 75083).

3484. According to the "PROJECT DOWNUNDER CONFERENCE NOTES," John Rupp addressed the group, noting the "watershed significance" and "tremendous credibility" of the 1986 Surgeon General's report. He told the conference attendees the industry's position on passive smoking was restricted to "ETS not shown to be health hazard to non-smoker." He cautioned that:

"We cannot say ETS is 'safe' and if we do, this is a 'dangerous' statement.'" 2021502102-2134 at 2106 (US 20346).

3485. The conference notes revealed that sales were declining in the United States, and "in U.S., [the] ETS issue will have [a] devastating effect on sales." Philip Morris was very concerned that the industry was "just at the beginning of [the] impact of [the] ETS issue." 2021502102-2134 at 2109-2110 (US 20346).

3486. According to the notes, Philip Morris was concerned about public perception of passive smoking and felt that "perception is everything." The task of altering public perception had to be carried out (1) "in [the] face of overwhelming adverse information and publicity" relating to the harm of passive smoking to nonsmokers; (2) in the absence of "objective science" in favor of the industry's position; and (3) despite the fact that "10 of the 13 [ETS] studies show [an] effect in the direction of harm." 2021502102-2134 at 2110-2112 (US 20346).

3487. Philip Morris also noted that ETS research was historically feared and avoided by the industry partly because of the "risk in doing research where you don't know where it will lead." 2021502102-2134 at 2112, 2115 (US 20346).

3488. The notes indicate that conference attendees agreed that the industry needed "substantial funding in ETS via CIAR" and needed to "increase [the] number of scientists up to 50 in the U.S. and also throughout world." The "effort should be organized worldwide" and the "science program has to be joint-industry based." 2021502102-2134 at 2130-2132 (US 20346); 2021502679-2683 (US 75077).

3489. On June 26, 1987, the final day of "Project Downunder," the conference attendees presented their conclusions and recommendations to R. William Murray, President and C.O.O. of

Philip Morris Companies. The group recommended a "dramatic increase in scientific activity on ETS." The group additionally recommended what they called an "NRA strategy" of "select[ing] the weakest of our enemies, mak[ing] an active effort to defeat them in the next election, then let[ting] people know what we did and why we did it," in conjunction with the "financial support" of industry friends. The increased funding of CIAR, the increased recruitment of "consulting scientists," and the establishment of an industry "scientific journal" were to play roles in the industry "solution" as well. 2021502671-2678 (US 22950).

3490. The Philip Morris group also stated its intent to bring on the other members of the tobacco industry though discussions "at the highest level":

> We also need to tell the tobacco industry, regarding accommodation strategy, [sic] This is what we are doing, join us. Use TI if helpful to do so. RJR can be expected to buy on. Concept should be introduced to R.J. Reynolds and other majors at the highest level. CEO to CEO, Chairman to Chairman.

2021502671-2678 at 2676 (US 22950).

3491. One week later, Rupp took the Philip Morris ETS message out to the other members of the industry. A document, titled "Report on Industry Meeting Concerning ETS," indicates that Rupp met with representatives of Reynolds, Philip Morris, Liggett, Hill & Knowlton, and the Tobacco Institute on July 2, 1987. Rupp warned participants that the manufacturers had to act as a unified front on ETS: "Individual companies, he noted, are in a position to take advantage of their commercial resources but should make every effort to do so toward the common goal of the industry as a whole." 87697186-7193 (US 88587).

3492. On January 4, 1988, the Tobacco Institute's Executive Committee "approved the concept of Operation Downunder." On February 18, 1988, representatives of Reynolds, Lorillard,

Liggett, American, the Tobacco Institute, and Covington & Burling were invited by the Tobacco Institute to develop a consensus recommendation for the Executive Committee. Tobacco Institute vice president Roger Mozingo wrote that:

> We have long agreed with many of Downunder's basic goals. . . . Further, the aggressive industry posture evident throughout the plan is needed if we are to stem the tide of legislative and private industry initiatives to ban or severely restrict smoking, as well as deal with other important industry issues.

TIDN0002710-2719 at 2711 (US 65548); 506617595-7596 (US 20760).

3493. At a February 3, 1988 meeting of the Tobacco Institute's Communications Committee, Sam Chilcote told the Executive Committee that they were now tasked to "move forward with an expanded comprehensive effort" to deal with the ETS threat. The "two basic objectives" in implementing Downunder were "to defeat or lessen all smoking restrictions" and "to slow the decline of the social acceptability of smoking." These goals were to be achieved through, inter alia, funding the Center for Indoor Air Research, "media tours," and "more experts." TIDN0008865-8890 (US 65559).

3494. In an October 8, 1987 memorandum from Helmut Gaisch, Director of FTR's Science and Technology, to Lee Pollak, in-house counsel in New York, Gaisch advised that Operation Downunder was being implemented in Europe with other cigarette companies and Covington & Burling. Gaisch described the link between Downunder and the recruitment of scientific consultants, or "whitecoats" as they were called, who would work on behalf of the industry throughout the world:

> Within the framework of the scientific part of "Downunder," we are involved in the process of enlisting the assistance of scientific experts on a world-wide basis. As there are other tobacco companies involved, e.g. RJR, John Rupp of C&B has been charged with coordinating this part of the project. . . . I have personally arranged

> meetings of John Rupp with key "whitecoats" in a number of European countries.

2501000364-0365 at 0365 (US 45866).

3495. On February 17, 1988, Philip Morris and Covington & Burling presented the Downunder recommendations in London to BATCo and other European cigarette manufacturers to bring them on board. BATCo Scientific Director Sharon Boyse (Blackie) recorded the following from the London meeting:

> Philip Morris presented to the UK industry their global strategy on environmental tobacco smoke. In every major international area (USA, Europe, Australia, Far East, South America, Central America & Spain) they are proposing, in key countries, to set up a team of scientists organised by one national coordinating scientist and American lawyers, to review scientific literature and carry out work on ETS to keep the controversy alive. . . .
>
> Because of the heavy financial burden, Philip Morris are [sic] inviting other companies to join them in these activities to whatever extent individual companies deem appropriate. . . .
>
> Dr. Gaisch said that their strategy on ETS had been established in the USA at a meeting between Philip Morris and Covington & Burling, the lawyers acting for the Tobacco Institute in the USA. At a later date R.J. Reynolds were also brought in to support some of their US activities, one of these being the Centre for Indoor Air Research."

321140944-0949 (US 20586).

3496. Operation Downunder became part of Defendants' coordinated, global efforts.

(4) 1988-1999: The Center for Indoor Air Research (CIAR)

3497. In 1986, "[m]embers of the [ETSAG] group began to express the opinion that a more efficient mechanism to search out and supervise such [ETS] research needed to be considered." 87780454 (US 23531).

3498. At a May 26, 1987 ETSAG meeting, members decided that a new ETS research coordinating organization for the Defendants should be called the Center for Indoor Air Research ("CIAR") "in order to dissociate it and avoid confusion with the Tobacco Institute." 506300804-0815 (US 20756); 511252621-2626 at 2621 (US 51554); 620002505-2506 (US 53330).

3499. CIAR was also an important component of the industry's ETS program established at "Operation Downunder" in June 1987. 2021502102-2134 at 2130-2132 (US 20346); 2021502679-2683 at 2681 (US 75077); 508221912-1914 at 1912-1913 (US 24738).

3500. ETSAG proposed "the formal organization of a research organization to deal with issues relating to indoor air quality," which became CIAR. The proposal for CIAR, presented to the Tobacco Institute Executive Committee on December 10, 1987, called for the creation of an organization "with its own staff and an increased research budget" for the ongoing ETSAG projects. At the end of the Executive Committee meeting, "it was agreed that Dr. Osdene and his group would proceed with the hiring of an Executive Director and the preparatory corporate and other steps for the establishment of the CIAR." TIMN0014390-4393 (US 62782).

3501. Pursuant to the Tobacco Institute Executive Committee agreement, CIAR was officially incorporated in January 1988 to take over the research responsibilities of the ETSAG. The charter members of CIAR were Philip Morris, Lorillard, and Reynolds, who constituted the Board of Directors. 87824558-4562 (US 23564).

3502. Brown & Williamson joined CIAR as a voting board member in 1995. Eisenberg WD, 25:14-15. While Liggett was never officially a member of CIAR, it attended at least one of its meetings and participated in ETS seminars and meetings organized by Covington & Burling. Dietz PD, United States v. Philip Morris, 7/1/02, 132:1-138:17; 2023053733 (US 86513). BATCo, while

not a formal member of CIAR, provided funding for several CIAR "sponsored" projects. See, e.g., discussion of Malmfors/SAS Study, Hazleton Project, and Latin American Project, infra.

3503. CIAR stepped into the shoes of the ETSAG with respect to industry ETS projects existing in 1988. Compare 2021001205-1205 (US 25534) (12/7/87 ETSAG meeting agenda) with 2021000945 (US 25532) (3/10/88 CIAR Board of Directors meeting agenda); compare 2021004058-4064 (US 20339) (1986 list of ETSAG-managed projects) with 2021006060-6065 (US 89161) (minutes of 10/25/88 CIAR meeting). All of the ETSAG-managed projects existing in 1987 were managed through CIAR from 1988 forward. These projects included the Malmfors/SAS airline study, the ORNL air sampler project, an aircraft study by Delbert Eatough, the ETS/asthma project at Tulane, and several critiques of epidemiology by industry ETS consultants. 2021006060-6065 (US 89161); see also 2023054167-4167 (US 75232) (CIAR board member Bob Pages wrote: "CIAR evolved out of an ad hoc ETS advisory group to the Tobacco Institute . . . ."); 86003256-3257 (US 23510) (In requesting Committee of Counsel approval for an ETSAG project, Hoel refers to CIAR as a "new funding mechanism for ETS projects.").

3504. Defendants first offered the job of CIAR Executive Director to outsider Irwin H. Billick. When Dr. Billick questioned the independence, objectivity, and credibility of the organization because all research funding decisions would be made by the Board of Directors, the offer was withdrawn. 2023555370-5370 (US 22842); 2023553133-3137 (US 22991); 2023555364-5365 (US 22844); 2023553132-3132 (US 22845).

3505. Reynolds scientist and ETSAG member Guy Oldaker served as "interim director" in 1987 and throughout much of 1988 until another executive director candidate could be located. TI00682069-2070 at 2069 (US 62088); 508220128 (US 92022). Moreover, until CIAR was

established in its own office, it was administered as part of the Tobacco Institute. 2023554658-4660 (US 37464).

3506. On August 1, 1988, the Board of Directors selected Max Eisenberg, formerly Maryland's Assistant Secretary for Environmental Science and Health, to be CIAR's first and only executive director. At the time of Eisenberg's hiring, CIAR's Board of Directors was composed of Tom Osdene and Bob Pages from Philip Morris, Charles Green and Gary Burger from Reynolds, and Alexander Spears and Vello Norman from Lorillard. Eisenberg WD, 1:15-22; 3:10-13.

3507. CIAR had three membership categories -- charter members, regular members, and associate members. According to the CIAR Bylaws, only a "corporation engaged in the business of manufacturing and marketing of cigarettes that produced two billion or more tax-paid cigarettes during calendar year 1987" was eligible to become a charter member of CIAR. The CIAR Certificate of Incorporation stipulated that only the directors of charter members were entitled to select Board members and vote on what research would be funded. During the entire existence of CIAR (1988-1999) only cigarette company executives/scientists sat on the Board of Directors. 86205444-5452 at 5444 (US 21827); 87824558-4562 at 4560 (US 23564); Eisenberg WD, 3:20-4:10.

3508. John Rupp of Covington & Burling was appointed general counsel to CIAR, and attorneys Mary Ward and Don Hoel regularly attended Board meetings just as they had earlier attended ETSAG meetings before. Eisenberg WD, 26:3-6.

3509. Philip Morris, Reynolds, Lorillard, BATCo and (after 1995) Brown & Williamson, paid over $4 million annually to fund ETS projects through CIAR. Funding was determined by market share. 2050764508-4508 (US 20492); 2021006060-6065 at 6060 (US 89161); Ward TT, 11/3/04, 4968:4-19; 2041653307-3385 at 3382-3385 (US 38214).

3510. CIAR also had "regular" or "associate" members, who were not cigarette manufacturer charter members. However, they provided less than one-half of one percent of the operating costs for CIAR projects. For example, in 1996, the non-cigarette manufacturers (associate members) contributed $36,000, or .47%, of CIAR's $7.7 million in funding. 566943537-3528 (US 92018); Eisenberg TT, 11/8/05, 5444:22-5446:11.

3511. Moreover, all "regular" and "associate" members were connected to the tobacco industry, and most were suggested to Eisenberg by members of the CIAR Board of Directors. Using the 1988 and 1996-97 Request for Applications (RFA) as examples, associate members Consolidated Safety Services, ENV Services, and Meckler Engineers Group were all consultants to the Tobacco Institute; Universal Corporation, DIMON International, and Standard Commercial Corporation are the three largest tobacco leaf merchants in the world; Hoechst Celanese is a maker of cigarette filters; Mead Paper, Mundet International, and Ecusta are all paper suppliers to the tobacco industry; and Quest International Flavors is a flavorant supplier to the industry. 321141105-1144 (US 20588), 2061691882-1913 (US 24012); Eisenberg TT, 11/8/04, 5428:16-5431:10; 5443:7-21; 5453:2-5456:5.

3512. Tobacco Institute executives attended a number of CIAR Board of Directors meetings after Eisenberg established an office in Linthicum, Maryland. In April 1989, Eisenberg, Spears, and Rupp gave a presentation and status update to a meeting of the Tobacco Institute Executive Committee. Eisenberg WD, 6:8-10; TIMN0014955-4960 (US 62784); 2023053733 (US 86513).

3513. On January 19, 1993, Liggett Scientific Issues Manager Dennis Dietz attended a CIAR meeting in London, along with executives from Philip Morris, Lorillard, Reynolds, BATCo, B&W, and several international manufacturers. 2023053733 (US 86513).

3514. In 1989, Eisenberg recruited outside scientists to serve on CIAR's Scientific Advisory Board ("SAB"), including Dr. Jared Cohon (Johns Hopkins), Dr. James Crapo (Duke), Dr. Gareth Green (Johns Hopkins), Dr. Irving Kessler (Univ. of Maryland), Dr. Morton Lippmann (NYU), Dr. Demetrios Moschandreas (ITT Research Institute), and Dr. Alfred Wolf (Brookhaven National Laboratory). Eisenberg TT, 11/09/04, 5665:16-5666:14; US 20588 (at 321141106).

3515. CIAR's SAB research agenda stated an interest in (1) "[e]nvironmental tobacco smoke (ETS), including respirable particulate and vapor-phase components;" (2) "[c]hemical contaminants from all sources, organic and inorganic;" and (3) "[b]iological agents, including aeroallergans and aeropathogens." (US 20588) (at 321141115).

3516. Despite the establishment of a functioning Scientific Advisory Board, only the CIAR Board of Directors had authority to approve the funding of any CIAR project. Eisenberg WD, 3:20-23, 15:21-16:6.

3517. Research proposals submitted in response to CIAR's annual requests for applications were reviewed initially by peer reviewers, then by the scientists on CIAR's SAB, then by the Executive Director, and then by the member company scientists who served on CIAR's board of directors and made the final funding decisions. 11/09/04 Tr. (a.m.) at 5495:1-25 (Eisenberg).

3518. In order to reach out to prospective researchers, CIAR issued its "Request for Applications" (RFA). CIAR RFAs were published from 1989 to 1998. The introduction in the 1988 RFA described CIAR as "an independent, non-profit corporation" whose purpose was "to sponsor scientific and technical research" on indoor air issues. 321141105-1144 (US 20588) (1989-1990 RFA); TI01900054-0094 (US 77530) (1991 RFA); 2023523979-4010 (JD 080303) (1992-1993

RFA); 2025471735-1762 (JD 024508) (1994 RFA); 2057790373-0404 (US 23995) (1995 RFA); 2061691882-1913 (US 24012) (1996-1997 RFA); 86616778-6810 (JD 042662) (1998 RFA).

3519. The names of the Charter Members was printed only on one page in an appendix in each of RFAs, on the same page with the names of the "regular" and "associate" members. See, e.g., 321141105-1144 at 1142 (US 20588) and 2061691882-1913 at 1898 (US 24012).

3520. CIAR RFAs did not disclose that:

- CIAR was almost exclusively funded by major cigarette manufacturers, and that the remainder of the funding (<½ %) was supplied by other companies affiliated with the manufacture of cigarettes;

- CIAR received significant funding from international cigarette manufacturers, including BATCo, Rothmans, and Imperial Tobacco (see discussion of Malmfors and Hazleton projects, below).

- Although CIAR had a Scientific Advisory Board in place as of early 1989 to review proposals for scientific merit, CIAR funded and managed a large number of projects that never went through the SAB process (see discussion of Applied Projects, below).

3521. CIAR also published a quarterly newsletter called "CIAR Currents" from 1991 to 1998. Eisenberg TT, 11/9/04, 5486:15-5487:2. In total, CIAR published 19 editions of "CIAR Currents," none of which disclosed that CIAR was controlled and funded by the tobacco industry. 88803301-3304, 2023055036-5039, 88803309-3312, 2028462984-2987, 2023521998-2001, 87251727-1730, 2028462980-2983, 89273328-3331, 89273324-3327, 89273320-3323, 89273316-3319, 89273312-3315, 89273308-3311, 515952380-2383, 517577679-7682, 2063650763-0767, 517557109-7112, 517557145-7148, 2063835149-5152 (US 92019).

3522. The CIAR newsletters, like the RFAs, did disclose the names and university affiliations of Scientific Advisory Board members. The newsletter did announce new additions/replacements to its SAB, but never disclosed the departure or arrival of new members of the cigarette manufacturer Board of Directors. (US 92019); Eisenberg TT, 11/9/04, 5499:18-22, 5501:5-11.

3523. From 1988 until its dissolution as required by the MSA in 1999, CIAR funded over 150 projects at over 75 institutions that resulted in roughly 250 peer-reviewed publications. (JD 002923 at 8360029); (JD 054352). Total research funding provided through CIAR was in excess of $60,000,000. See US 25643

(a) CIAR Applied Projects

3524. In addition to SAB projects, CIAR funded a class of studies called "Applied Projects," similar to CTR Special Projects, which were approved and directed by the Board of Directors with no review or recommendation by the Scientific Advisory Board. As described below, CIAR Applied Projects were used by Defendants to generate data and conclusions to support the industry's position on passive smoking.

3525. CIAR Board member and Lorillard scientist Vello Norman wrote in his minutes of the February 2, 1989 Board of Directors meeting:

> CIAR funds two kinds of studies:
>
> a. Research -- involvement by SAB, peer review, etc.
>
> b. Special Studies -- would normally be initiated by the Board, not subject to peer review (airlines, indoor air surveys, reviews, etc.)

87823747-3750 (US 85695). Board member Tom Osdene took notes from the same meeting, recording that "Special Studies" were distinct from CIAR "research," were not peer reviewed, would be initiated by the Board, and were also called "Applied Projects." 2021005961-5969 (US 25580).

3526. Fellow Board member and Philip Morris scientist Bob Pages wrote in a September 14, 1990 memorandum that CIAR was a "vehicle to sponsor/conduct special projects (Applied Studies)." 2023530026-0029 (US 23003).

3527. In a May 14, 1992 memorandum to Jim Charles, Pages distinguished "Applied Studies" from CIAR's ordinary research in these terms:

> The SAB recommends proposals for funding after they have been peer reviewed. Proposals can only be funded subsequent to approval by the Board. A second class of research projects -- Applied Studies -- are also funded if approved by the Board; such projects are not normally reviewed or recommended by the SAB.

2023054167-4167 (US 75232).

3528. Funding for Applied Projects was often billed by CIAR as "Special Assessments" in addition to the yearly market share-based payments of the companies to CIAR. (US 92032).

3529. CIAR Applied Projects was used by Defendants to fund studies that were previously approved by the TI-ETSAG, or Hoel Committee, and underway at the time of CIAR's formation in early 1988. These studies included:

1. **James Enstrom ($525,000)**; this study examined the association between spousal smoking and lung cancer using CPS 1 data.

2. **Torbjorn Malmfors ($638,806)**; a study of air cabin air quality aboard SAS aircraft.

3. **Roger Jenkins/ORNL ($920,794)**; three projects measuring ETS and passive exposure to tobacco smoke in Knoxville; in a restaurant/bar; and in a corporate facility.

4. **Roger Jenkins/Michael Guerin/ORNL ($1.7 million)**; an ETS exposure study of subjects in 16 cities across the country. (Guerin was a member of the CIAR SAB.)

5. **Marvin Kastenbaum ($170,935)**; a statistical project to develop certain tables to evaluate indoor air components. (Kastenbaum was a statistician employed by the Tobacco Institute.)

6. **Keith Phillips/Hazleton Labs (later called Covance Labs) ($8.0 million)**; a number of exposure/measurement studies conducted in foreign cities.

7. **ETS "Treatises"** (funding amount unknown); textbooks on ETS and related indoor air topics (See BR2000545-0785 (JD 065024); (no bates) (JD 044893); (no bates) (JD 080699); (no bates) (JD 080700)).

8. **Samuel Lehrer ($2.45 million)**; at least three projects assessing ETS and asthma in children and adults, and a project to assess asthmatic responses to perfumes.

9. **Alan Hedge ($979,092)**; this study examined "the extent to which ETS is related to the perception of comfort and health of office workers in office buildings," as well as ventilation conditions.

10. **Genevieve Matanowski ($2.3 million)**; one project ($1.6 million) was a confounders study designed to attack documented associations between ETS and lung cancer; the second project ($679,000) investigated lung cancer in non-smokers in South America. (Matanowski was a member of the CIAR SAB.)

11. **Ragnar Rylander ($333,031)**; a study using a questionnaire to determine lifestyle differences (confounders) between groups in Sweden and Switzerland.

12. **Thomas Platts-Mills ($590,642)**; a project evaluating ventilation, wheezing, and allergens.

13. **Milt Meckler ($127,318)**; a project to assess the impact of a ventilation/filtration system on indoor air. (Meckler was a paid Tobacco Institute consultant.)

14. **Demetrios Moschandreas/IITRI ($525,312)**; three projects assessing perceptions/reactions of persons to ETS in the air. (Moschandreas was a member of the CIAR SAB.)

15. **Antonio Miguel ($72,760)**; a project to test for gas and particle phase substances in indoor air in Brazil.

16. **Gray Robertson/HBI ($138,000)**; testing of air samples in office buildings.

17. **Robert Tardiff ($466,297)**; a project, using the Jenkins/ORNL data, "to produce distributions of exposure to ETS."

18. **Giovanni Viegi ($1.28 million)**; research into ETS confounders, assessing risk factors for cardiovascular and respiratory disease in Italy.

2505442777-2960 (US 25643*); 83205526-5581 (US 92033) (Applied Projects are indicated with the notation "Other"). Defendants spent over $21.5 million in, or one-third of its total funding, on CIAR "Applied Projects." 2505442777-2960 (US 25643*); 83205526-5581 (US 92033).

3530. John Rupp summarized the work of CIAR in 1993 by stating that "a number of CIAR-funded projects have contributed significantly to the industry's ongoing efforts to oppose unwarranted smoking restrictions." Rupp then ticked off the Applied Projects that had proven valuable for Defendants, including the HBI project, the Malmfors/SAS study, his "Asia Project" by Sarah Liao, the Hazleton Project, and the Jenkins/ORNL projects. Rupp continued, "What we have learned over the past five years, the period of CIAR's existence, is that CIAR can make -- indeed,

already has made -- an important contribution to the industry's efforts to fight unwarranted smoking restrictions." 87602277-2281 at 2278-2279 (US 23516).

3531. Applied Projects eventually assumed a more prominent role in CIAR operations than the SAB-reviewed studies as the industry's "needs" for certain types of studies grew. CIAR Board member Bob Pages wrote the following in an August 19, 1992 Philip Morris e-mail to Steve Parrish with respect to the future CIAR budget:

> As I mentioned at our July 1st ETS science meeting, the CIAR board has come up with a plan to refocus CIAR efforts so that we get more research results which will be useful and responsive to our needs: maintain the SAB-related research budget at a (reduced) constant, self-sustaining level; and fund more applied projects which are better targeted to meet our needs.

2023132080-2081 at 2080 (US 92031).

3532. CIAR's primary value was to generate data for defensive use in litigation. CIAR Board of Directors chairman Tom Osdene of PM wrote Sam Chilcote of the Tobacco Institute five years earlier in an April 25, 1988 letter that "the purpose of CIAR" was "to provide ammunition" for the industry on the ETS "battlefield." 2021012384-2388 at 2384 (US 20340). Rupp wrote in a March 1993 letter to Imperial Tobacco: "In sum, while one might wish it otherwise, the value of CIAR depends on the industry's playing an active role (1) in identifying research projects likely to be of value and (2) working to make sure that the findings of funded research are brought to the attention of decision makers in an appropriate and timely manner." 2023053717-3720 at 3719 (US 20373).

3533. An August 17, 1988 memorandum, written by former Covington & Burling advisor and current BATCo scientific head Chris Proctor, discussed CIAR and the advantages of membership to BATCo and Brown & Williamson. Proctor wrote:

> Meetings of the board are held every five weeks in Washington and, in addition to the board members, John Rupp (Covington and Burling), Don Hoel (Shook, Hardy and Bacon), Mary Ward (R.J. Reynolds) and a TI representative attend to observe. Rupp and Hoel comment on product liability aspects. In terms of scientific acceptability, CIAR provides a further buffer between the Company and the third party, yet allows strong control of projects without major in house effort.

400974598-4600 at 4598, 4600 (US 47526).

3534. CIAR also served as a buffer between Defendants and the projects they funded. In an internal PM e-mail April 15, 1991 from Bob Pages to Steve Parrish, Pages recommended against using CIAR to fund what would become the Japanese Spousal Study, but added: "although there MAY be (I'm not convinced yet) a reason to say it was sponsored by CIAR so as to "hide" industry involvement (as was done in Rupp's 'Asia project')." 2023544456 (US 22816) (emphasis in original).

3535. BATCo Scientific Director Sharon Boyse (Blackie) made a similar comment when she observed in a June 19, 1991 memorandum that

> the Japanese study could be channeled through an 'independent' organization such as CIAR. No matter how good the science, independence is always preferable, and in fact BAT made the decision to discontinue part of its research on ETS for this very reason.

507974107-4109 at 4108 (US 24730*).

3536. In a March 12, 1991 letter to Boyse, Rupp commented:

> In fact, I am not aware of an instance in which our opponents have been able to dismiss the results of CIAR-funded projects by attacking the funding source. That is, it seems to me, a very real and important achievement.

87602277-2281 at 2278 (US 23516).

3537. Tobacco industry attorneys had a significant role in the funding and approval of CIAR projects. In a June 28, 1988 memorandum to Philip Morris Assistant General Counsel Todd Sollis detailing Shook, Hardy & Bacon's ETS initiatives, Don Hoel wrote:

> SHB is instrumental in developing scientific research in the area of ETS. In the United States, much of this development is now undertaken through the Center for Indoor Air Research (CIAR). PM is a member of CIAR and currently chairs its Board of Directors. Within that organization, SHB represents the interests of PM in evaluating research proposals and in determining which existing projects should be continued. The firm also monitors ETS Advisory Group projects, which are now being "folded" into CIAR.

2015007199-7207 at 7205 (US 20311).

3538. At least one of the industry attorneys (Hoel, Rupp, or Ward) attended every CIAR Board meeting where project proposals were discussed and approved. See, e.g., 2021006342-6347 (US 25581); 2023531016-1018 (US 23674); TIBU34458-4469 (US 65527); TI01900211-0214 (US 21241); 87823743-3746 (US 90011); 87802318-2319 (US 23535); 87823747-3750 (US 85695); 2353587697352-7354 (US 56308); 400974598-4600 (US 47526).

3539. In sum, it is clear that although CIAR was publicly billed as an independent scientific entity organized to support research projects addressing indoor-air issues, its funding was controlled by the tobacco industry, and projects were sought for the purpose of establishing industry-favorable science and potential expert witnesses.

(b) Defendants Cultivated CIAR's Apparent Independence

3540. Defendants selected and funded Applied Projects, those not reviewed by CIAR's SAB, in order to counter the impact of studies linking ETS and disease and to generate data favorable to the industry's public ETS position. Several CIAR-sponsored Applied Projects are described below to illustrate how CIAR served the industry's goal of concealing tobacco industry funding and control.

3541. The Rylander Confounders Study. From 1994-1996, CIAR sponsored a project by long-time industry consultant Ragnar Rylander, resulting in a 1999 published paper, titled "Dietary Habits for Non-Smoking Females Living With Smokers or Non-smokers." The paper highlighted differences between groups, differences which suggested that confounders (risk factors other than ETS) explained the association between ETS and disease. 2067224066-4069 (US 85733).

3542. Philip Morris funded the project alone. 2028381480-1480 (US 26873); 2028381481-1490 (US 26874), and paid for Rylander's project via a "special assessment" from CIAR. 2050764511 (US 92032); Eisenberg WD, 43:16-19. Though the Rylander study was a Philip Morris project, the published paper stated only that the study was "supported by CIAR." 2067224066-4069 (US 85733).

3543. "Rupp's Asia Project." In 1991, industry ETS consultants Sarah Liao and John Bacon-Shone published a paper, titled "Factors Influencing Indoor Air Quality in Hong Kong: Measurements in Offices and Shops." The paper concluded that indoor air quality in Asian cities was largely influenced by outdoor air pollutants, and that ETS played only a very minor role in indoor air quality. The paper fails to disclose the source of funding. TLT0500039-0047 (US 65087).

3544. The Hong Kong project protocols were designed by BATCo's Chris Proctor and Reynolds's Guy Oldaker for industry ETS consultant Liao to use. 2500048508-8515 at 8509-8510 (US 20549); 300541891-1894 (US 85550). A project proposal from Liao to CIAR was dated March 6, 1990; the introduction in the proposal stated: "The project shall be sponsored by Centre for Indoor Air Research (CIAR) of U.S.A." 2023530411-0428 at 0412 (US 23672). See also 2023530327-0330 at 0329 (US 90023).

3545. The Hong Kong project went forward sponsored by CIAR. Proctor presented a progress report on the project at the February 6, 1991 CIAR Board of Directors meeting. 87802318-2319 at 2318 (US 23535). Proctor sent Eisenberg and the Philip Morris and Reynolds directors a draft of the Hong Kong paper under a cover letter dated March 1, 1991. 2023546632 (US 90026). CIAR Board member Bob Pages wrote Steve Parrish on April 15, 1991 that CIAR was used to sponsor the study "so as to 'hide' industry involvement." 2023544456 (US 22816). Rupp himself told Sharon Boyse (Blackie) in a letter dated March 12, 1993 that the Liao/Hong Kong study was one of many CIAR sponsored projects that had proven valuable to the industry. 87602277-2281 at 2278 (US 23516).

3546. The value of the study was in its perceived independence from the tobacco industry. In a February 14, 1990 memo to Defendants, Rupp stated, "Because the Hong Kong study will be conducted and reported by independent scientists, we expect that the results (however inappropriately) will carry more weight with a variety of target audiences than have the results of previous studies conducted and reported by industry scientists." 2500048976-8998 at 8989 (US 23007). Proctor distributed the published paper to sponsors from BATCo, Philip Morris, and Reynolds, thanking them for their "commitment to the study." 300541761 (US 23597). The

Tobacco Institute cited the paper as seemingly independent authority in support of its March 20, 1992 comments to OSHA denying the need for workplace smoking restrictions. TLT1022319-2405 at 2367 (US 87404).

3547. In a January 29, 1999 article in the South China Morning Post, Liao admitted that she received approximately $1 million from CIAR to carry out the Hong Kong study with Bacon-Shone. Liao stated that she was not aware that the source of the CIAR funding was the tobacco industry. 2072522793-2795 at 2793 (US 24607).[31]

3548. The Hazleton/Covance Project. At a cost of over $8 million, CIAR sponsored a number of exposure projects carried out by Hazleton Laboratories, which later became Covance Laboratories. The purpose of the Hazleton studies was to portray ETS as only a minor indoor air pollutant in the context of overall air quality and to generate bias data to undermine epidemiological studies showing an association between spousal smoking and lung cancer in nonsmokers. The Hazleton Project resulted in the publication of more than 11 studies. 2505442777- 2960 at 2880-2885 (US 25643*); 2501003237-3242 at 3238-3239 (US 22320).

3549. Defendants, through the IEMC, discussed in detail in Section V(G)(6)(a)((5)), infra, agreed to fund Hazleton as part of the industry's broad "Response to the IARC ETS Study." 2505443991-4000 at 3996 (US 22202); 2028363615-3616 (US 37366).

3550. According to the Rothman's scientist Barry Frost's January 1993 presentation to the IEMC, the contributors to the first of the Hazleton studies were Rothmans, Philip Morris, Reynolds, Imperial Tobacco, BATCo, Japan Tobacco, the German Verband (VdC), French manufacturer Seita,

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[31] At trial, Eisenberg, the director of CIAR, denied that CIAR sponsored the Liao/Hong Kong study at all. Eisenberg TT, 11/9/04, 5568:27-5569:3. The Court does not credit this testimony.

Spanish manufacturer Tabacalera, and the Swedish tobacco organization Reserca. 2021520163-0180 at 0167 (US 26738).

3551. The Hazleton Project resulted in numerous publications, some of which appeared in the tobacco industry's journal Indoor and Built Environment. 2505442777-2960 at 2883-2885 (US 25643*).

3552. The Latin American Project. In 1995, Antonio Miguel published a paper, titled "Characterization of Indoor Air Quality in the Cities of Sao Paolo and Rio de Janiero, Brazil," in the journal Environmental Science & Technology. The paper concluded that ETS was only a minor part of indoor air particulate matter in the restaurants and offices tested. The paper included an acknowledgment at the end stating that the study was funded in part by CIAR. 89273967-3974 (US 92023).

3553. The Miguel paper was part of the Latin American Project funded directly by the CIAR Board of Directors as an Applied Project. Under cover letter dated September 30, 1992, Covington & Burling analyst Chris Proctor forwarded two project proposals, the first by Miguel the second by Maria Calfaro, directly to Eisenberg and the CIAR Board of Directors for funding. The purpose of the projects was to gather data on indoor air in restaurants and offices in Brazil, Costa Rica, and other Latin American countries. The cost of the projects as proposed was $72,760 and $76,820, respectively. 2023591432-1459 (US 26794).

3554. Proctor wrote in his letter that funding the projects through CIAR would have "no direct implications for CIAR's budget." This was because, according to notes written by CIAR Board member Bob Pages on Proctor's cover letter, the projects were not funded by CIAR, but directly by Philip Morris (40%) and BATCo (60%). Moreover, Proctor's expenses in managing the

projects were to come out of the "ongoing consultant program," and John Rupp would "pick up out of pocket CIAR expenses." Thus, CIAR was used for sponsorship only, to avoid having to name Philip Morris and BATCo as sponsors in the published paper. 2023591432-1459 (US 26794).

3555. A November 23, 1992 update from Rupp reported that the funding of the Calfaro study, although "conducted under the auspices of CIAR" would be split among Philip Morris and BAT Group companies in Guatemala, Panama, El Salvador, Nicaragua, Honduras, and Costa Rica. 300543217-3227 at 3218-3219 (US 28139). An October 2, 1992 letter from Covington & Burling attorney Patrick Davies to Souza Cruz, the Brazilian affiliate of BATCo, advised that Rupp had asked him to respond to "questions to Sharon [Boyse] about billing for the Brazilian field study" and that Covington & Burling had set up a checking account in Sao Paolo to receive payments from BAT companies and disburse payments to the researchers. Davies also wrote that Proctor would be returning to Brazil "to oversee the field study." 300543295 (US 92025); see also 300543259-3260 at 3259 (US 28145) (11/29/92 letter from Davies acknowledging CIAR sponsorship of Central American study.)

3556. A Philip Morris record of an August 14, 1992 ETS meeting confirms that CIAR was chosen as a cover for the two projects in order to avoid disclosure of cigarette company involvement:

> MW [Philip Morris's Matt Winokur] or J. Rupp to meet with A. Gonzalez/C. Rodriguez concerning how best to handle disclosure issue concerning Brazil and Central America projects (CIAR was suggested as the best way to handle the projects).

2051810375-0377 at 0376 (US 92066).

3557. In 1995, CIAR billed Philip Morris a "special assessment" of $1 million for "Latin America/Asia exposure studies." 2050764531 (US 92032).

3558. The 16 Cities Study. One of the more expensive studies funded through CIAR as another Applied Project was the ORNL project published as the 1996 paper "Exposure to Environmental Tobacco Smoke In Sixteen Cities In The United States Determined By Personal Breathing Zone Air Sampling." (JD 044272); Ogden WD, 6:1-11; Ogden TT, 3/17/05, 15948:15-15949:8.

3559. Defendants undertook the 16 Cities Study in response to a workplace indoor air rule proposed by OSHA in September 1991. 2023859480-9486 (JD 080318). According to an October 8, 1992 Philip Morris e-mail from CIAR Board member Bob Pages to Steve Parrish, Reynolds CEO Jim Johnston conditioned his company's continued funding of CIAR on the initiation of projects that would help the industry oppose the OSHA rule: "CIAR must use all of its resources in support of projects/activities that will help us with OSHA." In the same e-mail, Pages stated that fellow CIAR Board member and Reynolds scientist Charles Green told him that "the prevailing attitude around Winston-Salem is that 'if we lose with OSHA, it's all over.'" 2028472657A-2028472658 (US 75169); Ogden TT, 3/17/05, 15947:6-9.

3560. The 16-Cities Study was planned in early 1993 with Reynolds, ORNL, and Reynolds' long-time marketing research firm, Bellomy Research. 508692972-2972 (US 92102). Bellomy was responsible for proposing the cities in the study, locating marketing research firms in those cities, and overseeing the entire process of obtaining the questionnaire data from participants. Ogden TT, 3/17/05, 15951:23-15953:6; Ward TT, 11/3/04, 4990:6-4991:24. Bellomy and Reynolds created the questionnaire given to participants. Ogden TT, 3/17/05, 15955:4-14. CIAR funding was split between ORNL and Reynolds, who received over $500,000 from CIAR to assist ORNL with data interpretation. 522057702-7708 at 7702 (US 93165); Ogden TT, 3/17/05, 15967:23-15968:5.

3561. As requested by the CIAR Board of Directors, all of the laboratory testing of body fluids and air samples for metabolites of nicotine was carried out at the Reynolds laboratories in Winston-Salem. Ward TT, 11/3/04, 4987:17-24; (JD 044272 at 483) ("ETS and saliva samples were shipped to the RJR/RD analytical laboratories. . . ."); 522057702-7708 at 7702 (US 93165). Ward TT, 11/3/04, 4987:25-4989:17.

3562. Reynolds scientist Mike Ogden (1) "designed and executed" the 16 Cities Study; (2) was responsible for completing all the analysis of the body fluid samples in the study; (3) authored 17 Reynolds Research & Development Memoranda (R&DMs) on the project; and (4) could have been listed as an author on the published paper. 510781780-1782 at 1780 (US 30001); 522057702-7708 (US 93165); 519274420-4426 at 4422 (US 30351); Ogden TT, 3/17/05, 15967:10-22.

3563. The lead researchers at ORNL were Roger Jenkins and Michael Guerin. Jenkins had been a recipient of major tobacco industry funding in the 1980s through the ETSAG. 2021004058-4064 (US 20339); 507734379-4380 (US 29905). Guerin served Defendants as a member of the CIAR SAB at the time the 16-Cities Study was carried out. 2025471735-1762 at 1736 (JD 024508); 2057790373-0404 at 0375 (US 23995).

3564. The results of the 16-Cities Study were favorable to the industry: the study concluded that exposure to ETS in the workplace was only a fraction of what was estimated by OSHA in the proposed rule. (no bates at II-48-II-70) (JD 023787) ("The ORNL Study is the best evidence in the record concerning workplace exposure to ETS.").

(c) The Demise of CIAR

3565. The MSA, signed by the parties in November 1998, required that Defendants shut down and disband CIAR within 45 days of "Final Approval." Although the MSA was signed by the

parties in November 1998, "Final Approval" by the settling States did not take place until approximately one year later. (no bates at 32-33) (JD 045158).

3566. The CIAR Board of Directors voted to dissolve CIAR on October 7, 1999, and Eisenberg formally dissolved the organization on December 6, 1999. 86205205-5206 (US 21091).

3567. Between the MSA signing in November 1998 and CIAR dissolution in December 1999, Defendants continued to fund millions of dollars of new and continuing research. In February 1999 alone the CIAR Board of Directors voted to fund over $3.5 million in new research. 2063908736-8736 (US 20514); 83205163-83205165 (US 23493).

3568. As one example of CIAR's continued activities, in 2000, the second edition of the CIAR text by ETS consultant Roger Jenkins was published, with Max Eisenberg listed as editor. The publication, titled "The Chemistry of Environmental Tobacco Smoke: Composition and Measurement," continues to dispute the known health effects of passive smoking and trivializing its role as an indoor air pollutant. According to Jenkins's introduction to his book: (1) "The degree to which ETS exposure represents a health hazard remains a point of contention"; and (2) "The contribution of ETS to the concentration of indoor air contaminants in commonly encountered environments is much less than is implied by the extreme values included in many tabulations of ranges observed." BR2000545-0785 at 0553 (JD 065024).

(5) Post-1991: IEMC

3569. In March 1991, after INFOTAB was dissolved, executives and lawyers representing several Defendants and other cigarette manufacturers formed the International ETS Management Committee (IEMC) to (1) fund and manage research on ETS and (2) coordinate the industry's strategy and position on passive smoking.

3570. A May 1991 Philip Morris document stated that the IEMC was established to insure that:

> 1. Common position statements and policies are developed and adopted worldwide;
>
> 2. Major potential threats of smoking restrictions and bans are identified;
>
> 3. Strategies are developed to deal with them;
>
> 4. The necessary resources are made available to the staff in the markets and regions; and,
>
> 5. Finally, that optimal coordination and cooperation across the companies is promoted to ensure the best application of those resources.

2500061112-1113 (US 22821).

3571. The executives and lawyers of the IEMC represented BATCo, Reynolds, Philip Morris, American Brands/Gallahers, Imperial Tobacco, Reemstma, and Rothmans was intended to work with a larger European industry organization called the Confederation of European Community Cigarette Manufacturers, or CECCM. 2500061112-1113 (US 22821); 507782317-2318 (US 20788).

3572. According to a 1991 memorandum by BATCo's IEMC representative Sharon Boyse (Blackie), the IEMC was established "following the AFCO judgment in Australia" when "a group of international industry lawyers met in London to consider the implications for the industry." This group became the IEMC. 300522762-2767 at 2763 (US 22223).

3573. The AFCO case referred to by Sharon Boye (Blackie) arose from a July 1986 advertisement by the Tobacco Institute of Australia, published in Australian newspapers:

> Lately, however, many non-smokers have been led to believe that cigarette smoke in the air can actually cause disease.

> There is little evidence, and nothing which proves scientifically that cigarette smoke causes disease in nonsmokers.

AFCO v. Tobacco Institute (Aust) (1991) 27 FCR 149.

3574. The Australian Federation of Consumer Organizations (AFCO) brought suit against the Tobacco Institute, alleging that the advertisement was deceptive under the Australian Trade Practices Act. AFCO v. Tobacco Institute (Aust) (1991) 27 FCR 149.

3575. Finding in favor of AFCO, the trial court held that the Tobacco Institute's advertisement was misleading and deceptive with respect to the scientific evidence that passive smoking caused lung cancer, respiratory diseases in children, asthma attacks, and middle ear disease. With respect to lung cancer, the Australian court held:

> In relation to the disease of cancer, the statement was erroneous and was misleading and deceptive both in 1986 and to date because: (a) far from there being little evidence that cigarette smoke caused disease in nonsmokers, there was much evidence to that effect, irrespective of whether the primary articles alone were regarded as evidence for the purposes of the advertisement, or regard was also had to the major reviews; and (b) a review of the totality of the available data leads to the conclusion that there was scientific proof in the sense that there was compelling scientific evidence that cigarette smoke caused lung cancer in nonsmokers.

AFCO v. Tobacco Institute (Aust) (1991) 27 FCR 149; upheld on appeal Tobacco Institute (Aust) v. AFCO (1992) 38 FCR 1; Tobacco Institute (Aust) v. AFCO (1993) 41 FCR 89.

3576. The industry realized after AFCO that it could be liable for statements that cigarette manufacturers or their trade associations (such as the Tobacco Institute) made denying the adverse health effects of ETS. In a memo on "Industry ETS Consultancy Programs," Dr. Sharon Boyse (Blackie) wrote:

> One conclusion that was very clear from the industry lawyers was that we had to further develop our resources of independent spokespersons who were not directly associated with the tobacco industry, in order to minimize situations in which we respond as an industry and so potentially lay ourselves open to legal claims.

300522762-2767 at 2763 (US 22223).

3577. One major role of the IEMC was to formulate a common position for the industry on ETS. To that end, Covington & Burling prepared a position paper, the "ETS White Paper," for the IEMC and CECCM, which concluded that (1) knowledge of the chemical composition of mainstream and sidestream smoke is not relevant to the composition of ETS; (2) knowledge of the health effects of active smoking is equally irrelevant; (3) ETS is only a very minor source of indoor air contaminants, and can be addressed via ventilation; and (4) the "pertinent evidence" did not support any claim that exposure to ETS was a cause of any disease or any adverse health effects in children or adults. 2023581802-1841 at 1808-1812, 1827, 1831, 1838 (US 88467).

3578. According to 1992 company memoranda from Philip Morris's Matt Winokur and BATCo's Sharon Boyse (Blackie) to their respective company executives worldwide, including Steve Parrish, general counsel of Philip Morris, the Covington & Burling position paper had been "approved and adopted for use by all the IEMC member companies" for public use. 2023581801-1801 (US 20392); 300528914-8914 (US 46573).

3579. The 1992 "ETS White Paper" was also forwarded to CECCM, the Tobacco Document Center (TDC) and all company representatives. 300543969-3970 (US 88468); 300543940-3942 (US 88469). Covington & Burling revised the "white paper" in 1993 and distributed it to IEMC and CECCM members for comments and approval. 500874371-4371 (US 88470); 300544202-4208 at 4206 (US 88471); 2025495368-5373 at 5370 (US 37270).

3580. CECCM worked with the IEMC and approved the IEMC position papers for use by all of its cigarette manufacturer members both with the media and with government officials. 300545701-5705 (US 88464); 300543440-3445 at 3443 (US 88465); 2504088209-8210 at 8209 (US 20571). In the words of the Rothmans representative to the IEMC: "It was eventually resolved: IEMC will develop the messages (globally); CECCM will deliver these message (in Europe)." (emphasis in original) 900006204 (US 88482); 900006205-6209 (US 88483). An "ETS Communications Manual" was compiled and distributed to all IEMC and CECCM members. 900006078-6080 (US 88485); 2072418746-8749 at 8746 (US 89141).

3581. In the 1990s, IARC undertook a large study in multiple cities to assess the health effects of passive smoking. Defendants also used the IEMC as a platform to monitor, influence, and criticize the IARC study. Boyse wrote the following in a December 1, 1993 memorandum to BATCo executives:

> IARC is to publish, in 1994 or 1995, the largest epidemiological study of ETS ever carried out, covering eleven Centres in Europe, North America, and Asia. We believe it likely that on the basis of this study, IARC will classify ETS as carcinogenic, which would lead to a situation not dissimilar to that with the EPA in the USA . . . .
>
> Through the International ETS Management Committee (BAT, PM, RJR, Rothmans, Imperial UK and Reemtsma) we are developing a strategy, both scientific and media-related, to cope with this study.

500844318-4319 (US 48464).

3582. A September 2, 1993 Philip Morris memorandum discussing the IARC study warned that:

> The results are anticipated to have significant credibility both because this study consists of original research and because IARC itself has a solid reputation. Preliminary indications suggest that the study may

> find a very weak, but positive link between ETS exposure and lung cancer in non-smokers.

2501117793-7797 at 7793 (US 27932).

3583. According to several Philip Morris documents, industry objectives in 1993 included: (1) "delay[ing] the progress and/or release of the study"; (2) taking steps to "neutralise the possible negative results of the study"; and (3) making efforts "to get the study shelved altogether." 2501117793-7797 at 7794 (US 27932); 2501348679-8683 (US 88474). The industry even asked: "Can we kill the credibility of the research up front, before publication?" 2500156109-6110 at 6109 (US 88473); 2025493279-3283 (US 88111).

3584. An updated 1993 plan was presented by Philip Morris's David Greenberg to Philip Morris Companies President and COO Bill Murray in September 1993. Objectives continued to include delaying the progress and release of the IARC study, as well as neutralising its results. Greenberg proposed setting up a Philip Morris IARC team, composed of Philip Morris employees and attorneys from Shook, Hardy & Bacon and Covington & Burling, to insure that the strategies were "implemented globally." 2021184116-4116 (US 26730); 2021184117-4121 at 4118-4119 (US 36718).

3585. Philip Morris's IARC planning involved executives and scientists from Philip Morris and Philip Morris Europe (FTR), in conjunction with the outside lawyers. Philip Morris (FTR) Scientific Director Helmut Reif took the lead in organizing and coordinating all of the inter-industry scientific efforts, which included preemptive assessment of the questionnaire to expose weaknesses; organizing with the law firms a team to identify and mobilize consultants, and offering IARC industry funded study results and protocols through Max Eisenberg at CIAR. Philip Morris's Matt

Winokur wrote to Philip Morris's general counsel Steve Parrish in a January 24, 1994 e-mail: "I agree that S & T (Richmond and Neuchatel) must be involved with all phases -- scientific, political and communications -- that come together when developing the industry's response to the IARC study. And already this is happening." 2029174855-4855 (US 88475); 2024104538-4538 (US 88476).

3586. From 1994 forward, a plan to counter IARC was carried out through a task force of the IEMC representatives. CECCM had its own "IARC Working Group" whose membership included many members of the IEMC "subgroup." The subgroup met to formulate the industry's comments and responses (called "ETS messages") to the IARC study both before and after publication; these "messages" were then be forwarded to CECCM and IEMC member companies to ensure unified positions. 900006185-6185 (US 88480); 2028361781-1781 (US 88478); 2078742949-2949 (US 27722).

3587. In a January 17, 1994 memorandum to David Greenberg, Matt Winokur summarized how the "IARC task force" had been set up "to coordinate plans and resources among the companies and in conjunction with National Manufacturers Associations." These plans included IARC "intelligence gathering" and the development of a "global communications . . . to address the impact of the study." 2025493459-3460 at 3459 (US 26843).

3588. A 1995 Reynolds Powerpoint presentation, titled "ETS: a global offensive and defensive strategy," called IARC a "manageable threat" that could be "globalized" and countered by CIAR and other industry passive smoking initiatives. 502558482-8497 at 8483, 8488, 8489, 8492 (US 29562).

3589. The industry's coordinated "IARC Release Plan," as written in 1996, involved many players. The plan was presented to IEMC and CECCM, for their approval. Rupp was in charge of writing various white papers that would be included in the National Manufacturer's Association manual. Shook, Hardy & Bacon provided legal clearance. Peter Lee reviewed IARC's ETS position and past practices to allow corporate affairs to identify weaknesses in the IARC methodology. There was a "Response Coordination Team" of executives from the member companies, including David Greenberg and Ruth Dempsey of Philip Morris, Chris Proctor of BATCo, and Steven Sears of Reynolds. More than a dozen other company executives and scientists served in other roles for the "Coordination Team." 2048381563-1574 (US 88131).

3590. The "IARC Industry Release Plan" was coordinated through CECCM. The minutes of the January 28, 1997 CECCM corporate member meeting recorded that Philip Morris gave a status update on the IARC study, and the members agreed that CECCM would update the manufacturer associations (NMAs) at the next meeting in February 1997. The "IARC Industry Release Plan" involved the cigarette manufacturer members, the NMAs, and public relations firm Burson Marsteller. 2072417681-7682 (US 89132).

3591. One strategy which was adopted to counter the anticipated IARC study was to create and convince scientific groups to adopt industry-favorable epidemiology standards, dubbed "Good Epidemiology Practices" or GEPs. 2501347174-7176 at 7175 (US 45951); 2029260524-0539 (US 26895); 2025493020-3030 (US 88108); 2028381627-1627 (US 26885). Through the use of its "GEPs," Philip Morris created and pushed a standard under which relative risks of less than two would be ignored, and would automatically bar a finding of causation. Parrish WD, 86:1-88:9.

3592. Defendants were unable to convince any organization to adopt their version of "good" epidemiological practices. In an April 3, 1998 Philip Morris e-mail from Ted Sanders to Cathy Ellis in Richmond, Sanders summarized the 1994 GEP initiative as follows:

> Approximately three years ago, the concept of GEPs was discussed in considerable detail in PM. Corporate Affairs thought it was a wonderful idea, because at first they. . . felt that part of a code for Good Epidemiological Practices would state that any relative risk of less than 2 would be ignored. This is of course not the case. No epidemiological organization would agree to this, and even Corporate Affairs realizes this now. A number of initiatives were attempted, but the one initiative which continues in Europe is currently under the auspices of John Rupp.

2060566164-6165 (US 20505).

3593. In early 1998, IARC published a summary update of its ongoing Multi-Center ETS study in its Biennial Report. 2063594009-4009 (US 39763). In this Report, the researchers reported a relative risk of lung cancer() of 1.16 for spousal exposure (CI = 0.93-1.44) and 1.17 for workplace exposure (CI = 0.94-1.45). In other words, non-smoking spouses exposed to smoking spouses faced a 16% greater risk of lung cancer, and non-smoking employees exposed to smoking fellow employees faced a 17% greater risk of lung cancer. Researchers also reported that "several quantitative indicators of ETS showed a dose-response relationship with lung cancer risk." 770007956-8214 at 8018, 8177-8178 US 88132; (no bates at 9) (JD 023241).

3594. Despite the findings in the IARC study of raised relative risks and a dose-response relationship, Defendants attacked the statistical significance with their GEPs below two. A March 8, 1998 BATCo press release stated:

> <u>Europe's Largest Ever Passive Smoking Study Has Failed to Establish a Meaningful Risk of Lung Cancer to Non-Smokers</u>

The ten year study, which was commissioned by the World Health Organisation and involved twelve centres in seven countries, has cast further doubt on the status of passive smoking as a cause of disease.

Dr. Chris Proctor, Head of Science for British American Tobacco said: "New scientific research from the World Health Organisation has shown the risk of lung cancer from environmental tobacco smoke to be either non-existent or too small to be measured at a meaningful level. . . . If this study cannot find any statistically valid risk, you have to ask whether there can be any risk at all."

2063594018-4018 (US 39764).

3595. A March 9, 1998 B&W press release stated:

MAJOR ENVIRONMENTAL TOBACCO SMOKE STUDY FINDS NO RISK

New research from one of the world's premier health organizations is out on environmental tobacco smoke.

In the largest study of its kind ever performed in Europe, research by the World Health Organization's International Agency for Research on Cancer (IARC) has found no meaningful increase in lung cancer risk to non-smokers exposed to environmental tobacco smoke.

"This is good news for smokers and non-smokers," said Sharon Boyse, director of scientific communication at Brown & Williamson Tobacco Corporation. We welcome this new study which confirms what we and many other scientists have long believed, that while smoke in the air may annoy some non-smokers, the science overall does not show that being around a smoker is a lung cancer risk," she said.

DXA0680223-0233 at 0233 (US 79025).

3596. In response, a March 1998 WHO press release stated:

PASSIVE SMOKING DOES CAUSE LUNG CANCER; DO NOT LET THEM FOOL YOU

* * *

> The results of this study, which have been completely misrepresented in recent news reports, are very much in line with the results of similar studies both in Europe and elsewhere: passive smoking causes lung cancer in non-smokers.
>
> The study found that there was an estimated 16% increased risk of lung cancer among non-smoking spouses of smokers. For workplace exposure the estimated increase was 17%. However, due to the small sample size, neither increased risk was statistically significant.

224460-4461 (US 79174).

3597. Another major purpose and function of the IEMC was to select and fund scientific studies to generate findings favorable to the industry's position that ETS was not a proven health hazard. For example, the Hazleton exposure studies described above, funded by Defendants through CIAR, were directed by the IEMC. 2023522351-2352B at 2352B (US 75127). The Japanese Spousal Study conducted by BATCO's Proctor and industry consultant Peter Lee was also directed by IEMC in order to obtain industry-favorable results. 300512244-2245 at 2245 (US 67752).

3598. A June 8, 1994 presentation by Philip Morris's Richard Carchman to the IEMC stated that IEMC-proposed exposure and confounder studies were to "be organized by and funded through CIAR." Carchman described four studies: two confounder studies by CIAR SAB member Genevieve Matanowski, the Hazleton project, and the ORNL16-Cities Study. The objective of the projects was to generate data for use with both scientists and policymakers in 1994 and 1995. 2505443991-4000 (US 22202).

3599. The IEMC agreed that once the Hazleton Project and the Japanese Spousal Study were completed, industry ETS consultants would be told by Covington & Burling "to spread the scientific word on the new scientific info" from the two projects. 2501003237-3242 at 3242 (US 22320); 2501003235-3235 (US 22322).

3600. The industry has also tried to discredit the IARC study results when addressing regulatory authorities. For example, Philip Morris's testimony before the National Toxicology Program (NTP) sought to use its misrepresentation of the IARC ETS study as the basis for its argument that the NTP lacked sufficient evidence to classify ETS as a carcinogen. 770007956-8214 at 8179 (US 88132) (citing 2063594507-4508 (US 27115)).

(6) The Global ETS Consultancy Program

3601. The ETS Consultancy Program was a worldwide network of consultants and organizations recruited to speak on behalf of the industry to influence public opinion, government officials, and scientists. As described below, Defendants created the ETS Consultancy Program to attack and discredit the scientific consensus and underlying evidence that passive smoking was a health hazard.

(a) Establishment and Goals of the ETS Consultancy Program

3602. One objective in creating and implementing the ETS Consultancy Program was simply to "keep the controversy alive" by attacking the scientific consensus that ETS was a health hazard. 321140944-0949 at 0944 (US 20586); 2021181803-1812 at 1803 (US 22155); 2047720166-0173 at 0169; (US 23966); 321091680-1729 at 1685 (US 28271).

3603. Creating and maintaining a controversy in the media and in the scientific literature allowed Defendants to continue arguing that ETS was not a proven health hazard. Director of Science & Technology Helmut Gaisch explained in an April 19, 1988 Philip Morris document titled "ETS Plan and Budget for the years 1988, 1989, 1990, and 1991" how the consultants would serve this aim:

> Objective for S&T [Science and Technology]:
>
> To organise and support scientific work on a continuous basis leading to results which are published in the scientific literature and reported at public scientific events. . . . This will enable the continued use of the argument: there is no convincing scientific evidence that ETS is a health risk for non-smokers.
>
> Scope: Management of experts as scientific spokespersons
> Management of extramural research projects
> Support of international scientific events

2501152297-2300 at 2297 (US 89558).

3604. Starting in the mid-1980s, the Tobacco Institute, with the assistance of outside attorneys at Shook, Hardy & Bacon and Covington & Burling, began the consultancy program in the United States. 2081369202-9220 (US 27796); TIMN435220-5272 (US 21734); TIDN0019217-9268 (US 85597); TI01140124-0133 at 0129 (US 62100).

3605. After the June 1987 "Operation Downunder" meeting, Defendants expanded their consultancy program to train and deploy scientists worldwide. 2028343858-3860 at 3858 (US 75086). Defendants referred to these efforts in the United States and globally as the ETS Consultancy Program, which continued well into the 1990s.[32] See 2500048635-8640 at 8639 (US 20550); 2071027438-7442 (US 40371) (1992-93); 2078462906-2909 at 2906 (US 75367) (1998-99).

3606. The ETS Consultancy Program, also called the "Whitecoat" project in many documents, ultimately sought to "resist and roll back smoking restrictions" and "restore smoker confidence" in all of Defendants' markets. 2501254705-4708 (US 75267). To do this, the industry recognized it had to undermine the scientific evidence demonstrating ETS was hazardous to

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[32] The Court is not making a finding that all paid industry consultants lied or gave testimony that they knew to be false.

nonsmokers and restore the social acceptability of smoking. 2023542519-2522 at 2519 (US 23677); 2501474253-4259 at 4253 (US 22017).

3607. In a February 17, 1988 memo, BAT scientist Sharon Boyse (Blackie) described the ETS Consultancy Program:

> In every major international area (USA, Europe, Australia, Far East, South America, Central America & Spain) they are proposing, in key countries, to set up a team of scientists organized by one national coordinating scientist and American lawyers, to review scientific literature or carry out work on ETS to keep the controversy alive. They are spending vast sums of money to do so, and on the European front Covington & Burling, lawyers for the Tobacco Institute in the USA, are proposing to set up a London office from March 1988 to coordinate these activities.

321140944-0949 at 0944 (US 20586).

3608. Sharon Boyse (Blackie) again described the scope and success of the effort in a July 1991 review and summary of the consultancy program:

> The industry in the US . . . has had a huge programme to develop independent witnesses or consultants on ETS-related issues, for media as well as for legal and scientific purposes. It is believed by the US industry that this wide availability of independent witnesses has been critical in their track record to date of defeating approximately 90% of all state initiatives to legislate on smoking restrictions.

3609. Defendants' intent was to influence "three audiences": "the scientific community, regulatory authorities, and the general public." 2501474253-4259 at 4258 (US 22017).

(b) Defendants' Implementation of the ETS Consultancy Program: Recruiting, Training, and Educating the Consultants

3610. Defendants and their lawyers created and trained a network of scientific consultants and academics to critique or research findings suggesting that secondhand smoke caused adverse

health effects, and to divert attention away from ETS to the issues of indoor air quality and ventilation.

3611. A Helmut Gaisch memo, titled "Proposal for the Organisation of the Whitecoat Project," described the program:

> Pro-active element: a) to generate a body of scientific and technical knowledge in the field of ETS within the PM EEMA and EEC markets. The Project's activities and programmes will include fundamental research, IAQ and IAQ studies. These will be undertaken by whitecoats, contract laboratories and commercial organisations such as ACVA.
>
> b) to disseminate and exploit such knowledge within specific communications programmes in these markets.

2501254705-4708 at 4705 (US 75267).

3612. BATCo's Sharon Boyse (Blackie) summarized the recruiting process in her February 1988 memorandum in these terms:

> The consultants should, ideally, according to Philip Morris, be European scientists who have had no previous connection with tobacco companies and who have no previous record on the primary issue [active smoking] which might, according to [Covington & Burling attorney David] Remes, lead to problems of attribution. The mechanism by which they identify their consultants is as follows: they ask a couple of scientists in each country . . . to produce a list of potential consultants. The scientists are then contacted by these coordinators or by the lawyers and asked if they are interested in problems of Indoor Air Quality: tobacco is not mentioned at this stage. CVs are obtained and obvious "anti-smokers" or those with "unsuitable backgrounds" are filtered out. The remaining scientists are sent a literature pack. . . . They are asked for a genuine opinion as independent consultants, and if they indicate an interest in proceeding further, a Philip Morris scientist makes contact.
>
> Philip Morris then expect the group of scientists to operate within the confines of decisions taken by PM scientists. . . .

321140944-0949 at 0944 (US 20586); see also 300538976-8999 (US 88778).

3613. In the words of David Remes, the lawyers were entrusted to locate a "corps of scientific consultants and engineers in each market" around the world. Covington & Burling and consultants in the United States were given the task of "weeding out unsuitable candidates." A particular problem was consultants who had ever expressed an adverse opinion on active smoking:

> Candidates who have made public statements adverse to the industry on the primary health issue generally are avoided, lest those statements be attributed to the industry if those candidates were retained as consultants on the ETS issue.

2501474253-4259 at 4256 (US 22017).

3614. Defendants often recruited consultants who had very little or no expertise in smoking and health issues. Defendants then educated and trained them.

3615. For example, a March 9, 1987 Philip Morris memorandum from Arjuna Kannangara to Mary Pottorff provided an update of recruiting efforts in Finland, Sweden, and Switzerland. Kannangara wrote that in order "to influence expert opinion" and "popular attitudes," the "strategy" was to:

> [R]ecruit and educate "consultants" to operate as credible third-party spokesmen in environmental toxicology and ETS (comparable to John Rupp/Indoor Air Pollution Advisory Group -- IAPAG).

2023541666-1668 (US 23675).

3616. A January 25, 1988 letter from Rupp to Gaisch and Philip Morris Europe counsel Bradley Brooks referred to consultants obtained by the industry in the ETS Consultancy Program as "'whitecoat' recruits." Rupp also described a March 1988 meeting of the Nordic consultants for "training and further orientation": "Our goal is to leave the March training/orientation session with

seven scientists . . . completely cognizant concerning the science of environmental tobacco smoke and prepared to share that knowledge with others at the industry's request." 2501474296-4301 at 4296-4297 (US 27955).

3617. The Asia ETS Consultancy Program was set in motion in 1989, based on the model already in place in the United States and Europe. 2500048655-8662 (US 27900); 2500048643-8654 (US 22857); 2500048508-8515 (US 20549); 2500048976-8998(US 23007). None of the consultants in the Asia Program had expertise or experience in ETS. 2500048655-8662 (US 27900).

3618. The April 10, 1989 Asia program status report detailed the consultant selection process. The document described how the Covington & Burling attorneys would make contact with a potential consultant, but withhold their affiliation with the tobacco companies. The attorneys would then give him or her a "packet" of ETS materials for review and comments. The researcher's potential as a consultant was then determined by review of these comments. The report noted that at least one promising consultant (Roh) needed "educating" on the industry's "misclassification" argument. Another consultant (Liao) would serve as a "buffer" between a high-visibility consultant (Koo) and Covington & Burling to provide a further layer of insulation from the industry. A two-day training session to educate the consultants on the relevant literature (provided by Covington & Burling) was scheduled for June 1989 in Bangkok. 2500048643-8654 (US 22857).

3619. In the September 27, 1989 Asia program status report, Rupp noted:

> We have not asked any of our Asian consultants to act as presenters but instead have requested that some of them participate in selected panel discussions. The symposium presents an ideal opportunity to expose the Asian consultants to the full range of issues and the most advanced current thinking on ETS and should bolster their confidence substantially. As the panel discussions will be transcribed and published alongside the keynote presentations, McGill [the McGill

> Symposium in 1989] will mark their first appearance in the scientific literature on ETS.

2500048508-8515 at 8509 (US 20549). Later in the February 1990 status report, Rupp reiterated: "One key objective of the project has been to recruit and educate scientists who would then be available to testify on ETS in legislative, regulatory, or litigation proceedings in Asia or elsewhere." Rupp then listed the various activities already undertaken by the Asia consultants on behalf of the industry, including distributing the McGill "symposium" proceedings, participation in scientific conferences and a public health committee, serving on the IAI journal board (see infra), carrying out research, and various media appearances. 2500048976-8998 (US 23007).

3620. The ETS Consultancy Program was subsequently exported to Latin America in 1991, with joint funding by Philip Morris (40%) and BATCo (60%). In the proposal from Sharon Boyse (Blackie) to Rupp dated January 2, 1991, Boyse summarized what had already taken place in Asia:

> The tobacco industry in Asia (BAT, PM, RJR and Japan Tobacco) has, for the past couple of years, been supporting a project to establish a consultancy group on ETS and related issues in the region.
>
> In each country . . . one or more scientists have been identified whose background enables them to take a scientific interest in the issues surrounding debate on ETS. . . . The consultants meet regularly to discuss ideas and learn about ETS issues, and have the background to become experts on ETS in their country, and to carry out research if required. Many are influential members of the scientific community. . . .
>
> As a result of the project, local experts on ETS are now available to provide consultancy services and to organize events and research. In many countries, positive media coverage of the issues has occurred, resulting in a decreased emphasis on ETS and increased attention to other environmental and indoor air pollution problems.
>
> In order to ensure independence from the tobacco industry, the programme is managed by John Rupp of Covington & Burling, a

> Washington-based law firm. All funding arrangements and contact with scientists is arranged through this firm.

321673508-3525 at 3509 (US 28585).

3621. Boyse then proposed to Rupp that an identical program be set up in Latin America. The project was projected to cost BATCo and Philip Morris $340,000 in the first year to recruit 14 consultants in five Latin and South American countries. Boyse wrote:

> It is proposed to develop a similar programme in Latin America. . . .
>
> The programme would be managed by Covington & Burling. Overall manager of the project would be the responsibility of Mr. John Rupp, with associates such as Mr. Chris Proctor contributing to the recruiting and training of the scientists. . . .
>
> Covington & Burling and Philip Morris already have scientific contacts in South America who could be used as starting points for recruitment. . . . Once scientists have been recruited, training in ETS issues would take place at orientation sessions held at regular intervals with the participation of Covington & Burling. . . . Once scientists have some training, a programme of activities would be put together. . . .

321673508-3525 at 3510 (US 28585).

3622. A July 24, 1991 document, titled "Latin American Candidate Recommendations," listed consultant selections by Covington & Burling, and provided the details and qualifications of many scientists, but recommended only those who whose views had been verified. For example, Carlos Alvarez from Buenos Aires had "already consulted for the companies in lawsuits involving cardiovascular disease from ETS exposure. Clearly, he shares the industry view on this issue." Eduardo Gros not only smoked, but had previously worked with BATCo scientist Chris Proctor. Covington & Burling had verified that Osvaldo Fustinoni of Argentina "does not believe that ETS poses a major health risk." 2503001504-1519 (US 85542). On the other side, Morton Schienberg

of Brazil was rejected because he and his wife "despise cigarettes and do not let anyone smoke in their house or around them." Covington & Burling rejected Dr. Rodrigo Villalba, a smoker, because he would not smoke "in front of his children or his patients because he believes ETS poses a hazard to them." Dr. Oscar Aldrey was not selected because he "believes that ETS is worse than mainstream smoke because it is not diluted by a filter." 2503001504-1519 at 1517, 1519 (US 85542).

3623. In addition to Covington & Burling, Shook, Hardy & Bacon attorneys also served as intermediaries between the scientists and the companies and oversaw the program. In a letter dated June 28, 1988 from Hoel to Todd Sollis of Philip Morris, Hoel wrote:

> One of the most important roles assumed by SHB in the scientific development of the ETS issue is that of liaison between the researchers and sponsoring members of the tobacco industry. By facilitating communication among all parties involved, maximum cooperation can be achieved. This helps assure PM of a ready source of scientists prepared to address the ETS issue at public hearings and scientific conferences as needed.

2015007199-7207 at 7206 (US 20311).

3624. An April 1990 Tobacco Institute "Management Plan Progress Report" documented that the Tobacco Institute continued to "identify and recruit academic researchers for the scientific witness program," another name for the consultancy program. TIMN194351-4398 at 4363 (US 87418).

3625. Defendants, both individually and collectively (e.g., through the Tobacco Institute), monitored the direction of the ETS Consultancy Program. For example, Anthony Andrade at Philip Morris emphasized industry control over the consultant projects in a September 1991 memorandum:

> I believe we should recommend formal quarterly or semi-annual reviews of the Covington & Burling consultant program to ensure that resources are being appropriately allocated. For example, we need to be in a position to direct C&B to expend more of its resources on Eastern European matters if the problems in that area take a higher priority than ETS issues within the European Community nations.

2023856321-6328 at 6328 (US 22037).

3626. In a March 14, 1990 "SECRET" document from Sharon Boyse (Blackie), titled "Far East ETS Project Update," Boyse noted:

> The priorities and budget for the programme were subsequently discussed at a meeting of representatives from supporting companies (BAT/B&W, Philip Morris, R.J. Reynolds, Rothmans, and JTI) in Hong Kong on March 7th. Details of that meeting are now reported. . . . It was agreed that regular meetings of representatives from the five major supporting companies (BAT/B&W, PM, RJR, Rothmans, JTI) will be essential now that there are so many companies and countries involved. Setting of priorities and evaluating progress will of necessity be an ongoing process throughout the year. Meetings will therefore be held every 2-3 months in Hong Kong. Covington & Burling will continue to produce regular written report.

30541874-1876 at 1874 (US 85567).

(c) The Indoor Air Pollution Advisory Group (IAPAG)

3627. The Tobacco Institute was the hub of Defendants' domestic ETS consultancy program, which included a group set up by Covington & Burling and several U.S. consultants in 1985 called the Indoor Air Pollution Advisory Group (IAPAG). Schwartz WD, 7:6-21.

3628. IAPAG activities were billed through the Center for Environmental Health and Human Toxicology (CEHHT), a consulting firm founded by consultants Sorell Schwartz and Philip Witorsch in late 1982 to enable the professors to perform consulting work beyond the 20 percent

time limit imposed by Schwartz's employer, Georgetown University. Schwartz WD, 2:25-3:9. Schwartz and Witorsch did their consulting work through CEHHT, and the Tobacco Institute covered CEHHT's basic operating costs. 2026335488-5492 at 5489 (US 26860).

3629. IAPAG consultants traveled throughout the country testifying at public hearings of many kinds. IAPAG consultants also: "reviewed, evaluated and critiqued scientific literature updated the database, educated and prepared scientific witnesses at direction of the Tobacco Institute, coordinated their interaction with the EPA, prepared scientific papers, participated in meetings." Schwartz WD, 5:7-9; see also TIDN0007373-7378 (US 77020); 2023542584-2586 at 2584 (US 87329); TI07560820-0821 at 0820 (US 65475).

3630. The Tobacco Institute employed IAPAG to rebut evidence confirming the association between ETS and lung cancer. Tobacco Institute vice president Walter Woodson wrote an internal memo dated January 15, 1988:

> I would like to know IAPAG's plans for dealing with new studies. For example, Balter mentioned three new cancer/ETS publications from late 1987, but it was unclear – to me, at least – what, if anything, they are doing to rebut new work in this and other ETS areas. Also, I'd like to know if IAPAG papers are underway for publication in peer-review journals. Such articles are a key reason for IAPAG existence, in my view.

TIOK0023599-3602 at 3600 (US 65701).

3631. The billing procedures and contacts between IAPAG consultants and the cigarette manufacturers obscured their close connection. As noted already, the billing for IAPAG's activities was done through CEHHT. See e.g., TI42550751-0754 (JD 54135). Rupp served as a buffer between Schwartz and the Tobacco Institute. Schwartz, through his consulting from CEHHT, billed Covington & Burling. Rupp kept the Tobacco Institute informed of IAPAG's activities. Checks to

IAPAG and CEHHT came from Covington & Burling, even though the money originated from the Tobacco Institute. Schwartz WD, 8:1-25.

3632. The Tobacco Institute decided where to send the consultants to make statements. Schwartz WD, 3, 8; TI07560615-0619 at 0618 (US 65472).

3633. During the 1980s and 1990s, CEHHT billed the tobacco industry millions of dollars for their services. The Tobacco Institute often spent tens of thousands per month on CEHHT fees. In 1986 alone, Schwartz's consulting firm received $1,032,000 from the Tobacco Institute. TI07560820-0821 at 0820 (US 65475); 87824794-4797 (US 32070); 87824798-4801 (US 32071); TI42550751-0754 (JD 54135); TI42550732-0740 (JD 54140); TI43990461-0455 (JD 54155); TI44110204-0205 (JD 54157); TI44110160-0162 (JD 54167); TI43370130-0132 (JD 54170); TI43370125-0127 (JD 54173); TIMN431124-1124 (US 62974); TI10160667 (US 65485).

3634. Schwartz's public appearances and the public relations aspect of his alliance with Defendants was discontinued in 1988 after he became uncomfortable providing the "unabashed advocacy" urged by the industry. Schwartz also became uncomfortable with the public testimony which the Tobacco Institute required of IAPAG. Schwartz WD, 12:22-26, 14:27-16:17. TI07560744-0746 at 0744 (US 62246); TI07560611-0614 at 0611, 0613 (US 65471); TI07562260-2261 (US 62247).

(d) The Appearance of "Independence"

3635. Through their recruiting and training of consultants around the world, Defendants created a cadre of seemingly independent consultants to support the industry's position on secondhand smoke and to create the impression that a legitimate controversy existed among

independent scientists. The global effort to create and manage this program required intense coordination among the companies and their counsel.

3636. The need for seemingly independent consultants emanated in part from an internal recognition that the industry had little credibility with the public and among regulatory bodies. As stated in a July 24, 1991 BATCo summary of the program:

> It has been apparent to the industry for some time that we do not have sufficient credibility to put forward a position on ETS (or any other issue for that matter) unless we can identify independent scientists who are saying the same thing. If independent scientists back up our position, it becomes more credible, not only to the general public and the media, but to politicians and other decision-makers. . . .
>
> Although it is essential for the industry to speak up about its positions, there are some things that are better left to independent scientists to express.

300522762-2767 at 2762 (US 22223).

3637. On July 15, 1988, company representatives from Philip Morris, Reynolds, BATCo and others, along with Covington & Burling and Shook, Hardy & Bacon lawyers attended a "Joint Meeting on ETS" at which they discussed the continuing industry ETS strategy of generating "marketable science" to use for public relations purposes. As one company representative told the group, "In providing this [ETS] information, the industry must be inconspicuous. Otherwise, he argued, the public will suspect the authenticity of the information." He recommended the use of third parties to convey Defendants' message. 2021548222-8235 at 8234 (US 20349).

3638. Defendants sometimes used long-time consultants, such as George Leslie and Francis Roe, to carry out recruiting and training tasks, so as to put more distance between the consultants and the tobacco industry. Leslie and Roe also assisted Rupp in identifying and recruiting additional

industry ETS consultants in both Europe and Asia. 2500048598-8600 (US 75372); 300541877-1877 (US 85568); 2501474253-4259 at 4256-4257 (US 22017).

3639. As with CEHHT, the consultants would bill Covington & Burling for their work, then Covington & Burling would bill the companies, to avoid direct payments from the companies themselves. See, e.g., 2023856341 (US 23713); 2023856342 (US 23714); 2023856343 (US 23715); 2023856344 (US 23716); 2023856345 (US 23717); 2023856346 (US 23718); 2023856348-6349 (US 23719*).

3640. In a memorandum dated December 12, 1988 from Philip Morris's Stig Carlson to Covington & Burling attorney Charles Lister, Carlson listed some specific industry ETS initiatives in Scandinavia, emphasizing the need to use different "contact" points to "avoid the infamous 'fingerprints'" of the cigarette companies. 2501255446-5447 at 5446 (US 85562).

3641. In Boyse's (Blackie) July 1991 review and summary of the program, she wrote:

> It was agreed that the kind of program that had been going on in the Far East and was being developed in Latin America was ideal, because the scientists were of good quality, were largely prepared to enter a more public arena than scientists normally would, and the programme was handled in such a way thanks to Covington & Burling that there was no direct association between the scientists and the tobacco industry. . . .
>
> For this type of programme it is absolutely essential to ensure that administration of the programme and contact with consultants is made quite independently of the tobacco industry, and that no tobacco industry executives have contact with them.

300522762-2767 at 2763, 2767 (US 22223).

(e) Defendants' Use of Consultants

3642. Through the consultancy program, the tobacco industry was successful in reaching "public, scientific and governmental audiences." 2500048956-8969 at 8967 (US 27901). In the words of B&W counsel Kendrick Wells: "The consultants groups' operation is essentially a public relations program, not a scientific operation." 401033325-3328 (US 24099).

3643. In a Philip Morris January 31, 1989 report titled "Boca Raton Action Plan," the company details its worldwide ETS initiatives, including placing consultants in scientific seminars, using consultants to resist aircraft smoking bans, using consultants to oppose restaurant smoking restrictions, the creation of Burson-Marsteller "News Bureau" programs in Europe for media distribution, and the coordination with other industry groups, such as INFOTAB and CORESTA. 2021595753-5910 (US 85541).

3644. In July 1989, after less than two years of participating in the program, Philip Morris vice president Andrew Whist reported to Philip Morris International president Geoffrey Bible (who later became CEO of Philip Morris Companies) that:

> Several hundred specific activities or events have been completed. These have included numerous press briefings, repeated briefings of important government officials, the publication of a number of review articles on the science of ETS, several air quality monitoring studies, convening of a number of scientific conferences, submission of comments on smoking restriction proposals being considered in a number of countries, testimony before a variety of legislative bodies, preparation and submission of affidavits and offers of proof in cases involving claims concerning ETS, publication of a book ("Clearing the Air") that seeks to put ETS into proper perspective, drafting of two additional books on ETS and indoor air quality issues, and approximately 100 separate presentations at major international scientific meetings challenging the unwarranted health claims that have been made concerning ETS.

2023034623-4632 at 4623 (US 26775).

3645. This July 1989 overview of the ETS Consultancy Program provides a snapshot of the size and complexity of the program. At that point, 70 scientists had been recruited in Europe, Asia, Australia, and Canada. This number included 49 scientists who were university-affiliated and 21 who were private. The consultants were sent to 36 scientific conferences in 1989, published some 43 papers, published three books in seven languages, delivered over 70 scientific and political briefings, gave over 1100 media interviews, and signed ten affidavits in an Australian AFCO lawsuit. According to the 1989 memorandum from Whist, this effort was managed by some 30 attorneys and cost approximately $3.5 million in consultant and legal fees in 1989. 2500048772-8781 (US 85527). This was before Defendants expanded the consultancy program into Latin America.

3646. Similarly, an October 1989 report from Covington & Burling provided Defendants a nine-page list of "conferences attended by consultants, recent publications, and ongoing projects" in Europe. 2500019903-9911 (US 25337).

3647. The Tobacco Institute played a pivotal role in retaining American and foreign consultants domestically:

> Scientific Witness Team. TI now has 23 consulting scientists whose businesses are to market their scientific expertise. Their principal mission is to testify before state and local legislative bodies on ETS and indoor air quality issues. They also respond to adverse articles in scientific technical, and general audience publications by submitting letters to editors. They attend and report on meetings of scientific organizations. . . . Members of the scientific witness team have made 48 legislative appearances and conducted 30 media tours to date this year. . . .
>
> Foreign Scientists. This strategy is to bring a "foreign" perspective on ETS science to U.S. journalists through the use of the industry's overseas consulting scientists. Through editorial board briefings and

> interviews with science and health reporters, these scientists will suggest that the U.S. understanding of ETS science is skewed by anti-smoker media hype, and that the U.S. response to ETS science is out of step with the rest of the world. . . . Next year we anticipate foreign scientists conducting at least one media tour per month in connection with attendance at scientific meetings.

TIDN0004239-4248 at 4239-4240 (US 75287).

3648. The Tobacco Institute's consultants attempted to critique and undermine scientific studies that identified ETS as a health hazard. For example, in 1993 alone:

- The Tobacco Institute paid consultant Gio Gori $3,555 to write a letter to the editor of the Journal of the National Cancer Institute ("JNCI") captioned: "Environmental Tobacco Smoke: The Price of Scientific Uncertainty." The letter appeared in the journal on January 6, 1993. The Tobacco Institute paid Gori another $4,137.50 to write an Op-Ed newspaper submission on the Environmental Protection Agency's Risk Assessment for the Wall Street Journal. TIMN0435220-5272 at 5225, 5226 (US 21734).

- The Tobacco Institute paid Peter Lee $4,000 to write a response to letters to the editor of Environment International that appeared on January 29, 1993, disputing the conclusion that ETS exposure caused lung cancer and mortality. TIMN0435220-5272 at 5253 (US 21734).

- On April 10, 1993, the Tobacco Institute paid Gio Gori $4,000 to write a letter to Lancet, disputing an editorial that had found the Environmental Protection Agency's Risk Assessment provided a firm regulatory basis for increased social action to minimize the public's exposure to ETS. TIMN0435220-5272 at 5231 (US 21734).

- In June 1993, the Tobacco Institute paid Peter Lee $5,000 to write a letter to the editor of Journal of the National Cancer Institute disputing results of an ETS study by Stockwell that post-dated the EPA Risk Assessment and found a link between ETS exposure and lung cancer in nonsmoking women. The letter was published along with two other letters

> from Tobacco Institute consultants Paul Switzer and Max Layard. TIMN0435220-5272 at 5247 (US 21734).

None of the letters disclosed that tobacco industry money had funded them. TIMN0435220-5272 at 5247 (US 21734); 2046342683-2686 (US 20469).

(f) ARIA and IAI

3649. The tobacco industry used its consultants to create larger organizations as well. Through these organizations, the industry's ETS consultants arranged conferences and published papers to get the industry's position on passive smoking into the scientific literature. 2500019903-9911 (US 25337); 2500048956-8969 (US 27901).

3650. The industry's ETS consultants in the United Kingdom, along with Covington & Burling, formed a group called Association for Research on Indoor Air ("ARIA") in 1988. 2500048956-8969 at 8960 (US 27901); 300538942-8943 (US 85552). According to Chris Proctor's record of an October 25, 1988 meeting in London, Philip Morris and Covington & Burling, along with the three ARIA founding consultants Francis Roe, George Leslie, and Frank Lunau, presented the ARIA group to Reynolds, BATCo, and other British manufacturers. 400974548-4550 (US 47525).

3651. ARIA was presented as a "Philip Morris initiative" set up in order to create a "group of scientists in the UK that will comment on ETS issues." Roe emphasized the value of ARIA's perceived independence to the other manufacturers and the industry, although the consultants were aware of the funding source:

> He stressed at length that the 16 individuals currently operating for ARIA were totally independent and that there was to be no formal contact between the individuals (not to be termed consultants) and the industry. . . .

> It was suggested that the position of Covington & Burling allows the members of each group to remain independent of the industry, though all know that it is tobacco money that is funding the exercise.

400974548-4550 at 4548-4549 (US 47525).

3652. In a memorandum dated October 10, 1988, B&W in-house counsel Kendrick Wells wrote Nick Cannar at BATCo that the industry also retained a public relations firm in London to generate material for distribution that was "intended to 'leverage' the statements" made by ARIA and its members. 401033325-3328 at 3325 (US 24099).

3653. The public relations firm was in fact the London office of Burson-Marsteller, who placed consultant statements in the European media. Burson-Marsteller, which coordinated their media activities with Philip Morris and Covington & Burling. 2500048951-8955 (US 85571); 2500048939-8941 (US 85572); 2500048926-8929 (US 85573); 2500048846-8847 (US 85574); 2500048931-8932 (US 85554).

3654. Covington & Burling organized, monitored, and funded the ARIA organization. 2500048956-8969 at 8960 (US 27901); 300538945-8954 (US 85549); 300541877-1877 (US 85568); 300538976-8979 (US 88778); 2501474253-4259 at 4256-4257 (US 22017); 2023856337-6349 (US 23712).

3655. In 1989, ARIA created an organization called Indoor Air International (IAI), a group to address scientific issues related to indoor air quality around the world. In a March 1, 1990, memorandum on the European Consultancy Program, John Rupp noted:

> Our consultants have created the world's only learned scientific society addressing questions of indoor air quality. The society (Indoor Air International) is seeking memberships from all those interested in IAQ issues throughout the world. It will soon have its own periodic newsletter . . . its own scientific journal. . . . The

> society will sponsor meetings and conferences . . . and thus can serve as an independent and accepted source of ideas and research regarding IAQ to the public and the scientific community. . . . We are of course including Asian and American consultants in the society, so as to provide worldwide coverage on IAQ issues.

2500048956-8969 at 8960 (US 27901).

3656. IAI was founded at an ARIA meeting in October 1989 exclusively by Defendants' paid European ETS consultants, notably Francis Roe, Frank Lunau, George Leslie, and Max Weetman. Most of the key members of ARIA were close friends of Roe. Covington & Burling managed the creation of IAI, publicly presented it as an "international learned society," and drafted the organization's bylaws. 2021598978-8991 at 8981, 8986 (US 23604); 2028440936-0950 at 0940 (US 75243); 300538942-8943 at 8942 (US 85552). IAI was funded by Philip Morris and BATCo. All billing was processed through Covington & Burling to avoid any direct connection to the industry. 300538942-8943 (US 85552); 300511564-1568 (US 85553); 2500048951-8955 (US 85571); 2500048931-8932 (US 85554); 2500049060-9062 (US 85555); TI43370125-0127 at 0125 (JD 54173).

3657. Rupp stated in his February 14, 1990 Asia consultancy program update that IAI intended to begin publishing a journal the next year. Rupp reported that Asia industry consultants were preparing to write articles for the journal, and several consultants were serving on the journal's editorial board. 2500048976-8998 at 8987-8988 (US 23007).

3658. IAI's publications and newsletters omitted any connection to the tobacco industry or tobacco law firms. Instead, its publications stated that the organization was merely a "learned society" dedicated to "promoting indoor air quality." 2028467035-7042 (US 85559); 2028467029-7034 (US 85560); 2023545366-5369 (US 23680); 325297289-7360 (US 85561).

3659. On September 5, 1991, Anthony Andrade wrote Mary Pottorff to voice his concern that Philip Morris should avoid direct involvement with IAI consultants:

> C&B should not recruit as consultants any scientists actively working for S&T. . . . There is a grave risk that IAI members may be compromised if they have a direct relationship with Philip Morris S&T. The best example would be Dr. Weetman. Dr. Weetman is obviously a critical leader in the C&B consultant program and IAI, and his potential usefulness could be jeopardized by his direct consulting relationship with PM S&T. Dr. Skrabanek is a second example.

2023856321-6328 at 6321-6322 (US 22037).

3660. IAI to some extent took over the law firm role of organizing and managing scientific conferences. According to a June 6, 1990 memorandum from Jim Newsom at Shook, Hardy & Bacon to other Shook, Hardy attorneys, the firm had a May 1990 meeting with Philip Morris's Steve Parrish to discuss ETS initiatives going forward. One topic was the industry's continuing use of IAI:

> We also briefly discussed whether we should be organizing conferences. Don [Hoel] had been responsible for these projects in the past. The newly-formed organization, IAI (Indoor Air International), plans to hold one indoor air conference each year. We told Steve [Parrish] that we would be willing to organize conferences depending on his views on how many conferences are needed , etc.

2023239673- 9695 at 9690 (US 26781); see also 2028467016-7019 at 7018 (US 85558).

3661. Geoffrey Bible, Executive Vice President of Philip Morris International, was kept informed as to the progress and achievements of the ETS Consultancy Program, and specifically ARIA and IAI. In 1991 Helmut Gaisch provided Bible an update:

> ARIA, an informal group, and IAI, a registered association, have made quite some progress during the recent months. It should be stressed that most act independently and are seen to be independent of us. IAI, Indoor Air International, who deal with the broad topic of the indoor environment, have a newsletter and a learned journal

> published by the respected Swiss scientific publishing house Karger. IAI have conducted large and successful international meetings in Lisbon and Montreux. IAI will jointly sponsor meetings in the near future with universities, government agencies and independent societies in Paris, Pavia, Perogia, Budapest, Prague, Bangkok, Bratislava, Athens and Rotterdam. . . . IAI members have met with governmental ministers and officials in several countries. . . . In all, no other resource gives the industry any similar access to the scientific community, government and those who make decisions about IAQ issues and standards. The key to this success is that an institution of growing professional authority was created, an institution that has developed an identity of its own.

2023856111A-6112 at 6111A-6112 (US 23708*).

3662. In 1995, the IAI changed its name to the International Society of the Built Environment ("ISBE") and the IAI journal's title was changed to "Indoor+Built Environment." The ISBE is still in existence today, continues to publish its journal and hold conferences, and is still run by industry ETS consultants. TLT0500003-0006 at 0005 (US 65083); 2063651094-1096 (US 75250).

(g) The Industry's ETS Consultants Cited and/or Published Without Disclosure of Tobacco Industry Ties

3663. Defendants used the work of their seemingly independent consultants disputing the health risks attributable to ETS to gain public support for their position by rarely disclosing the depth of their involvement. For example, articles in the Hong Kong Standard and South China Morning Post identified British ETS consultant and ARIA president George Leslie simply as the "head of Associates for Research on Indoor Air UK," and identified Rupp only as "a senior US scientific adviser and member of the American Civil Liberties Union." 2501204903-4903 (US 85577); 2501204902-4902 (US 85544); 87780965-0967 (US 85589).

3664. There are many other examples of newspaper and journal articles where consultants were quoted without disclosure of tobacco industry funding. See, e.g., 2501205177-5179 at 5178 (US 85579); 2048551288-1289 at 1288 (US 85581); TOMN343061-3061 (US 85582); 86022880-2880 (US 85583); 86022881-2881 (US 85584); 2505533679-3705 (US 22898); 2026127628-7634 (US 85564).

3665. In 1991, the book "Other People's Tobacco Smoke", a compilation of articles, all written by tobacco industry consultants, was published. The book was edited by A.K. Armitage, industry consultant and member of ARIA. However, the only mention of industry involvement was one half of a sentence by the editors at the end of a brief "Acknowledgments" paragraph thanking both their wives and Philip Morris International for their "cooperation and assistance." 2051809899-10096 at 9908 (US 87373); 2501152077-2091 (US 25597); 2081369203-9220 (US 27796); 2023034933-4946 (US 87334); 2500019903-9911 (US 25337); 2023592986-2998 at 2991 (US 85548); TIDN0019217-9268, at 9236, 9238, 9239, 9244 (US 85597); TIDN0011870-1870 (85635); 2501474296-4301 at 4299-4300 (US 27955); 2023591657-1659 (US 23692*); 2023591835-1837 (US 23695); 2023591891-1894 (US 23696); 2023591915-1918 (US 23698); 2023591962-1965 (US 23699); 2023591985-1988 (US 23700).

3666. The Tobacco Institute also tried to create the illusion of independence in its press releases and other publications attacking research implicating ETS as a cause of disease. These press releases cited industry consultants and conferences without reference to their tobacco industry source, instead describing them as:

- "independent scientific teams" (referring to IT Corporation, a Special Account 4 recipient) 92756893-6894 at 6893 (US

85585); 86002410-2413 (US 85716); 86002393-2396 (US 86359).

- "an expert on substances in indoor air" (referring to David Weeks, a paid industry ETS consultant) 92756893-6894 at 6893 (US 85585); TITX0025965-5968 at 5968 (US 85522); TIDN0019217-9268 at 9232-9233 (US 85597).

- "a prestigious panel of scientists at an international symposium" (referring to the industry's ETS consultants at the McGill Symposium) 87697659-7664 at 7660 (US 85586).

- "a US lawyer specializing in antitrust and trade regulation law" (referring to John Rupp) 87780965-0967 at 0965 (US 85589).

- "Maurice LeVois, Peter Lee, and Joseph Fleiss" (long-time paid industry consultants) who all provided an "objective review" 87697701-7772 at 7701-7702 (US 85587); TIDN0019217-9268 at 9220, 9226-9227 (US 85597).

- "independent scientists" Flamm and LeVois (noting ties to Federal Government including FDA, CDC, VA, but failing to disclose ties to tobacco industry) 91806529-6529 (US 88597); 87698341-8342 (US 85588); TIDN0019217-9268 at 9220, 9226-9227 (US 85597).

- "[a]n independent analysis of more than 300 major private and public buildings by ACVA Atlantic, Inc., an indoor air quality analysis firm, identified tobacco smoke as a major contributing factor to air quality complaints in only four percent–twelve buildings." TLT0961875-1888 at 1881 (US 85591).

3667. The articles, letters, and submissions of the industry consultants to regulatory bodies were sometimes reviewed and edited by lawyers prior to publication. TIMN0435220-5272 (US 21734); TI00581616-1629 (US 62969); Dawson WD, 114:15-116:4; 680707970-7973 at 7970 (US 92065); Parrish TT, 1/27/05, 11387:25-11393:1.

3668. For example, written responses by industry ETS Consultant Peter Lee to James Repace and Judson Wells were revised by both Shook, Hardy & Bacon and Covington & Burling prior to submission to a journal. Similarly, Covington & Burling made revisions prior to submission to an article criticizing the EPA risk assessment by industry ETS consultants Flamm and Todhunter, and a letter to the editor by ETS Consultant Gio Gori criticizing an adverse study by Brownson. TIMN435220-5272 at 5222, 5223 (US 21734).

(h) ACVA/HBI

3669. In June 1985, on the recommendation of the ETSAG, Defendants recruited John Graham "Gray" Robertson, owner of a small ventilation inspection firm called Air Conditioning and Ventilation Access ("ACVA") and later renamed Healthy Buildings International (HBI), to test air samples from homes in Boston and Florida. Robertson WD, 12:19-14:16; TLT0270555-0555 (US 85619); 504221588-1593 at 1591 (US 85620); 521028861-8861(US 52692*); TIDN0011695-1704 at 1695 (US 62594). Defendants funded the ACVA home testing as a CTR Special Project. Robertson WD, 15:7-11.

3670. Although not a scientist, Robertson, by January 1986, had become associated with the Indoor Air Pollution Advisory Group (IAPAG). Robertson WD, 18:13-20, 20:5-21:4 and 21:12-22:13; Schwartz TT, 10/25/04, 3580:11-21. Over time, Robertson became one of the industry's most traveled ETS consultants.

3671. Defendants funded Robertson's ETS activities, including making statements at legislative and regulatory hearings on indoor smoking bans and initiating projects and studies that questioned the adverse health effects of secondhand smoke. TIDN0002692-2701 at 2695-2697 (US 85605); TIDN0007373-7378 (US 77020); TIDN0016039-6045 at 6041-6042 (US 75289); Robertson

WD, 12:19-14:16 (1985 home study); 51:8-53:13 (New York City study); 36:10-37:7 (1987 Tokyo Conference); 38:2-40:12 and 103:3-19 (1988 Swiss study for Philip Morris); 41:6-14 (1988 London Conference); 41:15-42:12 (1989 Brussels Conference proceedings paper); 45:5-46:11, 46:13-16, 48:5-50:13 (1989 CIAR-funded 585 Building Study); 62:14-64:4 (1989 McGill "symposium"); 61:3-9 (1989 Building Council on Indoor Air position paper); and 87:5-10 (1992 Athens Conference).

3672. Defendants identified "Robertson and his colleagues at HBI" as "our foremost resources in our indoor air quality strategy" and promoted him as a "building doctor" and an expert in "sick building syndrome." [A situation in which building occupants experience adverse health effects that appear to be linked to time spent in a building but are not linked to a specific cause.] TI01140124-0133 at 0128 (US 62100); TLT0880001- 0024 at 0004 (US 87336). Robertson's work sought to examine and improve indoor air quality particularly through improved ventilation. Downplaying ETS exposure, Robertson took the position that banning indoor smoking was unnecessary to improve indoor air quality and that the "sick building syndrome" was the real problem. TI01262206-2209 (US 62105); TI12990109-0118 (JD 080482); Simmons WD, 5:3-10; TIOK0023878-3878 (US 77107); TIDN0002692-2701 at 2695-2696 (US 85605); 87780965-0967 (US 85589).

3673. Internally, Defendants questioned the rigor of Robertson's testing methods and the quality of his data. In a confidential note to BATCo and B&W, Sharon Boyse (Blackie) summarized a meeting with Reynolds on January 29, 1988. Boyse wrote: "RJR pointed out that although the abilities of Gray Robertson . . .as a presenter are undeniable, this is not the case for his scientific abilities. They felt, in particular, that his methodology could not stand up to scientific scrutiny, and that some of his data was questionable." BWBU242341-2343 at 2343 (US 21136). Project

coordinator Michael Michaelson at Covington and Burling made a similar observation of Robertson's methods in 1985: "In summary, the data generated by the ACVA home study in Boston are deeply flawed and not subject to meaningful interpretation." 80406377-6385 at 6385 (US 23476); 504933703-3707 at 3704 (US 24220).

3674. Other comments disparaging HBI's methods were made by senior tobacco company scientists in 1991 in reviewing a proposal eventually rejected for CIAR funding. 87776361-6362 (US 56325); 87776358-6359 (US 56324).

3675. Nevertheless, by 1994 Robertson and other HBI spokesmen had made over 125 legislative appearances and given over 700 media interviews. TLT0600106-0120 (US 65099); TLT0860022-0022 (US 87367); TLT0860023-0023 (US 87368); TIDN0010792-0792 (US 85637); TIDN0012371-2373 at 2372 (US 85638).

3676. Defendants maintained the perception of an arm's length relationship with Robertson and HBI. At a 1987 ETS Strategy Meeting held at Philip Morris International, Defendants warned that HBI must "be perceived to be at arm's length from the industry, including in media briefings. Its role at most should seem as yet another third party expert amongst others." 2046754737-4740 at 4739 (US 21646).

3677. By 1987, HBI was on monthly retainer to the Tobacco Institute and was paid various amounts at various times as well as its expenses. Robertson WD, 42:13-43:1, 26:14-16, and 30:14-15; TIDN0004200-4235 at 4202 (US 77018); TIDN0020081-0085 at 0082 (US 85612); TIDN0023739-3740 at 3740 (US 85613); TIDN0008801-8801(US 85614); TIDN0025605-5612 at 5606 (US 85615); TI10160671-0671 (US 65486).

3678. Through Robertson's work for Defendants, HBI went national, and eventually global. HBI grew from a small ventilation duct inspection outfit with an annual revenue of about $250,000 to a multi-national business with over $2.5 million in annual revenue; Robertson became an indoor air quality expert in forums around the world. Robertson TT, 10/21/04, 3332:4-3339:15, 3406:1-3409:16; Robertson WD, 3:11-4:8, 5:1-6:3, 64:5-65:16, and 73:4-74:11; see also TLT0860122-0129 (US 87341); 2501026750-6761 at 6753 (US 85609); 2029370437-0437 (US 26896). In 1990, the Tobacco Institute paid for HBI to expand by opening regional offices in the United States and abroad. Robertson WD, 56:16-58:13, 64:5-65:16; TIDN0010085-0093 (US 85617*).

3679. Philip Morris, through Covington & Burling, reimbursed costs incurred by HBI. Expenses included hundreds of thousands of dollars associated with Healthy Buildings International Magazine. 2063935035-5035 (US 39877); Robertson WD 66:15-72:12; 2023590035-0036 (US 85621); TIDN0010768-0769 (US 85622); TIDN0011756 (US 85623); 2029370155-0160 (US 87343); 2029370138-0139 (US 87355); 2503001929 (US 85611); TIDN0021382-1383 at 1382 (US 85626); 2043709159A-9159A (US 46241); 2029370153-0161 (US 87356); 2029372111-2112 (US 87357); 2503001929-1929 (US 87359). The full color, bi-monthly magazine presented Defendants' views to a wide range of recipients around the globe. TLT0860028-0039 (US 87344). At least seven issues of "Healthy Buildings" were published between 1990 and 1991. See, e.g., TLT0850001-0008 (US 87346); TLT0850073-0084 (US 87352).

(7) ETS Symposia

3680. Defendants sponsored and planned various ETS symposia or conferences throughout the world to generate data which supported the industry's ETS position. These conferences included a 1974 Bermuda conference, a 1983 Geneva workshop, a 1984 Vienna conference, a 1987 Tokyo

conference, the 1989 McGill "symposium," and others. The presentations made at these conferences were thereafter publicized in the United States by Defendants as examples of independent scientific statements in support of the industry's position that ETS was not a proven health hazard. In a June 28, 1998 memorandum from Hoel to Philip Morris's Todd Sollis describing Shook, Hardy & Bacon's ETS efforts for the industry, Hoel bragged:

> Since 1974, SHB has been actively engaged in the organization and development of ETS conferences and symposia. . . . Once the proceedings from these conferences are published, they provide information that is useful in dealing with the attacks of anti-smoking activities.

2015007199-7207 at 7206 (US 20311).

(a) The 1974 Bermuda (Rylander) "Workshop"

3681. Long-time industry consultant, Swedish professor Ragnar Rylander proposed to Philip Morris in July 1973 a "workshop" on the effects of passive smoking on nonsmokers. 1000259865-9865 (US 85708); 1000259799-9803 (US 85709).

3682. The purpose of the workshop was to generate findings favorable to the industry's position opposing smoking restrictions. Philip Morris's Helmut Wakeham strongly recommended industry financing of the workshop to counteract smoking legislation. 1000053116-3116 (US 85707). In a February 26, 1974 letter to Imperial Tobacco, Wakeham summarized the workshop as follows:

> We are looking forward to the report of this workshop. We hope it will provide us with a document we can use to quiet some of the hysteria on the subject. Our main concern is the legislation restricting smokers now being passed in some of the local governments in the U.S.A. A copy of the workshop outline is enclosed for your information.

2015035555-5556 (US 87376).

3683. The workshop was held in Bermuda on March 27-29, 1974. Its proceedings were published as a book. The only attribution to Defendants was in the preface: "The Workshop was supported by Geneva University through a grant from "Fabriques de Tabac Reunies." The proceedings did not disclose that FTR was and is the Philip Morris subsidiary in Neuchatel, Switzerland. 690019211-9302 at 9216 (US 88462).

3684. In addition to funding the workshop through FTR, Helmut Wakeham of Philip Morris and Don Hoel of Shook, Hardy & Bacon helped Rylander plan the workshop, choose the participants, and publish the results. 2015035615-5615 (US 85710); 2015035611-5611 (US 89406); 1000259703-9703 (US 85713); 1000260272-0272 (US 85714); 1000259790-9790 (US 87036). 1000259784-9784 (US 85717); 2015035615-5615 (US 85710).

3685. Later, Rylander submitted drafts of the workshop proceedings to Philip Morris and Shook, Hardy & Bacon for review and comment before submitting them for publication in the Scandinavian Journal of Respiratory Disease. 1000259693-9693 (US 86613); 1000259703-9703 (US 85713); 1000260272-0272 (US 85714); 1000260253-0253 (US 89407).

3686. The 1974 Bermuda papers were incorporated into a broad industry "Position Paper" on passive/public smoking distributed to Defendants as part of the operations of ICOSI, the international tobacco industry group. ICOSI distributed this "Position Paper" in order to coordinate the responses of the manufacturers on a number of smoking and health issues. With respect to passive smoking, the position paper stated:

> In 1974, a workshop (organized by, among others, Dr. Rylander of the Universities of Geneva and Gothenburg) was attended by scientists from all over the world to consider the health consequences of

> atmospheric tobacco smoke. These scientists were unable to conclude that cigarette smoking is a hazard to non-smokers.

513886735-6773 at 6737-6738 (US 87377); 500876807-6812 (US 87378).

3687. The 1974 conference was the beginning of a 25-year financial relationship between Rylander and all cigarette company Defendants. He was first funded through the industry's Special Account 4 from 1975 to 1989. 1005122219-2222 (US 20214); 507875857-5859 (US 20795); 507876993-6994 (US 20799); 86002454-2457 (US 85776); 86002410-2413 (US 85716); 86002393-2396 (US 86359); ATX140000938-0939 (US 21122). His relationship with Defendants continued as a consultant to Philip Morris and as a CIAR Applied Projects researcher through 1999. 2063590583-0586 (US 85704); 2505442777-2960, 2905-2907 (US 25643*).

(b) The Geneva (Rylander) Conference

3688. In 1981, the Tobacco Institute Executive Committee, the Committee of Counsel, and Shook, Hardy & Bacon, enlisted Rylander to assess the utility of another conference. 03554255-4255 (US 85641). An August 1981 memorandum from Don Hoel recorded his meeting with Rylander at Shook, Hardy & Bacon. In this memorandum, Rylander acknowledged that neither he nor a conference could give ETS a "clean bill of health"; however, he did believe that "he could bring a healthy skepticism" to the conference and to claims against ETS. Hoel and other Shook, Hardy attorneys reviewed Rylander's proposed list of invitees. 680542957-2962 at 2958 (US 85718). The Committee of Counsel approved the symposium in April 1982 and reported that approval to the Executive Committee. 01330467-0467 (US 26460); 01330468-0469 (US 85719).

3689. Rylander provided his overview paper, used to introduce the conference, as well as the discussion papers presented at the conference, to Defendants for review and input prior to their use at the conference. 680542957-2962 at 2958 (US 85718).

3690. The conference was estimated to cost the industry between $65,000 and $80,000. 502122726-2727 (US 29551). A later memorandum from Brown & Williamson in-house counsel J. Kendrick Wells put the cost to Defendants at $70,000. 401033325-3328 at 3327 (US 24099).

3691. Rylander invited a number of other Special Account 4 and CTR Special Project recipients; several gave presentations at the symposium on work they had performed on behalf of the tobacco industry. These participants included Domingo Aviado, Anthony Cosentino, Melvin First, Roger Jenkins, and Theodor Sterling. None of their financial relationships with the industry were disclosed in the published proceedings of the Geneva conference. 301153900-4051 (US 85645).

3692. For example, Melvin First was paid via Special Account 4 for work that he performed in early 1983 under the title "Methods for Environmental Tobacco Smoke Measurement," the subject of First's presentation at the Geneva conference. 1005125153-5154 (US 36085); 03746173-6182 at 6179 (US 46500). Theodor Sterling received hundreds of thousands of dollars in CTR Special Project funds in 1982 and 1983 for work related to his Geneva conference topic. 03746173-6182 (US 46500). In addition, Sterling's financial ties to Defendants via CTR Special Project funding began in the early 1970s and continued into the 1990s. 2024699783-9808 (US 85647); 92613920-4198 (US 32132); 2015006938-6940 (US 85764). Domingo Aviado was also a long-time recipient of industry Special Project and Special Account funds at the time of the Geneva Conference. 92613920-4198 at 4107 (US 32132); 03638980-8982 (US 85649); 2015029462-9463

(US 85652); 682070007-0008 (US 87369); 682070001-0002 (US 36081); 682069976-9997 (US 85654); 682069978-9979 (US 85656); 682069972-9973 (US 85657); 682069965-9967 (US 85658); 682069960-9961 (US 85659); 682069953-9954 (US 85660); 682069938-9940 (US 85661); 507875841-5843 (US 85662); 507875857-5859 (US 20795); 507876993-6994 (US 20799); 507875832-5834 (US 20794); 507876986-6987 (US 20798); 507875698-5700 (US 22953); 86002454-2457 (US 85776).

3693. The conference, organized by Rylander and Hoel, was held in Geneva in March 1983. The conference proceedings were then published in a book, titled "ETS-Environmental Tobacco Smoke, Report from a Workshop on Effects and Exposure Levels." The preface did include a statement that the conference "was supported by a grant from the Tobacco Institute, Washington, D.C., to the University of Geneva." 301153900-4051 at 3905 (US 85645). Rylander's extensive connection to the industry and the involvement of Shook, Hardy & Bacon in planning the conference were not disclosed in either the conference proceedings or any of the industry statements citing the conference's "conclusions." 301153900-4051 (US 85645); 2025364951-5007 (US 22173); 500642763-2772 (US 85644).

3694. Rylander's workshop summary, printed in a section titled "Workshop Perspectives," at the close of the published conference proceedings, stated that (1) the evidence linking ETS to any disease was "not considered conclusive"; (2) no passive smoking conclusions could be drawn from the data linking active smoking to disease; (3) the evidence of passive smoking causing effects on children was "contradictory"; (4) carbon monoxide was "not important from a health point of view"; and (5) the only proven effects of ETS were "irritation and annoyance." 301153900-4051 at 4042-4043 (US 85645).

3695. The Tobacco Institute sent a report of the Geneva symposia conclusions to the U.S. Health and Human Services Secretary and Assistant Secretary, and to the Surgeon General. The Tobacco Institute circulated a press release about the conference to medical and health publications, medical schools, members of Congress, newspapers, journalists and state health officials. TI12882975-2977 (US 62400).

3696. Rylander submitted comments to EPA in 1990 on the draft Risk Assessment stating: "I am sorry to see our own workshops from 1974 [Bermuda] and 1984 [Geneva] are not cited, particularly as the former was the first to apply the terms environmental tobacco smoke (ETS)." 2026127784-7790 (US 92064).

3697. Defendants went on to cite the conference as seemingly independent authority in advertisements, brochures, news releases, and submissions to Congress, OSHA, and EPA in support of their opposition to smoking restrictions. None of these materials informed readers that the conference was funded by the industry or planned by an industry consultant (Rylander) and lawyer (Hoel). 520911538-1542 (US 85593); 500642763-2772 (US 85644); 2025364951-5007 (US 22173); TINY0020573-0577 at 0575-0576 (US 88600); TIFL0055129-5139 at 5131-5132 (US 88601); TIMN0120782-0785 at 0784-0785 (US 88602); 517001328-1330 (US 88603); 2070140494-0630 at 0595-0596 (US 88604).

3698. In May 1984, the Tobacco Institute published "Environmental Tobacco Smoke Workshops 1983 - 1984" claiming: "Three times since March 1983, participating researchers and other medical experts have declared, forthrightly and independently, that no conclusion can be drawn about whether ETS has any chronic health effects on the nonsmoker. . . . Another physician-researcher organized an ETS workshop in Geneva in March 1983 as follow-up to a similar

conference in 1974. He concluded afterward that "irritation and annoyance must still be considered to be the most prevalent effects ascertained from exposure to ETS.'" 500642763-2779 at 2765-2766 (US 85644).

(c) The Vienna Conference

3699. Defendants organized an invitation-only symposium addressing passive smoking and health in Vienna, Austria, from April 9-12, 1984. 04211608-1610 (US 22131*).

3700. A September 17, 1981 Reynolds "SECRET" memorandum from Associate Scientific Director Frank Colby to in-house counsel Samuel Witt, with copies to Don Hoel and others, detailed the industry's plans to hold a conference/workshop on passive smoking. The conference would be planned by Hoel and Colby, and would be chaired by Professors Helmut Valentin (a former Special Account #4 recipient) and Ernst Wynder, another recipient of extensive industry funding, with the "thrust and intent" to convince German and American scientists "that there is no real controversy, and that the facts on the [passive smoking] problem are all on our side." 500534168-4169 (US 89428). 1005045370-5383 (US 85777) and 1005122262-2265 (US 20218).

3701. The Vienna Conference was funded by the German Verband, the German cigarette manufacturer association with representatives of Philip Morris, BATCo, and Reynolds. According to a December 1, 1983 internal memorandum from Philip Morris (FTR) scientist Walter Fink to Tom Osdene at Philip Morris recording the minutes of a November 1983 Verband meeting, "DM 150,000 were approved for the Meeting on Passive Smoking to be held in Vienna in April 1984." 2028524616-4618 at 4618 (US 89162).

3702. The primary conclusion of the conference was that there was no link between passive smoking and any disease. Dr. Hirayama was invited to attend the conference. The conference

concluded that, "[w]ith the exception of Dr. Hirayama, all the participants agreed that so far there was no definite proof of a causal relationship between passive smoking and the risk of lung cancer." TI12871546-1582 (US 87370). Following the conference, Wynder and Valentin issued a press release stating: "Should lawmakers wish to take legislative measures with regard to passive smoking, they will, for the present, not be able to base their efforts on a demonstrated health hazard from passive smoking." The press release omitted any information about funding of the conference by Defendants or the Verband. 04211608-1610 (US 22131*); 2024967092-7093 (US 87372). The translated press release was circulated by Don Hoel to the Committee of Counsel for Defendants' use and information. 2024967085-7085 (US 89431).

3703. Defendants publicized the conclusions of the Vienna Conference. A May 1984 Tobacco Institute publication, titled "Environmental Tobacco Smoke Workshops 1983 - 1984," claimed that the Vienna conference's conclusion that "a health hazard from ETS has not been demonstrated" was reached "forthrightly and independently." 500642763-2779 at 2765-2766 (US 85644). The conference was also cited at length by Defendants in the 1986 Tobacco Institute booklet, titled "Tobacco Smoke and the Nonsmoker: Scientific Integrity at Crossroads," in which the Tobacco Institute claimed that Hirayama "stood alone" in his finding that passive smoking was linked to lung cancer. 2025364951-5007 at 4957-4958, 4961 (US 22173).

3704. In 1986, the Vienna conference was turned into published proceedings (Medical Perspectives on Passive Smoking) containing a summary preface and the presentations made by the industry-selected scientists. While the conference was limited to a selected group of scientists, the preface stated that the conference proceedings "provide the interested reader with an overview of the present status of the scientific discussion of passive smoking." TI12871546-1582 (US 87370).

3705. In 1987, the Tobacco Institute published a booklet, titled "Smoking Restrictions: The Hidden Threat to Public Health," in which it declared that ETS had not been shown to be a health hazard to nonsmokers and that more research was needed. The booklet quoted statements made by organizers of the 1983 Geneva and the 1984 Vienna conferences, with no disclosure that the conferences were funded and organized by the tobacco industry. TI05540699-0705 at 0702 (US 21246).

3706. Defendants made similar claims in other public statements and submissions made to the public and regulatory and legislative bodies. TINY0020573-0577 (US 88600); 300551794-1823 at 1799 (US 88608); 93766027-6051 at 6029 (US 85675*).

3707. Defendants not only omitted mentioning any connection to the tobacco industry in their use of the Vienna conference in public statements, but also affirmatively misrepresented that the conference was sponsored by or held "in cooperation with" the World Health Organization. See e.g., 500642763-2779 at 2767 (US 85644); 04211608-1610 at 1608 (US 22131*). The misrepresentation was stopped only after the WHO protested in writing that it "ha[d] not granted the workshop any kind of sponsorship or support." TI00681815-1818 (US 62083); TI00681800-1803 (US 88606).

3708. Don Hoel and John Rupp denied that the industry had sponsored the Vienna Conference to the industry's own ETS consultants Sorell Schwartz and Nancy Balter when they expressed concern about having relied on its conclusions as a "neutral source":

> At some point later, Nancy and I were sitting in Rupp's office and she brought [the Vienna conference] up again, emphasizing the importance of the question, our having relied on the conference proceedings as a neutral source. Rupp picked up his phone, dialed Don Hoel, put him on speaker, and said to Hoel: I have Sorell and

> Nancy here with me and they want to know if the Vienna conference was surreptitiously sponsored by the tobacco industry. Hoel's response -- absolutely not. A year or two later, I attended a meeting in Europe on indoor air pollution. Mary Pottorff of Philip Morris was also there, and we were talking. I mentioned this Vienna story to her. She laughed and said to me, "You have got to be kidding, Don Hoel organized that symposium."

Schwartz WD, 19:29-38.

(d) The 1987 Tokyo Conference

3709. In 1987, Japan Tobacco Inc. (JTI) sponsored a conference in Tokyo to counter the 6th World Conference on Smoking and Health, an annual event of the World Health Organization slated to be held in Japan in November 1987. The 1987 Tokyo Conference was planned and managed by Don Hoel and the Tobacco Institute ETS Advisory Group (ETSAG). Several ETSAG meeting agendas and summaries demonstrate Defendants' involvement in moving the Tokyo conference from a "project proposal" to a reality. 506330874-0879 (US 50834); 505491315-1320 (US 24227); TIBU30330-0331 (US 62566); 511252621-2626 (US 51554); 505491406-1410 at 1409 (US 75275).

3710. Defendants and JTI met several times in late 1986 and early 1987 to discuss the conference. 506330874-0879 (US 50834); 505491315-1320 (US 24227); 512252621-2626 (US 51554).

3711. A February 4, 1987 internal Philip Morris ETS "Action Items" update memorandum from Mary Pottorff to Bill Murray reported the following under the heading "PMI Action on ETS":

> Tokyo University ETS Conference
>
> Don Hoel has informed us that this PMI requested conference will take place two weeks prior to 6th World Conference, pending confirmation from JTI.

2501152342-2344 (US 20017).

3712. Professor Hitoshi Kasuga chaired the conference. Kasuga was a Japanese scientist who was conducting research for JTI at the time the conference was planned. 508226799-6804 at 6801 (US 75279). Defendants supplied names of American industry ETS consultants who would attend. The consultants' fees, along with their travel, food, and lodging expenses, were paid by JTI and Defendants. TI0068-2069-2070 (US 62088).

3713. The ETS conference, titled "International Conference on Indoor Air Quality," was held in Tokyo on November 4-6, 1987. Many of Defendants' American and European ETS consultants were in attendance and many presented papers. These consultants included Theodor Sterling, Franz Adlkofer, Karl Ueberla, Linda Koo, Ragnar Rylander, Peter Lee, Roger Perry, Domingo Aviado, Sal DiNardi, Melvin First, James Kilpatrick, Michael Lebowitz, Nathan Mantel, Gray Robertson, Sorrell Schwartz, and Ernst Wynder. Neither the list of attendees nor the conference program disclosed that the conference was funded through JTI and planned by both JTI and Defendants. 321091730-1825 (US 22892).

3714. The Tokyo Conference proceedings were published in 1990 as a book titled Indoor Air Quality. Kasuga's preface emphasized the existing ETS "controversy," and stated that none of the preceding conferences and "symposia," including Rylander's Geneva and Vienna conferences, had "established a definite causal relationship between ETS and lung cancer." Papers written by ETS consultants Rylander, Lee, Perry, Adlkofer, Sterling, and others were published in Indoor Air Quality. The book published papers written by BATCo scientist Chris Proctor and Reynolds scientist Guy Oldaker, without any mention of their employers. Kasuga summarized the conference in an "Outline" section at the conclusion of the book, where he stated that any number of factors in

the air may have adverse effects on health, and ETS is merely one among many that should be studied. TLT0990809-1076 at 0812-0813, 1073-1074 (US 87398).

3715. None of the papers published in Indoor Air Quality, nor the book itself, disclosed that the conference was funded through JTI and planned by both JTI and Defendants. TLT0990809-1076 (US 87398).

3716. Defendants cited the Tokyo Conference and papers published in Indoor Air Quality as objective scientific authority in support of their position that passive smoking was not a proven health hazard to nonsmokers. TI11951245-1685 at 1374 (US 85699); 87654420-4485 at 4481, 4485 (US 87385); 2024706618-6698 at 6687 (US 87405).

3717. Ernst Wynder, founder of American Health Foundation ("AHF"), was one of the organizers of the 1984 Vienna conference and the primary speaker at the 1987 Tokyo conference. Wynder had a long history with Philip Morris that also was not publicly disclosed. This relationship began in approximately around 1969, at which time Wynder described himself as one of the "best friends the cigaret [sic] industry has." 1000321438-1438 (US 85666). Between 1976 and 1990, Philip Morris provided AHF with millions of dollars in research grants.[33] 2021630792-0794 at 0793 (US 92067); 2001202325-2325 (US 85724); 1003710362-0363 (US 85669); 2021636204-6204 (US 85671); 2021594926-4930 at 4929 (US 85672*).

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[33] In 1991, Kraft General Foods, a subsidiary of Philip Morris Companies (now Altria), continued the Philip Morris support of AHF. That year, Kraft gave AHF $657,500 toward its five year commitment of nearly $2 million for a research and education program to be conducted from 1991 to 1995. This program studied the correlation between lifestyle and environmental exposures and major chronic illnesses, and the role of diet in cancers of the lung, oral cavity and bladder. 2046988683-8683 (US 85673); 2021630974-0975 (US 87371); 2046988682-8682 (US 85674).

(e) The 1989 McGill "Symposium"

3718. Defendants planned a symposium at McGill University in Montreal for November 1989.

3719. In an August 8, 1989 "Strictly Confidential" memorandum from Philip Morris International's Andrew Whist to Philip Morris Companies' Vice Chairman Bill Murray, with copies to Geoffrey Bible and others, Whist wrote:

> This memorandum summarizes our earlier conversation concerning the ETS symposium at McGill University.
>
> What we have been planning over the past several days is a major international symposium which would be both closed and private until the release, shortly after the symposium, of a monograph summarizing the proceedings. Our goal, of course, is to produce an impressive document that would have the potential of neutralizing two reports that are scheduled to be released near the end of this year -- an ETS risk assessment that is being prepared by EPA and a detailed assessment of ETS health effects under preparation, at Rockefeller University, supervised by Professor Spitzer (an avowed anti-smoker). The EPA and Spitzer reports would cause substantial damage unless they are somehow countered.

2023034633-4637 (US 22932).

3720. Long-time industry ETS consultant, Donald Ecobichon at McGill, hosted the symposium, which was held November 3-4, 1989. Philip Morris chose the attendees and also edited and transcribed the panel discussions for inclusion in the monograph which was to be published immediately following the symposium. Numerous Covington & Burling attorneys participated in the planning and organization of the symposium on behalf of the industry. Philip Morris, Reynolds, and the Tobacco Institute share the costs of the symposium evenly. 2023034633-4637 (US 22932).

3721. A September 19, 1989 report of the industry "ETS Coordinating Committee," written by Reynolds attorney Mary Ward, recorded Rupp's McGill presentation to the committee. Rupp told the group that the published "monograph" (Ward refers to this as a "big, fat book") could be used by the companies to oppose the EPA's risk assessment. 515541696-1701 at 1700 (US 30103).

3722. A September 27, 1989 "Status Report" from Covington & Burling attorney John Rupp clearly states that the purpose of the McGill event was to neutralize two ETS reports that were expected to indict passive smoking as a cause of disease:

> ETS Symposium at McGill University
>
> On November 3 and 4, 1989, approximately 60 of our consultant scientists from the United States, Canada, Asia, and Western Europe will convene for a private symposium devoted to ETS and risk assessment. The purpose of the symposium is to produce an authoritative monograph that will serve to neutralize two reports that are scheduled to be released near the end of this year - an ETS risk assessment that is being prepared by the U.S. Environmental Protection Agency and a detailed assessment of ETS health effects that is being prepared in Canada under Professor Spitzer's supervision.

2500048508-8515 (US 20549).

3723. The symposium included 80 industry ETS consultants. 2500048976-8998 at 8984 (US 23007). Chris Collett, an employee of industry consultant Theodor Sterling and an attendee at the "symposium," wrote in an internal review of the conference that:

> Other comments I overheard concerned the absence of criticism or disagreement between the attendees. The presentations and panel discussions were sessions of "preaching to the converted."

94348745-8752 at 8752 (US 85688).

3724. Covington & Burling sent the Tobacco Institute an itemized statement of McGill symposium expenses under cover letter dated January 19, 1990. The expense statement includes a listing of many of the attendees, all industry ETS consultants, as well as industry-financed groups such as ARIA and HBI. The expenses and fees listed on this one statement for the production of the McGill symposium totaled over $800,000. TIDN 0021302-1305 (US 22731).

3725. In January 1990, the McGill proceedings were published by Lexington Books, along with a press release, and press kits for distribution by the Tobacco Institute with the assistance of public relations firms Ogilvy & Meyer and Burson Marsteller. 2023546229-6233 (JD 080524).

3726. The published McGill proceedings did not disclose the sponsorship by Defendants beyond citing a generic "tobacco industry grant." TLT0150001-0390 (US 65706). The sole reference to the tobacco industry was contained in the preface, which stated that the "symposium . . . was made possible by a tobacco industry grant and by grants and other support from the following co-sponsors." TLT0150001-0390 (US 65706). The preface listed 11 independent-appearing "co-sponsors." 2501474253-4259 (US 22017). Several of the "co-sponsors" were merely the institutions where a number of attending industry ETS consultants worked; others had preexisting links to Defendants. TIDN0019217-9268 at 9219, 9234 (US 85597) (Ecobichon/McGill University and Healthy Buildings International); 2501474253-4259 at 4255 (US 22017) (Institut Fresenius); 2500048643-8654 (US 22857) (Kim/Hanyang University); TIDN 0002692-2701 at 2695 (US 85605) and TIMN0435220-5272 at 5264 (US 21734) (National Energy Management Institute); 87697701-7772 (US 85587) (National Federation of Independent Business); 2023592986-2998 at 2993 (US 85548) (Allen/RCC Research and Consulting); 2023856321-6328 at 6322 (US 22037) (Weetman/Sunderland Polytechnic).

3727. The McGill proceedings did not disclose that:

- The symposium chairs (Ecobichon and Wu) were industry ETS consultants TIDN0019217-9268 at 9219, 9234 (US 85597).

- The conference participants were all industry ETS consultants who had been selected by the industry and Covington & Burling. 2500048976-8998 at 8984 (US 23007).

- Several of the "co-sponsors" did not sponsor the event at all. Rather, the Covington & Burling list of expenses shows that McGill University, HBI and the Institute for International Health and Development were actually paid by Defendants. TIDN 0021302-1305 (US 22731).

3728. The Tobacco Institute sent out McGill symposium proceedings and materials to over 200 science and health writers. TI13341775-1775 (US 62415).

3729. Defendants cited the McGill symposium in press releases, legislative submissions, and letters to the editor in major newspapers, without disclosing their sponsorship of the symposium:

- Defendants coordinated nationwide "media activity" drawing attention to the McGill conference through the Tobacco Institute's Public Affairs Division, but using ETS consultant interviews arranged by industry public relations firm Ogilvy & Mather. TIOK0017415-7416 (US 85698).

- The October 1, 1990 "Comments of The Tobacco Institute on Health Effects of Passive Smoking: Assessment of Lung Cancer in Adults and Respiratory Disorders in Children" repeatedly cited the McGill symposium, characterizing the event only as an "international symposium on ETS" that generated "the consensus views of 80 eminent scientists." 87653565-6820 at 3941- 3998 (at 3958) (US 88596).

- In its March 20, 1992 "Comments" in response to the OSHA Request for Information, the Tobacco Institute cited the proceedings and several individual "papers" presented at McGill. TLT1022319-2405 at 2324-2328 (US 87404).

- The February 5, 1990 Tobacco Institute comments to the EPA on the draft Risk Assessment attached the McGill proceedings and described the event simply as a "a thorough, up-to-date discussion of the relevant literature" which concluded that "ETS has not been shown to present a health hazard to nonsmokers." TI11951245-1685 at 1254 (US 85699).

- Philip Morris's September 28, 1990 "Comments" to the EPA on its draft Risk Assessment cited the McGill conference in a lengthy section summarizing industry-favorable conclusions of "scientific symposia." 2070140494-0630 at 0598 (US 88604).

- A June 25, 1990 Tobacco Institute press release titled "Draft Risk Assessment Described as Speculation" identified the McGill conference as a "prestigious panel of scientists at an international symposium on ETS held at McGill University in Montreal, Canada." 87697659-7664 (US 85586).

- Tobacco Institute consultant letters to the editor appeared in newspapers such as the Chicago Sun-Times, Detroit News, Las Vegas Sun, and Salt lake Tribune drawing attention to the McGill "conclusions." TI09911997-2033 (US 22367).

- Letters to the editor published in the Chicago Sun-Times, Las Vegas Sun and the Salt Lake Tribune under the name of industry consultant Jack Peterson, and in the Richmond-Times Dispatch on August 26, 1990, under the name of industry consultant David Weeks are typical examples in which the McGill symposium conclusions were communicated to the public with no industry attribution. Dawson WD, 134:13-135:13; TI12201464-1465 (US 86722); TIMN343061-3061 (US 85582); TIDN0019217-9268 at 9229 (US 85597).

- A Tobacco Institute press release dated June 10, 1992 titled "Majority Favors Smoking Sections in Most Public Places, Anti-smoking activists recycle old claims to add new pressure" relied on the McGill symposium findings. TIFL0523989-3992 (US 88456).

- ETS consultants distributed the McGill proceedings to government officials in markets around the world. 300522762-2767 at 2766 (US 22223).

3730. Defendants organized at least four other similar ETS conferences: London in 1988, Brussels in 1989, Lisbon in 1990, and Athens in 1992. Robertson WD, 41:6-14 (1988 London Conference); 41:15-42:12 (1989 Brussels Conference); 87:5-10 (1992 Athens Conference); 2500048956-8969 at 8957 (US 27901) (1990 Lisbon Conference).

b. Defendants and Their Paid Consultants Controlled ETS Research Findings

3731. Several projects managed by Defendants as part of their worldwide ETS program illustrate the degree to which Defendants closely supervised and, when necessary, altered the research on the question of ETS and disease. Four of these ETS projects -- the 1995 Japanese Spousal Study, the 1989 Malmfors/SAS paper, the 1992 HBI 585 Building Study, and the 2003 Enstrom/Kabat paper -- are described in detail below.

(1) The 1995 Japanese Spousal Study

3732. In April 1995, a paper titled "Marriage to a smoker may not be a valid marker of exposure in studies relating environmental tobacco smoke to risk of lung cancer in Japanese non-smoking women" was published in the International Archives of Occupational and Environmental Health under the name of industry consultant Peter (P.N.) Lee. 900006054-6061 (US 57902*) This paper, internally referred to by Defendants as "The Japanese Spousal Study" was funded and directed by Defendants through the International ETS Management Committee (IEMC) in order to challenge the association between lung cancer and spousal smoking reported in the Hirayama study. Blackie WD, 54:17-19; 2023522351-2352B (US 75127). As explained, infra, the study was not only closely

managed by Defendants, but reached a conclusion that "high misclassification rates in Japan . . . undermine conclusions from epidemiological studies conducted there," which was of very dubious validity.

3733. On April 5, 1991, Covington & Burling's Chris Proctor proposed to Defendants a study of misclassification (i.e., misreporting of the smoking status of participants) among Japanese women married to men who smoked. Charles Green at Reynolds sent the proposal to Bob Pages and Tom Osdene at Philip Morris with the message: "We need to get our international folks involved in the funding." 2023544450-4455 (US 22817).

3734. Proctor's proposal for what later became the Japanese Spousal Study was presented to the CIAR Board of Directors for funding. The proposal called for a payment of $45,000 to Covington & Burling for Proctor's "supervision . . . of all phases of the study, including the preparation of a publishable report." 87802262-2263 (US 56329); 2023544450-4455 (US 22817).

3735. According to an April 15, 1991 Philip Morris e-mail from Bob Pages, a member of the CIAR Board of Directors, to Steve Parrish, Proctor's proposal called for two Japanese investigators to serve as co-authors, but that Proctor would be "a 'behind-the-scenes' study director." 2023544456-4456 (US 22816).

3736. Pages recommended the following to Parrish in his April 15, 1991 e-mail:

> Three concerns: 1) This is NOT a project that should be funded by CIAR, although there MAY be (I'm not convinced yet) a reason to say it was sponsored by CIAR so as to "hide" industry involvement (as was done in Rupp's "Asia Project"). 2) Proctor (and his fee) may be necessary to help get this done -- at least he has the "hands on" experience with a similar study done in the UK -- but this should be a Japanese study: Proctor should not be a coauthor on any publication that comes out of it.

2023544456-4456 (US 22816).

3737. While the project was still under consideration by CIAR, the discussion among Defendants was extended to include BATCo and the IEMC. BATCo's Sharon Boyse (Blackie) commented in a June 19, 1991 memorandum to other members of the IEMC (including representatives of Philip Morris, Reynolds, and Brown & Williamson in the United States) that:

> In the meantime, were we only to support one project we would support the Japanese one for the following reasons:
>
> > Independence. Although I accept many of the points made in [Rothmans'] Barry Frost's memo, the fact is that with Hazleton [laboratories], the tobacco industry is directly paying for the research, whereas the Japanese study could be channeled through an 'independent' organization such as CIAR. No matter how good the science, independence is always preferable, and in fact BAT made the decision to discontinue part of its in-house research on ETS for this very reason.

507974107-4109 (US 24730*).

3738. Ultimately the project was not funded through CIAR. Instead, with law firm supervision, IEMC funded the project. Boyse wrote her boss at BATCo Ray Thorton in a June 17, 1991 memorandum titled "IEMC ETS Research Projects" that:

> It was therefore decided by all companies to fund the project. The research will be carried out by two Japanese scientists who have been recruited by Covington and Burling as part of the Far East ETS project, and who are therefore in no way associated with the tobacco industry. The project will be monitored by Covington and Burling, with Chris having a direct involvement in assessing methodology and progress. Regular verbal progress reports will come from Chris.
>
> Peter Lee will also be involved in advising on certain aspects of the project. However, neither Peter nor Chris will appear as co-authors.

300512244-2245 at 2245 (US 67752).

3739. All members of the IEMC participated in the funding of the Japanese Spousal Study at an original cost of $200,000 as follows: Philip Morris ($36,000), Brown & Williamson ($36,000), Reynolds ($36,000), BATCo ($36,000), Rothmans ($36,000), and Imperial ($20,000). 300512244-2245 at 2245 (US 67752).

3740. The Japanese Spousal Study was carried out, as planned, under Proctor's direction. Pages provided Parrish an update of the progress in an e-mail dated November 8, 1991, which noted that, although the samples for the study were obtained in Japan, analyses of the samples would be conducted at Reynolds's lab in Winston-Salem. Pages wrote:

> Spoke with Chris Proctor to get an update.
>
> Study seems to be moving along surprisingly quickly. . . . Frozen urine samples will eventually be sent to RJR for analysis. . . .
>
> Proctor expects to return to Japan shortly to check on the distribution of subjects . . . . He would like to be back in Tokyo to begin drafting a report by mid-December.

2023544508-4508 (US 22913).

3741. The testing of the samples for the Japanese Spousal Study was carried out at the Reynolds's lab. Ogden TT, 3/17/05, 15982:8-22; see also 508217791-7793 (US 92094).

3742. The Japanese Spousal Study ran into problems when the Japanese investigators recruited by Proctor refused to cooperate. According to a May 18, 1993 Philip Morris summary of an IEMC meeting, Proctor related the following as part of his presentation to the group:

> JAPANESE SPOUSAL STUDY IEMC
>
> * * *
>
> PAPERS

1. Lee did the statistics.

2. The Japanese scientists have "drifted away" from Proctor; the paper will be published but will be much weaker than Peter Lee's previous draft.

3. Proctor has written a paper and has sent it to them for their review

4. Peter Lee could still publish his paper w/o Japanese

5. Neither draft recognizes no [sic] funding source nor that RJR did the analyses

6. Proctor -- some concern that the Japanese scientists will talk about the tob. Industry involvement.

7. One of the Jap. Scientists is "lost completely" (Nigawa sp?) but Yano is still close to Proctor

2501003237-3242 at 3239-3240 (US 22320).

3743. Yano, the remaining Japanese researcher recruited by Covington & Burling, backed out soon thereafter, forcing Defendants to look to Lee as the sole author of the study. 2023544546 (US 22925).

3744. Philip Morris IEMC representative Helmut Reif wrote in his June 24, 1993 "Monthly Activities" that the Japanese scientists had become "uncomfortable" with Lee's conclusions. 2028372583-2596 at 2595 (US 22926).

3745. A later Philip Morris report from Helmut Reif recorded that one of the Japanese consultants recruited to be an author voiced his belief that the findings were not supported by the data, that Lee had changed the data in a rewritten paper, and that he felt "threatened" by the tobacco industry. The following is an excerpt from Reif's November 29, 1994 "Monthly Activities" report:

(1) Japanese Spousal Study

> History:
> A[dlkofer] visited together with Wynder the Japanese author on behalf of the spousal study. (Authors refused to publish under their name, PNL [Peter N. Lee] rewrote it, editors of "Preventive Medicine" found it not matching their journal, Int.Arch.Occ.Med, Adlkofer took it over, however, had hesitations. Prof. Feinstein wanted answers to some detailed questions before publishing it).
>
> Results:
> Author Yano reported that he was shown around to several ETS conferences by Proctor and afterwards, Proctor withdrew. Author [Yano] never thought he would have to publish this study and distanced himself from the paper by the following arguments:
>
> (a) Misclassification was not 30% -- PNL calculated on the basis of active smokers, not on the basis of passive smokers -- but only 10%, and this was counterbalanced by a similar misclassification from the other side - nonsmokers wrongly claiming to be smokers.
>
> (b) He feels threatened by the industry . . .

2028372914-2915 at 2915 (US 22324).

3746. After the Japanese scientists backed out of the project, the paper (now listing Lee as the sole author) remained unpublished through 1994. The British Medical Journal and the American Journal of Epidemiology rejected the paper for publication. Blackie WD, 62:21- 63:4; 2024210654-0658 (US 22866).

3747. The American Journal of Epidemiology (AJE) rejected the paper on the basis of flaws that, in its view, could not be remedied. The editor-in-chief informed Lee in his May 17, 1994 letter:

> Both reviewers found the overall response rate of 33% to be unacceptable, particularly since generalizations are made to population-based studies. Furthermore, the sampling approach is not adequately described and a "semi-random" approach may not be unbiased. Can the results obtained in the 1990s be extrapolated to the

> reported studies, particularly the cohort study of Hirayama in which the smoking information was collected decades earlier?
>
> The reviewers also questioned the basis of the estimation of the misclassification bias and the criteria used to select the factors that you considered as potential confounding factors. Both reviewers identified a number of other limitations of the manuscript, including errors in the tables and possible miscalculations. Given the low response rate, revision would not address the principal concern of the two reviewers.

2024210654-0658 at 0654 (US 22866). The reviewer went on:

> Even if the results of the current study are deemed valid and generalizable, the conclusions as summarized in the abstract are not supported by the data generated in the study. . . . Smokers married to non-smokers were significantly more likely to lie about their smoking status than were smokers married to smokers (64% versus 17%, P=0.002). Thus the bias implied by the actual data generated in this study is a negative bias, which does not support the statements in the abstract to the effect that results from passive smoking studies in Japan are invalid and that the increased risk reported is probably due to bias from smoking misclassification (i.e., smokers lying about their smoking status). Of course, the finding that smokers married to non-smokers are more likely to lie is no more reliable than any other finding in this study given the low response rate.

2024210654-0658 at 0655 (US 22866).

3748. In fact, Lee himself stated in the abstract of this unpublished version that: "Major findings were that over 30% of smokers (judged by existence of the biomarker for nicotine, cotinine) denied smoking, a much higher rate than reported in Western studies; denial rates were higher for women married to non-smokers" rather than for women married to smokers. Accordingly, as noted by the AJE reviewer, Lee's data supported the conclusion that the reported risks in the Japanese epidemiological studies would be even higher but for the smoking misclassification. 2024210632-

0652 at 0634 (US 22865). Such a conclusion would have been directly contrary to the conclusion sought by Defendants.

3749. Lee sent the rejection letter and reviewers' comments under cover letter dated May 23, 1994, to Proctor (with copies to executives at Imperial Tobacco and Gallaher) with a recommendation that the paper be rewritten. 2024210653-0653 (US 22867).

3750. Lee clung to his conclusion that misclassification bias could explain the raised lung cancer risks reported in the Japanese epidemiological studies. Long-time industry consultant, Franz Adlkofer's International Archives of Occupational and Environmental Health published Lee's Japanese Spousal Study paper in April 1995. The paper concluded that high rates of misclassification "undermine conclusions from epidemiological studies conducted" in Japan. The final published version of Lee's Japanese Spousal Study paper did not disclose the fact that "denial rates were higher for women married to non-smokers." 9000006054-6061 at 5054 (US 57902*).

3751. Lee's paper acknowledged the "financial support from several companies of the tobacco industry." 9000006054-6061 (US 57902*).

3752. Defendants and their consultants cited Lee's conclusions from the Japanese Spousal Study in support of the industry position that there were no proven health effects associated with ETS, the epidemiology was flawed, and the question was still open. The original plan had been to generate a paper "to undermine Hirayama conclusions in time for the EPA [Risk Assessment]." 2023522351-2352B (US 75127). However, because the project was not completed and published until 1995, it was instead used to critique the 1994-1995 OSHA proposed rulemaking. At the request of the Tobacco Institute, Lee submitted comments dated July 1994 and November 1995 to OSHA. Lee asserted in his comments that he was "an Independent Consultant in Statistics and

Epidemiology, providing advice to a wide range of clients, including the tobacco industry." He then cited the Japanese Spousal Study as support for his opinion that misclassification bias is a major flaw in Japanese epidemiological studies. TIBR0006738A-TIBR0006754 at 6750 (US 62553); TIBR0000567-0590 at 0568 (US 85817).

(2) The 1989 Malmfors/SAS Airline Study

3753. In the late 1980s, the issue of airline smoking restrictions was gaining increased attention from public officials. In 1986, Congress requested a report by the NRC to the FAA concerning the smoking sections on airplanes. In that report, "The Airliner Cabin Environment: Air Quality and Safety," the NRC recommended "a ban on smoking on all domestic commercial flights, for four major reasons: to lessen irritation and discomfort to passengers and crew; to reduce potential health hazards to cabin crew associated with ETS; to eliminate the possibility of fire caused by cigarettes; and to bring the cabin air quality into line with established standards for other closed environments." (no bates) (JD 024863 at 6-7). This recommendation was followed by the passage of legislation in 1987 directing the Secretary of Transportation to restrict smoking on domestic flights with a scheduled flight time of two hours or less. 2501042537-2541 at 2537 (US 89402); see 29 U.S.C. App. § 1374(d).

3754. SAS airlines announced in late 1987 that it was planning to ban smoking on domestic Swedish flights as a test in the summer of 1988. Finnair had already decided to ban smoking on all domestic flights and permit only smoking breaks on international flights. 2501042537-2541 at 2537 (US 89402).

3755. In 1988, Philip Morris decided to carry out its own airline cabin testing for ETS, with the objective to "persuade the management of airlines to adopt policies which permit smokers to

enjoy cigarettes during flight." Philip Morris's Mary Pottorff was assigned to be project leader, Rupp was tasked to select researchers to participate in the study. 2501042537-2541 at 2537, 2539 (US 89402).

3756. In a July 5, 1988 memorandum to Philip Morris's Andrew Whist in New York, Pottorff wrote that SAS had agreed to permit the air cabin testing and that the project would be funded by Philip Morris, Reynolds, and the Swedish cigarette manufacturers association. Pottorff further advised that three industry consultants would participate in the study, and that the air samples would be tested at a Dutch laboratory called TNO. Torbjorn Malmfors Toxicologist, Karolinska Institute, Sweden, would then write the paper with the other two consultants. A September 2, 1988 letter from interim CIAR director Guy Oldaker to Chris Proctor stated that BATCo was funding the project with the other companies. 2501042534-2535 (US 90037); 508220128-0128 (92022).

3757. Philip Morris elected to finance the SAS study through CIAR:

> The official funding of IFAQ [in flight air quality] research can be the Center for Indoor Air Research (CIAR) in Washington, D.C. There are two benefits from this vehicle, namely all contributions to fund the research can be processed by CIAR staff & CIAR can then be correctly named as a sponsor of the research -- which will diminish the effectiveness of the antis PR efforts to challenge the credibility of the research.

2501458517-8519 at 8518 (US 25615).

3758. John Rupp recruited Malmfors as an ETS consultant for Philip Morris. Rupp advised that Malmfors "does not believe that any adverse health effects [of ETS] have been shown" and was ready to take the "next step in the process" and meet with the tobacco industry directly. 2023543320-43321 (US 90036); 2023034933-4946 at 4939 (US 87334).

3759. The Dutch laboratory TNO took air samples aboard a number of SAS aircraft during the month of September 1988. TNO analyzed the samples for ETS components and prepared a "Confidential" report of its results to CIAR dated December 16, 1988. This report included an "Analysis of the Results" section (pages 20-42) where the authors concluded that the particulate and carbon dioxide levels on the SAS aircraft were not only high, but exceeded WHO and hygienic standards on many of the flights. The authors also found that there was little difference in ETS and air quality between the smoking sections and one of the nonsmoking sections. 89816305-6347 at 6343-6346 (US 90043).

3760. Gaisch recorded in his October 1988 monthly report that he had seen the TNO data, and noted that the high carbon monoxide levels were "an indication that the air in the aircraft cabin does by no means meet the ASHRAE standards (US norm for quality of indoor air)" and that the separation of smokers and nonsmokers was "nearly immaterial" to the air quality. 2501152077-2091 at 2088-2089 (US 25597).

3761. On January 3-4, 1989, Philip Morris, R.J. Reynolds , and Lorillard met with the three Swedish consultants and Max Eisenberg at Covington & Burling. The group agreed that "the RSP data was unexpectedly high" and that the testing pads should be reanalyzed at a laboratory in the United States, even though the pads were three months old. 2501255448-5448 (US 90046).

3762. The group “was not too comfortable with the way Malmfors had presented the data" and asked Rupp to talk to Malmfors about a "better approach." On January 4, "Rupp reported that Malmfors was agreeable to such an approach." 2501255448-5448 (US 90046).

3763. In his handwritten notes of the January 3, 1989 meeting at Covington & Burling, Tom Osdene wrote that the report's "explanations" were "inappropriate," and that the solution was to

"remove the discussion" section. 2023528894-8895 at 8895 (US 90035). In his notes of the January 4 meeting, Osdene wrote that the TNO report would be "discarded" and a "revised final version" would be prepared. 2023528896-8899 at 8898 (US 92036).

3764. Helmut Gaisch's report of the meetings recorded the following:

> [I]t was decided by a majority that (1) the exposed filter pads should be sent to Dr. Max Eisenberg, CIAR, who will find a US-based laboratory to carry out the UV-PM analysis, (2) All chapters of the narrative part of [the] TNO [report], going beyond mere description of the experimental part, should be eliminated.

2501152038-2052 at 2044-2045 (US 90044).

3765. TNO prepared a second report for CIAR dated January 23, 1989. This revised report entirely eliminated the 22-page "Analysis of the Results" section from the earlier report. 506848666-8687 (US 90047).

3766. Malmfors sent his second draft to Rupp, U.S. industry consultants, and CIAR by February 3 for review. 87823747-3750 at 3749 (US 85695).

3767. Defendants were apparently still not satisfied with Malmfors' paper. Philip Morris's Helmut Reif summarized a meeting between Malmfors and industry representatives (including Pottorff, Proctor, Green, Reif, and Covington & Burling attorney Charles Lister) in Stockholm on March 21, 1989, where Malmfors presented his revised findings. Industry representatives apparently tried to pressure Malmfors to change his results even further, at which point the following occurred:

> As the discussion got too tight, Malmfors said that he would not change his opinion, but there were other experts who could do his job.

2028364552-4554 at 4552 (US 90036).

3768. The SAS study was finally published, titled "Air Quality in Passenger Cabins of DC-9 and MD-80 Aircraft," in industry consultant Roger Perry's journal Environmental Technology Letters. The published version concluded that : "The total exposure to cabin air ETS among the passengers is rather small and insignificant in comparison to total life exposure to air pollution," and that an effective ventilation system could maintain air quality in airline cabins. 87630985-1000 at 0998 (US 23522).

3769. Despite the fact that Malmfors and his listed co-authors were consultants to Philip Morris, the published paper stated: "The authors have served as consultants to CIAR." 2023528820-8893 at 8821, 8863, 8868 (US 92028); 87630985-1000 at 0999 (US 23522).

3770. The Malmfors/SAS project was funded through CIAR at a cost of $638,806. 2505442777-2960 at 2861 (US 25643*). While the published paper did acknowledge the funding from CIAR, there was no mention of the source of CIAR funds, or the involvement of tobacco industry scientists and lawyers in the planning, management, and execution of the study, as well as the writing of the published paper. 87630985-1000 (US 23522).

3771. The Malmfors/SAS paper was cited by Defendants in submissions to regulatory agencies, including the Federal Aviation Agency, in support of its position that no regulation of smoking in aircraft was required beyond separation of smokers and nonsmokers. 2024191369-1381 at 1375-1376 (US 89401); 2023216588-6626 at 6594 (US 87407).

3772. Industry consultants HBI and Gary Huber cited the Malmfors study to the EPA in their comments opposing to the ETS Risk Assessment. 87653565-6820 at 4753-4763 at 4762, 5519-5548 at 5323 (US 88596).

(3) The 1992 HBI 585 Building Study

3773. In 1989, CIAR funded a project by industry consultant "Gray" Robertson and HBI (see supra Section V(G)(6)(a)((6))((h))) to assess indoor air quality and ETS in offices. The project cost $138,387 and resulted in the 1992 published paper "The Measurement of Environmental Tobacco Smoke in 585 Office Environments" (the "585 Building Study"). The paper concluded that ETS components in "typical office workspaces" were lower than had been previously reported. 2505528777-8786 at 8786 (US 20572); 2505442777-2960 at 2895 (US 25643*).

3774. In conducting the study, HBI falsified and manipulated the data. HBI field technician Gregory Wulchin testified at trial that he conducted a number of the ETS inspections underlying HBI's published 585 building study. Wulchin WD, 6:13-7:1. Wulchin examined eight of his ETS field reports that were included in the data underlying the published paper and found that false data entries had been made. Wulchin WD, 7:2-13:12; TLT0600139-0217 (US 65101). Wulchin testified that at least one of his data sheets had been altered by Robertson. Wulchin WD, 3:21-5:16; TLT0600139-0217 at 0154 (US 65101); Wulchin TT, 11/3/04, 4855:5-4859:10. Wulchin identified similar errors transposing several other data recordings that had been made by other HBI technicians. Wulchin WD, 13:13-16:14. In addition, Wulchin testified that the readings in two of his field reports demonstrated unacceptably high levels of particulate from cigarette smoking in rooms where there was good ventilation. Wulchin WD, 16:19-17:8. As a result of these irregularities and others, Wulchin testified, "My experience with HBI data as well as [my] review of HBI reports, leads me to conclude that HBI's data contained unexplained entries that raise serious questions about the integrity of its studies." Wulchin WD, 17:9-14. The Court credits his testimony for the following reasons: Wulchin was a former employee who harbored no animus against HBI; he had nothing to

gain from testimony that was adverse to HBI; his testimony was specific and internally consistent; under cross-examination, he was neither evasive nor hostile.

3775. After the 585 Building Study was published, the results and data were the subject of a 1994 Congressional examination. Robertson WD, 89:4-8; 2047330959-0981 (US 38593). The Subcommittee on Health and the Environment obtained HBI's then-existing ETS data forms and compared them to the data that was submitted in an interim report to CIAR. Robertson WD, 90:10; TLT0600053-0084 (US 65097) (interim submission to CIAR). Discrepancies were identified that would have affected the levels of ETS reported by HBI's study. Wulchin confirmed that HBI's data collection forms were often changed to minimize measurements of ETS.

> It is my belief that there were other instances in which HBI reduced field measurements of high levels of particulates in rooms where smoking occurred. . . .
>
> I conducted a number of tests summarized in the CIAR report. My review of the report indicates that HBI mischaracterized and made numerous alternations in the data I collected.

Wulchin WD, 3:11-20, 5:2-13; TLT0600139-0217 at 0140 (US 65101).

3776. Some of the criticisms made by HBI employees and tobacco industry scientists about HBI methodology were also made by James Repace, EPA, and Alfred Lowery, Naval Research Laboratory, widely published authors on ETS and indoor air quality, in a 1992 letter to the editor shortly after the 585 Building Study was published. For example, from the data provided in the paper, Repace and Lowery were able to determine that HBI took measurements of smoking areas within larger rooms, and HBI did not report the volume of any rooms in which readings were taken. 2505583630-3641 (US 85640).

3777. In addition, Repace and Lowery criticized the lack of science underlying the study: air exchange rates were not reported; the number of buildings was not reported; the locale of the buildings was not reported; the types of buildings were not reported; the ages of the buildings were not reported; the types of air handling systems were not reported; the time of year recordings were made was not reported; the proximity of the detector to smokers was not reported; and there was no discussion of or comparison with earlier findings, as would normally be the case in scientific studies. 2505583630-3641 (US 85640); see also VXA1601456-01742 at 1651-1652 (US 64059) (1984 Surgeon General's Report, stating number of cigarettes burned, the size of the room, the effective ventilation rate, and smoke residence time are all important variables in determining levels of secondhand smoke exposure); VXA2110670-1053 at 0823-0826 (US 63709) (1986 SGR).

3778. Defendants themselves recognized the flaws in Robertson's scientific methodology. In April 1991, even before the allegations of scientific fraud publicly surfaced the following year (2070332077-2104 (US 85627)), CIAR Board members Spears (Lorillard), Green (Reynolds), and Pages (Philip Morris), discussed a proposal by HBI to gather additional data related to ETS and indoor air quality. CIAR rejected funding the proposal because it lacked scientific merit. 87776361-6362 (US 56325); 87776358-6359 (US 56324).

3779. Despite the evidence of scientific fraud, in March 1992 the Tobacco Institute cited the 585 Building Study as scientific authority in its comments opposing adoption of OSHA's IAQ Rule. TI02120021-0098 at 0035 n. 32 (US 65685*); see also (no bates at 91) (JD 023792), (Reynolds' 1992 OSHA submission). As recently as 2000, the HBI paper was cited by industry consultant Roger Jenkins in a journal article. (no bates at 49) (JD 065013); BR2000545-0785 at 0658 and 0670 (JD 065024).

3780. The published paper on the 585 Building Study acknowledged, "Funding for this work was made available in part by the Center for Indoor Air Research, Linthicum, Maryland." (US 20572). As detailed above (see supra Section V(G)(6)(a)((6))((h))), this statement does not provide the reader an accurate picture of Robertson/HBI's long-standing, lucrative financial relationship with the tobacco industry.

(4) The 2003 Enstrom/Kabat Study

3781. James Enstrom's May 2003 article, "Environmental tobacco smoke and tobacco related mortality in a prospective study of Californians, 1960-1998," concluded that the association between ETS exposure and lung cancer and CHD "may be considerably weaker than generally believed." This study was CIAR-funded and managed and was published in the British Medical Journal. (no bates) (JD 024496).

3782. A June 25, 1996 Philip Morris e-mail from Marc Firestone to Richard Carchman stated that Enstrom did work for Philip Morris and Reynolds "in the context of the EPA litigation," and that one of his new proposals was "clearly litigation oriented" and should be "pursued, if at all, in the context of attorney work product." 2063610699-0699 (US 27128).

3783. Enstrom then sent his first proposal to perform statistical analyses on data from CPS I to CIAR on July 15, 1996, stating:

> For the past three years I have done consulting and research for Jeffrey L. Furr of Womble Carlyle on behalf of R.J. Reynolds and Philip Morris. This research has found a number of results that raise serious questions about several published findings on the relationship of passive smoking to lung cancer and other diseases.

2063610840-0841 at 0840 (US 85796). Enstrom also stated in his July 15, 1996 letter to Eisenberg that his proposed CIAR research would "continue and expand upon" the research done for Womble Carlyle. 2063610840-0841 at 0840 (US 85796).

3784. At a November 1996 meeting, the CIAR Board of Directors discussed the Enstrom proposal and noted that Philip Morris lead scientist Richard Carchman and Reynolds lead scientist Charles Green (two members of the CIAR Board) had already visited Enstrom at UCLA to discuss the proposal with him personally. 2063650515-0518 at 0515 (US 79212).

3785. Enstrom wrote a January 15, 1997 letter following up on his proposal but directly to Carchman at Philip Morris, rather than to CIAR or its SAB:

> A level of trust must be developed based on my past research on passive smoking and epidemiology in general in order to work out the best way for me to conduct this research. A substantial research commitment on your part is necessary in order for me to effectively compete against the large mountain of epidemiologic data and opinions that already exist regarding the health effects of ETS and active smoking.

2063654073-4073 (US 85811).

3786. According to the minutes of the May 15, 1997 CIAR Board of Directors meeting, CIAR found a co-author collaborator for Enstrom, Geoffrey Kabat. 517578187-8188 (US 85816).

3787. By letter from Carchman dated April 25, 1997, Philip Morris agreed to fund a precursor study by Enstrom for $150,000. 2063610867-0867 (US 85787). That same year, Enstrom received funding from CTR, via a letter that proposed paying him an additional $25,000 in addition to an ongoing CTR grant already in place. 40001769-1769 (US 85804*).

3788. Enstrom's second proposal to CIAR, dated October 20, 1997, resulted in funding of at least $525,000 from Defendants, a 1998 contract with CIAR as an Applied Project. 566943549-

3579 at 3550 (US 85813); 2505442777-2960 at 2815 (US 25643*); 83205526-5581 at 5538 (US 92033); Eisenberg TT, 11/9/04, 5630:22-5631:8; 2505442777-2960 (US 25643*); 83205526-5581 at 5538 (US 92033); Eisenberg TT, 1/9/04, 5630:22-5631:8; 2505442777-2960 (US 25643*).

3789. As originally planned, the researchers conducted a study using California CPS I data to ascertain rates of reported cases of coronary heart disease, lung cancer, and chronic obstructive pulmonary disease for study participants identified as "never smokers married to smokers." The study yielded the following results: never smokers married to smokers had a relative risk of 0.94 for developing coronary heart disease and 0.75 for developing lung cancer. Thus, according to the study, the relative risk of developing coronary heart disease and lung cancer decreased for never smokers married to smokers. Based on these results, the researchers concluded that there is no significant association between passive smoking and tobacco-related diseases in never smokers married to smokers. TKT0500029-0038 (US 65086).

3790. When the Enstrom/Kabat paper was published in the May 2003 issue of the British Medical Journal, it was roundly criticized in the scientific community. Members of the 2002 working group on involuntary smoking and cancer for the International Agency for Research on Cancer (IARC) made the following statement:

> Enstrom and Kabat's conclusions are not supported by the weak evidence they offer, and although the accompanying editorial alluded to "debate" and "controversy", we judge the issue to be resolved scientifically, even though the "debate" is cynically continued by the tobacco industry.

(no bates) (JD 024496). The American Cancer Society had repeatedly warned Enstrom that using its CPS-I data in the manner he was using it would lead to unreliable results. Enstrom used only a small subset of the overall data, and, more importantly, the data corresponded to participants who

enrolled in 1959, a time when exposure to tobacco smoke was common. TLT0961621-1623 (US 86735); (no bates at 502-503) (JD 024502).

3791. Defendants nevertheless promoted the study. For example, in October 2003, BATCo cited the report on its website in support of its position that "the claim that ETS exposure has been shown to be a cause of chronic disease is not supported by the science." BATCo stated that a "very large study published in the British Medical Journal in May 2003 on environmental tobacco smoke in the home has found no increases in risk for the key smoking related diseases." The website provided a hyperlink to BAT's summary of the study:

> In our view, this is an important study which confirms that many of the estimates of the risks of public smoking are overstated in the extreme, and that considerable doubts remain as to whether ETS exposure is associated with any risk of chronic diseases such as lung cancer and heart disease. We believe the study illustrates that calls for bans on public smoking cannot be justified on the basis of the suggestion of chronic health risk for non-smokers, although of course we believe that the needs of non-smokers should be also catered for with solutions such as good ventilation.

ARG0412302-2303 (US 86747); TLT1020487-0488 (US 88461).

3792. In the present litigation, Defendants' statistician Edwin Bradley relied on the Enstrom paper as evidence that bias and confounding explain the elevated observed risks in epidemiological studies finding an association between spousal smoking and lung cancer. Bradley WD, 100:36-101:21.

7. Defendants Made False and Misleading Public Statements Denying that ETS Is Hazardous to Nonsmokers

3793. Despite the positions of the public health authorities and despite their own internal recognition of the link between ETS and disease in nonsmokers, Defendants made numerous public statements denying the linkage.

3794. In 1979, Defendant Tobacco Institute issued a brochure to the public called "Fact or Fancy?" that denied any adverse health effects caused by cigarettes. With respect to passive smoking, the brochure denied that: "Women who smoke harm their babies before and after birth." Moreover the brochure claimed: "It is difficult to understand why parental smoking is blamed for a child's coughs or wheezes, in view of these conflicts in research findings." TIMN0133740-3798 at 3741, 3754 (US 21280).

3795. In 1980, the Tobacco Institute published a brochure titled "A Two-Way Street" which stated: "First of all, it is important to understand that there is no convincing evidence that tobacco smoke causes disease in nonsmokers." 2024299572-9575 at 9573 (US 20401).

3796. In response to the three 1981 studies showing an increased risk of lung cancer among spouses married to smokers and the Surgeon General's warning of a "possible serious public health problem," Defendant Tobacco Institute ran a series of advertisements called "Answers to the most asked questions about cigarettes." "Question 5" was "Does Cigarette Smoke Endanger Nonsmokers?" The Tobacco Institute's "answer" in the advertisement distorted the scientific evidence and the Surgeon General's conclusions:

> Here's what two major opponents of smoking said on the subject:

> 1. The Surgeon General. Clearly and simply put, he has not concluded from the scientific literature reviews that cigarette smoking causes disease in nonsmokers.
>
> 2. The American Cancer Society. A report covering 17 years and some 200,000 people indicated that 'second-hand' smoke has an insignificant effect on lung-cancer rates in nonsmokers. Fact from a report published by the Statistical Director of the Society in June, 1981.
>
> A recent Japanese study made claims about lung cancer rates among nonsmokers. This got wide press coverage. But the validity of the study was seriously questioned by a variety of experts around the world.

TIMN0121194-1205 at 1196 (US 85358); see also 93852854-2869 at 2854 (US 88574).

3797. The ad campaign attacking the 1982 Surgeon General's Report was substantial:

> The campaign . . . [was] targeted to reach eight out of 10 Americans 25 years or older. It is appearing in publications including Newsweek, People, Sports Illustrated, Time, TV Guide, U.S. News & World Report. . . .

TIMN0121194-1205 at 1196 (US 85358). Previous ads had already generated 10,000 requests for the Tobacco Institute's booklet. A series of nine ads were planned to run throughout 1982. Id., see also 93852922-2933 at 2931 (US 21118); TI04591849-1855 at 1853 (US 22028); TINY0006369-6379 at 6376 (US 87667).

3798. In October 1983, the Tobacco Institute ran another advertisement in the series called "Answers to the most asked questions about cigarettes," posing the question "What happens to cigarette smoke in the air?" The ad ran in the Wall Street Journal and other news media. Among other things, the ad stated,

> Even the U.S. Surgeon General, an outspoken critic of smoking, said in 1982 that the available evidence is not sufficient to conclude that other people's smoke causes disease in nonsmokers. The fact is, no

> claim of adverse health effect of cigarette smoke on a healthy nonsmoker has yet been proved.

TLT0601093-1095 at 1094 (US 65131); TLT0601100-1104 at 1101-1102 (US 65133).

3799. In 1984, Defendant Reynolds ran an advertisement titled, "Can we have an open debate about smoking?" Among other things, the advertisement stated, "Studies which conclude that smoking causes disease have regularly ignored significant evidence to the contrary. These scientific findings come from research completely independent of the tobacco industry. We at R. J. Reynolds think you will find such evidence very interesting. We think reasonable people who analyze it may come to see this issue as not a closed case, but as an open controversy." Reynolds included the adverse health effects of secondhand smoke in its campaign:

> We will also explore other important issues including relations between smokers and non-smokers, smoking among our youth, and "passive smoking." Some of the things we say may surprise you. Even the fact that we say them may prove controversial. But we won't shy away from the controversy because, quite frankly, that's our whole point. We don't say there are no questions about smoking. Just the opposite. We say there are lots of questions -- but, as yet, no simple answers.

513943434-3434 (US 50268).

3800. Subsequently in 1984, Reynolds ran an advertisement titled "Smoking and Health: Some facts you've never heard about." The advertisement directly attacked the conclusions of the Hirayama study:

> You also hear a lot today about "passive smoking" -- breathing other people's cigarette smoke. One study from Japan, which recently received tremendous publicity, claimed to have shown that wives of smokers ran a greater risk of lung cancer than wives of non-smokers. But this study contained such serious flaws that it was quickly and strongly criticized by several independent scientists -- including the statistician who designed the test used in the study.

506100136-0136 (US 50882).

3801. From January 1984 to April 1986, Reynolds ran a series of advertisements in newspapers across the country. One was titled "Smoking in Public: Let's separate fact from fiction"; another was titled "Secondhand smoke: Let's clear the air"; and a third ran under the headline "Secondhand smoke: The Myth and the Reality." The three Reynolds advertisements asserted: "In fact, there is little evidence -- and certainly nothing which proves scientifically -- that cigarette smoke causes disease in nonsmokers." 506290558-0792 at 0608, 0611, 0612 (US 29799).

3802. In December 1986, the Tobacco Institute published a brochure, titled "Tobacco Smoke and the Nonsmoker: Scientific Integrity at the Crossroads." The Tobacco Institute claimed in its brochure that "a detailed review of the scientific literature on ETS" led to the conclusion that: "The evidence does not support conclusions that ETS represents a health hazard to nonsmokers." TIMN 284404-4413 at 4405 (US 77088).

3803. Defendants continued their drumbeat of public statements denying that cigarettes and tobacco smoke are a hazard to nonsmokers. The statements often borrowed from what the industry had said with respect to active smoking. For example, the Tobacco Institute published a booklet in 1987, titled "Smoking Restrictions: The Hidden Threat to Public Health." In this booklet, the authors asserted with respect to the health effects of passive smoke that:

> A detailed review of the scientific literature on environmental tobacco smoke yields two basic conclusions:
>
> First, environmental tobacco smoke has not been shown scientifically to pose a health hazard in nonsmokers.
>
> Second, as a National Academy of Sciences panel noted recently, more and better research needs to be done.

520911538-1542 at 1539, 1540-1541 (US 85593).

3804. A 1987 series of Philip Morris advertisements had pictures of smokers "talking" to the reader. The smokers in the ads asserted: "Please don't tell me my cigarette smoke is harmful to you. There's just no convincing proof that it is"; and "I know there's no proof my smoke can hurt you." 2500146093-6096 (US 20554).

3805. The Tobacco Institute published a brochure in 1988, titled "Environmental Tobacco Smoke and Health: THE CONSENSUS." This brochure referred to the 1986 reviews on passive smoking, then declared: "SCIENTIFIC CONSENSUS: No scientific case against environmental tobacco smoke." 507828094-8102 at 8096 (US 51276).

3806. An April 1990 INFOTAB publication, titled "Children & Smoking-The Balanced View," stated: "Exposure to ETS has not been scientifically proven to adversely affect the health of children." 2501342105-2110 at 2109 (US 20565).

3807. In November 1989, EPA had requested comments on a draft document titled "Environmental Tobacco Smoke: A Compendium of Technical Information," a companion document to the upcoming ETS Risk Assessment. TI11951245-1685 at 1251 (US 85699). In its February 1990 comments to EPA, the Tobacco Institute relied heavily on the conclusions of the McGill symposium, an industry funded and managed conference discussed Section V(G)(6)(a)((7))((e)), supra, but did not disclose the connection:

> In addition, we would like to point out that in November of this past year, a symposium on ETS involving some 80 scientists from 20 countries was held at McGill University in Montreal. The proceedings of the symposium reflect a thorough, up-to-date discussion of the relevant literature. We believe that the results of this conference -- which concluded, overall, that ETS has not been shown to present a health hazard to nonsmokers -- should be carefully considered in

> further development of the EPA Compendium. Accordingly, we are transmitting copies of the McGill proceedings for use by EPA and its consulting authors.

TI11951245-1685 at 1254 (US 85699).

3808. In support of its arguments opposing the compendium's conclusions, the Tobacco Institute also cited published papers by industry consultants Sterling, Kessler, Fleiss, Layard, Reasor, HBI, Robertson, Hood, Tollison, Wagner, Ecobichon, Wu, Gori, Turner, Holcomb, Weinberg Consulting Group, Viren, Lee, Koo, Kabat, Wynder, Eatough, Witorsch and Haley. The Tobacco Institute did not disclose that it and the cigarette manufacturers funded and managed these consultants. TI11951245-1685 (US 85699).

3809. On June 25, 1990, the day the EPA released its draft Risk Assessment, the Tobacco Institute issued a press release which stated, under the headline "DRAFT RISK ASSESSMENT DESCRIBED AS SPECULATION; Underlying scientific foundation inadequate," that the conclusion that "ETS has been shown to be a cause of disease" was "contrary to fact." The Tobacco Institute then cited the McGill symposium findings, with no disclosure or attribution, as independent authority in support of its view:

> This very issue was recently addressed by a prestigious panel of scientists at an international symposium on ETS held at McGill University in Montreal, Canada. As the opening presenter to the risk assessment panel at the symposium emphasized:
>
> "The first order of business . . . is for proper studies to be carried out with respect to a possible causal link between ETS and particular diseases. If studies justifying a causal inference were to become available, we could then employ the remaining steps in the risk assessment technique."

87697659-7664 at 7659, 7660 (US 85586); Dawson WD, 135:18-137:3.

3810. The Tobacco Institute also critiqued the EPA Draft Policy Guidelines, which related to smoking in the workplace. A Tobacco Institute Public Affairs Progress Report stated:

> We continued coordinating the industry's submissions on both draft documents with two member companies who plan to submit independent comments. . . .
>
> Editorials by scientific consultants criticizing the EPA ETS risk assessment in light of the findings of the McGill ETS symposium were published in the Detroit News, the Las Vegas sun and the Chicago Sun-Times. . . .

TI09911997-2033 at 2005 (US 22367).

3811. Industry consultants prepared letters to the editor for publication in major newspapers attacking the draft Risk Assessment with the results of the McGill symposium. As stated in the Progress Report quoted above, a number of these editorials/ letters were published. TI09911997-2033 at 2021 (US 22367). By omitting industry attribution, the letters appeared to have been written by individuals with no industry connection. 1990 letters by Tobacco Institute consultant Jack Peterson in the Chicago Sun-Times, Las Vegas Sun and the Salt Lake Tribune, and by Tobacco Institute consultant David Weeks in the Richmond-Times Dispatch. Dawson WD, 133:13-135:13; TI12201464-1465 (US 86722) (Peterson letter titled "Passive smoking danger? Don't believe what you read"); TIMN343061-3061 (US 85582) (Weeks editorial titled "The Facts About ETS"); TIDN0019217-9268 at 9228-9229 and 9232-9233 (US 85597).

3812. As described below, the Tobacco Institute and other Defendants filed lengthy comments with the EPA on October 1, 1990, disputing the conclusions of and evidence cited in the Risk Assessment and policy guide. In these submissions, Defendants relied on the industry's ETS initiatives.

3813. On October 1, 1990, the Tobacco Institute made its submission to the EPA. 87653565-6820 at 3941- 3998 (US 88596). The comments emphasize the findings of the papers presented at the McGill symposium, as well as industry-funded papers by industry consultants Lee, Balter, Gori, LeVois, Mantel, Bacon-Shone, Lunau, G.L. Reynolds, Viren, Fleiss, Gross, Wynder, Kabat, Reasor, Ecobichon, Wu, Gross, Kilpatrick, Todhunter, Perry, Kirk, Layard, Koo, Bieva and Witorsch, as well as the 1987 Tokyo conference and the 1988 "Perry" conference (organized by industry ETS consultant Roger Perry). 87653565-6820 at 3958, 3963-3967, 3969, 3972-3976 (US 88596).

3814. On October 1, 1990, R.J. Reynolds also made a submission to the EPA, which relied on many of the same industry consultant papers and industry-managed conferences, including: Koo, Witorsch, Kabat, Lee, Mantel, Kornegay, Kastenbaum, MacDonald, Layard, Viren, Kilpatrick, Butler, Rylander, the American Health Foundation (AHF), Adlkofer, Gori, Haley, Viren, Bieva, Sterling, Yano, Eatough, Proctor, Carson/Erikson. 87654420-4485 (US 92098).

3815. Oldaker and Paul Nelson were among a number of Reynolds scientists who wrote separate comments on the draft EPA Risk Assessment for the company. They similarly cited the industry's symposia and consultants in support of their opposition. Oldaker, the writer of the 1988 Carson/Erickson paper, repeatedly cited the paper as one of the authorities in support of his comments. 87653565-6820 at 4515-4531, 4604-4612, 4613-4618, 4619-4645 (US 88596).

3816. Philip Morris submitted comments to the EPA dated September 28, 1990. Like those of the Tobacco Institute and R.J. Reynolds, the Philip Morris submission cited to: Adlkofer, Haley, Robertson, Sterling, Kirk, Perry, Carson & Erikson, Proctor, Eatough, Jenkins, Kilpatrick, Viren, Koo, Lee, Ueberla, Mantel, Wynder, Kabat, First, Guerin, Schwartz, Balter, Aviado, Lunau,

Rylander, Fustinoni, Kasuga, Katzenstein and Faccini, as well as several industry "symposia" and conferences. 2070140494-0630 at 0537-0553, 0595-0600, 0604-0608, 0611-0615 (US 88604).

3817. Defendants also paid a number of their consultants to submit free-standing comments to EPA in opposition to the draft Risk Assessment. The following scientists submitted separate comments to the EPA, but did not disclose their affiliation with the tobacco industry: Adlkofer; Aviado; Bridges; Bucci; Butler; Furst; Rutsch; Rylander; Schneider; Skrabanek; Springall; Sterling (individually and with Weinkam and Rosenbaum); Sullivan; Tweedie; and Ueberla. 2026127293-7298 (Adlkofer); 2026128531-8559 (Aviado); 2026129063-9064 (Bridges); 2026127908-7912 (Bucci); 2026135132-5136 (Butler); 2026128569-8575 (Furst); 2026128171-8176 (Rutsch); 2026127783-7790 (Rylander); 2026127753-7760 (Schneider); 2023475720-5728 (Skrabanek); 2023128950-8981 (Springall); 2026127212-7236 (Sterling and Collett)); 2026128426-8477 (Sterling, Weinkam, Rosenbaum); 2026134124-4134 (Sullivan); 2026127923-8001(Tweedie); 2026127065-7102 (Ueberla) (US 92064); 2026127628-7636 (US 85564) (Crepat); 2081369202-9220 at 9205-9206 (US 27796) (list of PM consultants); Parrish TT, 1/26/05, 11147:12-11148:22, 11160:22-11167:9.

3818. Under cover letter dated September 28, 1990, industry consultant and McGill symposium co-host Donald Ecobichon separately submitted the proceedings of the symposium directly to the EPA, urging that EPA consider the conclusions of the participants; Ecobichon did not disclose any tie to the industry. 2026134978-4978 (US 87395).

3819. In December 1990, EPA's Scientific Advisory Board held a public meeting to discuss the Draft Risk Assessment and the draft policy guide. 2040226083-6212 (JD 002884). That morning, the Tobacco Institute issued a press release claiming that there were major flaws in the

draft EPA Risk Assessment and Policy Guide. Critical comments by Tobacco Institute consultants Lee, LeVois, and Fleiss are quoted in the release. However, neither their affiliation with the Tobacco Institute nor the fact they were paid industry consultants was disclosed.

3820. The Tobacco Institute created and fostered the impression that a large number of scientists existed who, independent of the tobacco industry, opposed the EPA's proposed Risk Assessment. The press release was accompanied by 69 pages of background materials, including "an annotated list of scientific comments critical of the documents." The Tobacco Institute claimed that "dozens of scientists have challenged fundamental and technical aspects of the draft documents." 87697701-87697772 (US 85587). Of the 59 scientists included on the list, "most of if not all of the scientists commenting would have been retained by the industry." Dawson WD, 142:19-22, 143:9-19; Dawson TT, 1/12/05, 10008:5-10011-9.

3821. Under cover letter dated October 15, 1990, Covington & Burling forwarded Lorillard a compilation of comments that were "filed by and on behalf of the tobacco industry" with respect to the draft ETS risk assessment and policy guide. The compilation contains submissions from various third party entities with varying document dates. For example, on October 1, 1990, the tobacco-industry funded Washington Legal Foundation filed comments on behalf of itself and twelve congressmen from tobacco-growing states who opposed the EPA action. WLF also issued a news release to publicize their comments. Nowhere in the submission to EPA or in the press release did WLF acknowledge its industry funding. 87653565-6820 at 3567-3583 (US 88596).

3822. Defendants' critique of the EPA continued after the final EPA Risk Assessment was published in 1992. In 1993, John Luik was hired by CECCM to write a paper titled "Pandora's Box: The Dangers of Politically Corrupted Science for Democratic Public Policy;" which attacked the

Risk Assessment. Blackie WD, 132:19-133:10. Shook, Hardy & Bacon helped craft Luik's response to peer review criticisms after he submitted "Pandora's Box" to a journal for publication. 2024215189-5190 (US 37097); 2025495375-5376 (US 89050). In spite of this, and although Luik received funding from Reynolds, Philip Morris, and BATCo, neither the funding nor the industry support was acknowledged or disclosed in the paper, which was ultimately published in a Boston University alumni journal called Bostonia. 2025495237-5249 (US 89052).[34]

3823. In 1999, B&W funded a book by Luik and fellow industry consultant Gio Gori through a third party, the Fraser Institute. Blackie WD, 143:6-12. The book, titled Passive Smoke: The EPA's Betrayal of Science and Policy, alleged scientific misconduct on the part of the EPA in conducting its Risk Assessment. JDX2781834-1954 (JD 067661). The authors did not acknowledge tobacco industry funding. Blackie WD, 143:10-17.

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[34] According to a December 21, 1993 memorandum from CECCM Chairman John Lepere to Philip Morris's David Bushong and Matt Winokur, Lepere addressed a Philip Morris recommendation that consultants in the future disclose CECCM funding. Lepere responded:

> I consider that future decisions on disclosure would best be made, taking account of your company's recommendation, on a case by case basis as each arises . . . .
>
> The only recent project to which the recommendation would have been relevant in J.C. Luik's "Pandora's Box" project. Although the decision was not recorded in the minutes of the meeting of our Working Group held on 9 June 1993, the Group then decided, without dissent, that credit should not be given to CECCM in any publication resulting from that project. I confirmed accordingly to John Luik in writing on the following day. He submitted his paper shortly thereafter for peer-review for publication in the "Philosophy and Public Affairs" learned journal and it has also recently been part-published in the Bostonia magazine, in both cases without acknowledgment of CECCM's financial support.

2025495222-5223 (US 89049).

3824. Defendants knew that a one-tailed 95% confidence interval was used by EPA. See Section V(G)(2)(a)(¶¶3341-3344) for a detailed explanation of this issue. In a November 22, 1993 memorandum to industry consultant John Luik, with copies to BATCo's Chris Proctor and Philip Morris's Matt Winokus, Rothmans scientist David Rowland summarized the facts and the source of the confusion over whether the EPA had applied a 90% or 95% confidence interval. Luik was in the process at that time of finding a journal to publish his "Pandora's Box" paper, discussed above. Rowland described a meeting with counsel at Shook, Hardy & Bacon:

> [SHB attorney] Bernie O'Neill and I went through the EPA document. The key to the whole thing is a short paragraph on page 5-2. . . .
>
> So the EPA used a one-tailed test of significance at p=0.05 (i.e., the 95% confidence level). To effect this, they performed a two-tailed test with 90% confidence intervals, which is equivalent. Hence the source of confusion perpetuated by Stanton Glantz and other commentators.
>
> Since getting back to the office this morning, I see that Kim Davis of Lovell, White and Durrant has come to a similar conclusion after considering pages 5-34/35 and speaking to his contacts in the US.
>
> Thus, the 90% argument is out: what has to be attacked is the EPA's assumption that they were justified in using the one-tailed test.

2025495375-5376 at 5375 (US 89051).

3825. Rowland had undertaken his investigation of the 90% confidence interval allegation after Luik was told by a journal reviewer that "Luik's claim that EPA used BOTH a 90% confidence interval and a one-tailed test is 'manifestly false.'" 2024215189-5190 at 5189 (US 37097). Notwithstanding Rowland's confirmation to Luik that EPA used a 95% confidence interval and a one-tailed test, Luik's article was not corrected. 2024595237-5249 at 4239, 5243 (US 89052).

3826. Indeed, under questioning by the Court, Defendants' expert Dr. Bradley admitted to understanding the EPA's rationale for a one-tailed test, noting that the EPA

> had stated that they [EPA] felt like you could not have reduced risk with exposure to ETS, so therefore, that was not a possibility that the relative risk could be less than 1, it could only be greater than 1, and consequently, they wanted to look only at the increase. . . .

Bradley TT, 3/14/05, 15456:23-15457:3.

3827. At the RJR Nabisco Holdings Company annual shareholders' meeting held on April 17, 1996, in Winston-Salem, corporate executives of the holding company, RJR Nabisco, and RJR Tobacco presented an overview of their companies' performance and answered questions from shareholders. One shareholder asked the companies' position on passive smoking and children, that is, whether the company believed that people should smoke around children. The answer from management did not acknowledge any health risk to children. Instead, the following ensued between the shareholder and the chairman of RJR Nabisco:

> THE CHAIRMAN: I will not restrict anybody's right to smoke. If the children don't like to be in a smoky room, and I wouldn't like to be, they'll leave. I don't know if you've got any grandchildren; I do. And if there is smoke around that's uncomfortable, they'll leave.
>
> MS. DONLEY: An infant cannot leave a room.
>
> THE CHAIRMAN: Well -- Okay. At some point they begin to crawl, okay. And then they begin to walk, and so on. I guess that's enough said. Thank you very much.

520800648-0821 at 0708-0709 (US 92100).

3828. On October 2, 1997, Philip Morris Companies sent a letter to Congress in response to a request from senators asking for Philip Morris's position on smoking and health issues. In this letter, often referred to as the "Hatch Statement," the company stated that "the evidence with respect

to ETS is not persuasive." 2085633197-3198 at 3198 (US 45754). Philip Morris Companies Chairman Geoffrey Bible repeated this statement during his testimony before the House Commerce Committee on January 28, 1998. 86592673-86592675 at 3344 (US 21820). Lorillard's letter to Congress, dated October 1, 1997, similarly asserted, "We do not agree that exposure to environmental tobacco smoke has been shown to be a cause of disease in nonsmokers. 86592673-2675 at 2675 (US 56175).

8. Defendants Continue to Obscure the Fact that ETS is Hazardous to Non Smokers

a. Websites and Other Public Statements

3829. In this litigation, Defendants have denied that ETS causes disease in nonsmokers. USX6390001-0400 at 0045-0046 (US 89555) (BATCo); USX6390001-0400 at 0078-0079 (US 89555) (B&W); USX6390001-0400 at 0147-0148 (US 89555) (Lorillard); USX6390001-0400 at 0194-0195 (US 89555) (PM); USX6390001-0400 at 0272, 0274-0275 (US 89555) (RJR).

3830. Reynolds continues to publicly and directly deny that secondhand smoke causes diseases and other adverse health effects in nonsmokers. Reynolds's position on its website is that it believes "that there are still legitimate scientific questions concerning the reported risks of secondhand smoke." Reynolds's website further states:

> Considering all of the evidence, in our opinion, it seems unlikely that secondhand smoke presents any significant harm to otherwise healthy nonsmoking adults at the very low concentrations commonly encountered in their homes, offices and other places where smoking is allowed. We recognize that exposure to high concentrations of secondhand smoke may cause temporary irritation, such as teary eyes, and even coughs and wheezing in some adults. In addition, there is evidence that secondhand smoke, like other airborne irritants, or allergens such as pollen and dust may trigger attacks in asthmatics.

(US 92012). Mary Ward, an in-house attorney for Reynolds until 2004, testified that the Reynolds position on passive smoking has not changed since she joined the company in 1985, with the exception of admitting that ETS "may trigger attacks in asthmatics." Ward TT, 11/4/04, 5076:9-5077:22.

3831. Reynolds corporate position on ETS and children is that "parents and others should minimize the exposure of children and young children to tobacco smoke and other airborne irritants." (US 92012).

3832. Lorillard also continues to dispute publicly and directly disagree with the scientific consensus. On October 14, 2003, Lorillard issued a press release announcing a favorable verdict in the Miami case of a former flight attendant who alleged her chronic sinusitis and bronchitis were caused by ETS exposure over 27 years of working for airlines. After stating the trial result and providing a summary of the allegations, the press release stated: "Jurors are increasingly seeing through the transparent body of evidence in these types of cases, and we will continue our vigorous defense against any and all such future claims." USX5710001 (US 89303). The press release was picked up and run in the Los Angeles Times the next day. USX5710005 (US 89305).

3833. Lorillard general counsel Ron Milstein testified that his company has never admitted in any forum that ETS exposure causes disease, and that the October 2003 press release was in line with the company's position that ETS is not a proven health hazard. Milstein TT, 1/7/05, 9263:8-9264:24. Lorillard's current website does not admit that ETS causes disease in nonsmokers. Instead Lorillard directs consumers to the findings of public health authorities on ETS.

3834. B&W also continues to publicly deny that secondhand smoke causes diseases and other adverse health effects in nonsmokers. The company's 2003 website stated: "It is, therefore, our

view that the scientific evidence is not sufficient to establish that environmental tobacco smoke is a cause of lung cancer, heart disease, or other chronic diseases." TLT0390003-0003 (US 76761). In 2004, the B&W public corporate position was revised to state its disagreement in slightly different terms: "In our opinion and in the opinion of others, however, there are legitimate scientific questions concerning the extent of the chronic health risks of ETS." USX5420009 (US 89165); Ivey TT, 11/16/04, 6082:23-6083:14.

3835. BATCo continues to publicly dispute that secondhand smoke causes diseases and other adverse health effects in nonsmokers. BATCo also denies that passive smoke is a health hazard to adults or children. On its website, BATCo states that ETS can be "annoying," but denies that it presents any risk:

> We believe, however, the claim that ETS exposure has been shown to be a cause of chronic disease is not supported by the science that has developed over the last 20 years or so. In our view, it has not been established that ETS exposure genuinely increases the risk of nonsmokers developing lung cancer, heart disease, or chronic obstructive pulmonary disease.

ARG0412302-2303 (US 86747); see also ARU6220813-0814 (US 86743).

3836. BATCo's website also claims that the 1998 WHO/IARC study, which reported a increased relative risk of lung cancer of 16% for spousal exposure and 17% for workplace exposure, "found no meaningful increase in lung cancer risk." BATCo summarizes the 2003 Enstrom study results, but fails to state that the study was funded and managed by the tobacco industry through CIAR and Philip Morris. ARG0412302-2303 (US 86747).

3837. BATCo has denied ETS-related health risks in other recent public statements. According to a March 1998 news article, BAT Chairman Martin Broughton was asked if he stood

by the company's assertion that passive smoking is not a health risk. Broughton's response was: "There is virtually no evidence at all to the contrary." ARU6532231-2233 at 2232 (US 86878).

3838. In 2002, BATCo published a document titled "British American Tobacco Social Report 2001/2002." In this report, BATCo asserted:

> There is also a debate about Environmental Tobacco Smoke (ETS), also known as passive smoking. Some say it poses health risks, and others, including ourselves, say there is no convincing evidence that ETS is a cause of chronic diseases such as lung cancer.

TLT0231830-TLT0231910 at 1844 (US 76316).

3839. When Philip Morris Companies originally established the Philip Morris website in October 1999, its public position on passive smoking was that while "many scientists and regulators have concluded that ETS poses a health risk to nonsmokers," Philip Morris did not agree with these conclusions. (no bates) (US 92056).

3840. In summer 2001, Philip Morris revised its position on ETS. According to a June 11, 2001 memorandum from Paula Desel to Raymond Lau and others, and copied to Ellen Merlo, Chuck Wall, Denise Keane, Mark Berlind, and others, Desel attached a draft revised ETS position for the Philip Morris website. 2083609049-9049 (2083609050-9056 (withheld as privileged)) (US 92058).

3841. The draft was forwarded to Roger Walk, a Philip Morris scientist in Europe (and INBIFO Scientific Adviser), who forwarded his comments to Raymond Lau. According to an undated Philip Morris document, a Philip Morris employee reviewed Walk's and Lau's comments, then responded to Desel with the following revision to the paragraph on lung cancer and heart disease:

> The conclusions reached by governmental authorities and the public health community with respect to lung cancer and heart disease in

> non-smoking adults are based on a large number of scientific studies that have investigated the association of reported ETS exposure with these health end points. These studies have shown a small, but generally consistent, increase in the relative risk of contracting these diseases for non-smokers reportedly exposed to ETS.

2085126542-6544 at 6542 (US 92059).

3842. A later draft of the Philip Morris revised position on passive smoking, marked "Confidential" and dated August 6, 2001, is titled "Our Policy and Position on Secondhand Tobacco Smoke." This iteration of the company's position acknowledged and agreed with the scientific consensus that passive smoking can cause lung cancer and other diseases:

> We agree with [accept] the consensus among governmental authorities and the public health community that secondhand smoke (also known as environmental tobacco smoke or ETS) can cause or increase the risk of diseases -- including lung cancer and heart disease -- in nonsmoking adults, as well as conditions in children such as asthma, respiratory infections and Sudden Infant Death Syndrome.

2085126539-6541 at 6539 (US 92057).

3843. The August 6, 2001 draft Philip Morris position also stated that, "Given the health effects of secondhand smoke, we believe that legislatures should adopt meaningful and reasonable public smoking restrictions, considering all the factors and interests involved." 2085126539-6541 at 6539 (US 92057).

3844. From 1999-2001, the Philip Morris website publicly stated its disagreement with the scientific consensus as well:

> Many scientists and regulators have concluded that ETS poses a health risk to nonsmokers. Even though we do not agree with many of their conclusions, below we have provided some links so you can access some of their views.

(US 92056 at 2); Parrish TT, 1/25/05, 11080:23-11082:14.

3845. While this case was pending, Philip Morris revised its position on ETS to delete its disagreement with the conclusions of "scientists and regulators." Philip Morris now states: "Public health officials have concluded that secondhand smoke from cigarettes causes disease, including lung cancer and heart disease in nonsmoking adults" as well as a number of adverse health effects in children. (no bates at 1 of 2) (US 92055).

3846. Liggett does not take a public position on the effects of ETS; in fact, Bennet LeBow, President and CEO of Vector Tobacco Inc., testified, "I do not know whether Liggett ever had or has a position on ETS and causation of lung cancer in healthy non-smokers." Lebow testified that "the scientific issues involving ETS, and the effects of cigarette smoke on non-smokers, are different, more complicated and more controversial today than the issue of whether smoking causes lung cancer and other diseases in smokers." LeBow WD, 56:10-57:9.

b. The Philip Morris External Research Program (PMERP)

3847. Philip Morris has created a new organization called the Philip Morris External Research Program, or PMERP, to continue the scientific research carried out by CIAR.

3848. The MSA, signed by representatives of certain Defendants on November 23, 1998, required that Defendants shut down and disband CIAR. (no bates at 32-33) (JD 045158). CIAR's executive director Eisenberg formally dissolved the organization on December 6, 1999. 86205205-5206 (US 21091).

3849. Prior to CIAR's dissolution, Defendants were already forming a plan to establish a replacement. On November 25, 1998, Lorillard general counsel Arthur Stevens wrote a letter to Philip Morris general counsel Denise Keane with copies to Charles Blixt at Reynolds and Ernie Pepples at B&W. Stevens wrote: "Please call me later in the morning on Monday, November 30,

1998, so that we can discuss the status of the plan to reinstate CIAR. The matter seems to be 'dragging' without direction toward a positive resolution." 86205404 (US 22164). The CIAR Board of Directors had a similar intent in 1998 to reconstitute CIAR. Eisenberg TT, 11/15/04, 5881:6-17, 5883:2-6; 86205377-5378 at 5377 (US 75412); 2064207030B (US 25744); 2063871374-1380 at 1380 (US 92030).

3850. On October 11, 1999, Eisenberg faxed Philip Morris a proposal to form an "External Research Program" to administer research with a Scientific Advisory Board, a research agenda, and peer reviewers. 2073327299-7301 (US 90035).

3851. Philip Morris established the PMERP in early 2000, using the same offices in Linthicum, Maryland, that formerly housed CIAR, employing many of the same individuals who were employed by CIAR, and even using the same phone numbers as CIAR had used. The program is administered by an entity called Research Management Group (RMG), set up in 2000 solely to manage the PMERP. RMG has never managed any other program. Eisenberg TT, 11/9/04, 5631:9-24. RMG is headed by Max Eisenberg, the former executive director of CIAR. Eisenberg WD, 52:6-10, 53:10-16; Eisenberg TT, 11/15/04, 5852:10-5853:7.

3852. Eisenberg and Philip Morris established a "Research Focus" and Request for Applications for PMERP in the same way that the Research Agenda and Request for Applications were established for CIAR. Eisenberg TT, 11/9/04, 5637:16-5638:14; 2085317779-7809 (US 22200). The PMERP utilized a number of former CIAR peer reviewers and grantees, as well as ETSAG project recipients, including James Enstrom, Alan Hedge, Samuel Lehnert, Roger Jenkins, and Antonio Miguel. 563815-5639:9; 2085317779-7809 at 7802 (US 22200). All told, 44 out of the 105 peer-reviewers listed by PMERP in its 2000 Request for Applications were drawn from the

peer reviewer list in the 1998 CIAR Request for Applications. 2085317779-7809 at 7802 (US 22200); 86616778-6810 (JD 042662); Eisenberg TT, 11/15/04, 5663:14-18. Moreover, 53 of the peer reviewers were former recipients of CIAR funding. Eisenberg TT, 11/15/04, 5864:3-11. Many researchers funded through CIAR have continued to receive funding through the PMERP. Eisenberg WD, 54:14-17. Through the PMERP, Philip Morris continues to manage projects conducted by ETSAG and CIAR researchers Roger Jenkins, James Enstrom, Demetrios Moschandreas and Samuel Lehrer. PM3002997014-7258 at 7087, 7088, 7105 (JD 055034).

3853. Eisenberg also organized the formation of a Scientific Advisory Board (SAB), similar in structure to the CIAR SAB. The PMERP SAB was originally staffed with two former members of the CIAR SAB. Eisenberg WD, 53:22-54:3; 2085317779-7809 at 7780 (US 22200).

3854. The subject matter of the research funded through the PMERP is very similar to that funded through CIAR. The first research topic area in the PMERP Research Agenda is "Exposure/Biomarkers/ Dosimetry," a subject that includes the very same types of work that were funded as Applied Projects by CIAR. For example, PMERP funds work investigating "area and personal monitoring," "biological monitoring with biomarkers," and exposure assessment. 2085317779-7809 at 7785 (US 22200); 2082735680-5706 at 5687 (JD 043675).

3855. The PMERP also solicits epidemiological research proposals to study risk factors and confounders in the development of cancer. 2085317779-7809 at 7786 (US 22200); 2082735680-5706 at 5688 (JD 043675).

3856. As was the case with the CIAR SAB, the PMERP SAB has no authority to sign contracts with researchers or commit funds for any studies. Eisenberg TT, 11/15/04, 5861:6-5862:6.

c. Other Initiatives

3857. After entering into the MSA, Philip Morris continued its efforts to jointly fund industry research through structures that existed prior to the MSA, undertaking joint funding of external research with BATCo through Philip Morris's Scientific Research Review Committee. Reif PD, United States v. Philip Morris, 7/30/03, 70:13-71:15.

3858. In addition, there is credible evidence that the ETS Consultancy Program is still operational. In 1998, Ted Sanders, Director of Worldwide Scientific Affairs of Philip Morris, sent Richard Carchman in Richmond, a collection of company evaluations of ETS consultants still working for Philip Morris. The document also contains a summary of how the European consultancy program was transferred from Covington & Burling to Philip Morris in 1997:

> **European Consultant Group**
>
> This program, which WSA inherited approximately one year ago, has gone through and is continuing to go through significant changes. The program, which dates back about ten years, was originally administered through C&B. Once the program was transferred to WSA, scientists took on an active role in managing the program. That role has continued to expand to the point that for the first time in the program's history, face to face contact between the three principal consultants involved in the program and WSA scientists has been initiated. The three principal consultants involved are Dr. George Leslie, Dr. John Hoskins, and Dr. Max Weetman. By the end of next week I will have CV's on each on these three individuals which will be transmitted to you. At that time I think that further discussions are necessary to determine both how best to utilize these consultants and to ensure that this can be done.

2063593931-3949 at 3946 (US 24025) (emphasis in original).

9. Conclusions

3859. Scientists have been concerned about the health effects of environmental tobacco smoke since at least the late 1960s, after the issuance of the Surgeon General's Report on Smoking and Health. However, no scientific consensus about the hazards of ETS to non-smokers (particularly to babies and young children), as well as to smokers who also inhale the sidestream smoke which is a component of ETS, was reached until 1986. That year the Surgeon General issued his Report concluding that ETS is a cause of disease and that children of smoking parents have a higher frequency of respiratory infections and symptoms; the National Research Council of the National Academy of Sciences issued its report on "Environmental Tobacco Smoke, Measuring Exposures and Assessing Health Effects," concluding that ETS increases the incidence of lung cancer in nonsmokers and that children of smoking parents suffer greater respiratory problems; and the World Health Organization's International Agency for Research on Cancer (IARC) issued its Monograph concluding that tobacco smoke is carcinogenic to humans.

3860. Significantly, Defendants were well aware of, and worried about, this issue as early as 1961 when a Philip Morris scientist presented a paper showing that 84% of cigarette smoke was composed of sidestream smoke, and that sidestream smoke contained carcinogens. In addition to understanding, early on, that there was a strong possibility that ETS posed a serious health danger to smokers, Defendants also understood the financial ramifications of such a conclusion. In 1974, the Tobacco Institute's president Horace Kornegay acknowledged that indoor air restrictions designed to defuse the passive smoking issue "could lead to the virtual elimination of cigarette smoking." In 1980, the CEO of R.J. Reynolds, Ed Horrigan, stated that "We all know that probably the biggest threat to our industry is the issue of passive smoking." In the 1990s, a Philip Morris

report identified "the social acceptability of smoking practices [as] the most critical issue that our industry is facing today . . . Attacks on acceptability are almost exclusively based on claims that ETS can cause diseases in the exposed population."

3861. Despite the fact that Defendants' own scientists were increasingly persuaded of the strength of the research showing the dangers of ETS to nonsmokers, Defendants mounted a comprehensive, coordinated, international effort to undermine and discredit this research. Defendants poured money and resources into establishing a network of interlocking organizations. They identified, trained, and subsidized "friendly" scientists through their Global Consultancy Program, and sponsored symposia all over the world from Vienna to Tokyo to Bermuda to Canada featuring those "friendly" scientists, without revealing their substantial financial ties to Defendants. They conducted a mammoth national and international public relations campaign to criticize and trivialize scientific reports demonstrating the health hazards of ETS to nonsmokers and smokers.

3862. Defendants still continue to deny the full extent to which ETS can harm nonsmokers and smokers. Some Defendants, such as BATCo, R. J. Reynolds, and Lorillard, flatly deny that secondhand smoke causes disease and other adverse health effects; some, such as Brown & Williamson, claim it's still "an open question"; and others, such as Philip Morris, say that they don't take a position and that the public should follow the recommendations of the public health authorities. To this day, no Defendant fully acknowledges that the danger exists.

H. At Various Times, Defendants Attempted to and Did Suppress and Conceal Scientific Research and Destroy Documents Relevant to Their Public and Litigation Positions

3863. Defendants attempted to and, at times, did prevent/stop ongoing research, hide existing research, and destroy sensitive documents in order to protect their public positions on

smoking and health, avoid or limit liability for smoking and health related claims in litigation, and prevent regulatory limitations on the cigarette industry.

3864. The evidence of Defendants' suppression of research and destruction of documents consists of events which often seem to be unrelated and to lack a unifying thread. Defendants claim these facts, most of which are undisputed, amount to no more than a string of isolated instances which prove nothing. This explanation misses the point. The evidence is clear that on a significant number of occasions, Defendants did in fact suppress research and destroy documents to protect themselves and the industry. The fact that much additional evidence may be lacking because Defendants were successful in their efforts to suppress, conceal, and destroy materials that would have reflected adversely on their corporate interests is hardly a justification for ignoring the evidence that does exist. Moreover, in those instances where Defendants did successfully suppress, conceal, and destroy materials, it is most unlikely that there would be any evidence to reflect that since it would no longer exist. By destroying evidence, Defendants make it virtually impossible to know what materials existed prior to their destruction.

1. Suppression and Concealment of Scientific Research

3865. At various times, Defendants suppressed or otherwise concealed documents and information adverse to their public or litigation positions. For example, notes of a November 5, 1975 CTR meeting of a subcommittee of the Research Liaison Committee reveal that Ed Jacobs of Jacobs & Medinger directed that "no further formal minutes be made - also all should remove notes & previous minutes from corporate files." 1003294811-4811 (US 20171).

3866. In 1978, Sheldon Sommers, Chairman of the CTR Scientific Advisory Board ("SAB"), complained to William Gardner, the Scientific Director of CTR, that he (Sommers) was

concerned that the CTR lawyers were controlling tobacco research by CTR based upon legal considerations. Sommers stated: "I think CTR should be renamed Council for Legally Permitted Tobacco Research, CLIPT for short." Indeed, the lawyer control of CTR had become so pervasive that Sommers concluded that "[m]y considered opinion is that the time for me to sever connections with CTR is near." 11319256-9256 (US 20281). He resigned as Chairman of SAB in 1980.

3867. In 1981, Robert Northrip, a Shook, Hardy & Bacon attorney who at various times represented Philip Morris and B&W, explained at a Committee of Counsel meeting that lawyers' Special Project funding was used to allow adverse research findings to be hidden from the public. 521038287-8291 at 8289 (US 30481).

a. R.J. Reynolds

3868. To its credit, R.J. Reynolds ("RJR") disclosed large portions of its scientific research. RJR scientists have published more than 800 manuscripts since 1980 in the fields of chemistry, biology and toxicology. Townsend WD, 196:13-16 (discussing (no bates) (JD 067970)). Likewise, Reynolds scientists have made over 800 scientific presentations at scientific conferences like the Society of Toxicology and the Tobacco Science Research Conference, among others, since 1980. Townsend WD, 196:17-20.

3869. Once the Vice President of R&D decided that scientists should do certain research, they were allowed to conduct the research, freely discuss it with each other, and freely write memoranda about it. DiMarco, Burton Dep., 8/14/01, 205:1-12; Townsend WD, 193:10-24, 194:1-7.

3870. No one at RJR prevented R&D scientists from publishing material once the Vice President of R&D decided it should be published. DiMarco, Burton Dep., 8/14/01, 205:13-18; see also Mosberg, United States Dep., 4/23/02, 45:21-48:12 ("[c]ertainly nobody impeded us from

publishing, but in some instances where no new findings were observed, we didn't publish that work.").

3871. Despite that history, RJR's lawyers -- both inside and outside counsel -- had significant influence on the actual research conducted by the company. A 1985 "fact memorandum" from RJR's outside counsel, Jones, Day, Reavis & Pogue, described RJR's research and development activities. The Law Department and R&D Management exerted control to "prevent the distribution or production of certain reports," including a 1953 literature survey by Claude Teague that "indicted" cigarette smoking. 515873805-3929 at 3896-3897 (US 21922). Another company scientist, Jim Fredrickson, who was working on identifying nitrosamines (carcinogens) in smoke in approximately 1965-67, was told "not to prepare a final report on his research but merely to record the work in his laboratory notebooks." 515873805-3929 at 3898-3899 (US 21922).

3872. A December 31, 1985 memorandum from Jones Day makes clear that "[a]fter the 1964 Surgeon General's report came out, the Law Department, according to Ralph Rowland, did influence research objectives to a degree, because the lawyers did not want anyone performing research that would appear to acknowledge that cigarettes or cigarette smoke contained harmful constituents or posed a health problem." The memorandum also noted that "the Law Department did participate in setting the guidelines for testing of additives," and "[s]ince Sam Witt became General Counsel of R.J. Reynolds Tobacco ("RJRT") in 1981, the Company lawyers have played a major role in reviewing research protocols relating to smoking and health and drafting R&D mission statements . . . [I]t was understood that the lawyers controlled things in this area." The memorandum acknowledged that "the Law Department through the years has had a great deal of influence over RJRT-sponsored outside research," and that "Jacob, Medinger has played a major role

in reviewing and choosing foreign research projects to be funded by RJRT." It also stated that "Peter Van Every (an attorney in the Law Department of RJRT) . . . [had a] 'New York Times principle,' . . . by which [he meant that] 'things should not be written that could not be published in the New York Times.'" 515873805-3929 at 3870, 3875, 3878, 3879, 3886, 3893 (US 21922).

3873. In December 1982, RJR attorneys (both those within the company and outside) became very concerned about positions taken and statements made by Robert DiMarco, the head of RJR's Research Department. Those concerns are discussed in detail in a December 13, 1982 memorandum from Wayne Juchatz, who later would become RJR's General Counsel, to Sam Witt, who was then RJR's General Counsel. The memorandum discusses a lengthy meeting between Juchatz and DiMarco in which DiMarco stated that it was "essential" that RJR try to develop a "less mutagenic [carcinogenic] cigarette," but said that he had been told by Ed Jacob, an outside counsel, that he could not do that. When Juchatz explained to DiMarco his concerns from a product liability standpoint, DiMarco "refused to accept it as a rationale for not doing what he felt [RJR] had an obligation to do (as a responsible manufacturer)." Juchatz stressed the need for "close cooperation" between the R&D Department and counsel. 505741150-1153 at 1150-1151 (US 23009).

3874. At that meeting, DiMarco readily acknowledged that his scientific views were in "direct contradiction" to RJR's legal positions and stated that over the prior twenty years knowledge about "cancer causation . . . had developed . . . to the point where . . . [RJR's] legal defense [that there was no causation] had been rendered (or was perilously close to being rendered) obsolete." DiMarco further told Juchatz that RJR's medical/scientific witnesses "lacked credibility and integrity." 505741150-1153 at 1151 (US 23009).

3875. DiMarco also told Juchatz that he was so concerned about the "rigid legal positions" taken by RJR outside legal counsel -- "which had restricted the proper functioning of the R&D Department" -- that he would seek "'second opinions' [either from RJR's Legal Department or, if necessary, from outside counsel of his own choosing] on past legal advice restricting R&D activities." 505741150-1153 at 1151 (US 23009).

3876. Finally, at the December 1982 meeting, DiMarco advised Juchatz that, contrary to RJR's official legal position, he would not oppose FDA regulation of the tobacco industry. Juchatz, in his memorandum, concluded that "[t]his statement reflected an insensitivity to the legal and political issues inherent in FDA regulation of our business." DiMarco also disagreed with the Legal Department's efforts to remove ammonia from the list of ingredients required to be supplied to the Department of Health and Human Services. After further pressure from the Legal Department, DiMarco "reluctantly" agreed to the proposed removal. 505741150-1153 at 1151-1153 (US 23009).

3877. Following the December 1982 meeting between DiMarco and Juchatz, RJR attorneys, principally its outside counsel, became so concerned about DiMarco and the possibility that his views, if made known outside of RJR, would create great litigation risk for RJR, that the lawyers discussed the possibility of terminating him. The Legal Department met for a full day with outside counsel to discuss how to handle DiMarco. The lawyers concluded that "[w]e [counsel] will, therefore, be required to maintain close surveillance of [DiMarco's] R&D work in order to minimize the risk that [DiMarco's] 'beliefs' find their way into documents or projects which create unnecessary legal risks." 505741143-1147 at 1146 (US 20747); Juchatz TT, 11/18/04, 6611:12-6611:22. In a subsequent memorandum on the same issue, the lawyers reiterated that DiMarco's beliefs created legal risks for RJR:

> [W]e have advised management based upon our own and outside counsel's opinion that there are substantial litigative risks associated with having an individual as head of R&D who believes that smoking causes disease. . . . We have further advised management that while this risk can be reduced, it cannot be eliminated.

They reiterated that they would be required to "closely [monitor] what is in fact going on in the R&D department." 505745988-5992 at 5991 (US 20748).

3878. In 1982, outside counsel Ed Jacob advised RJR and its Research & Development Department that: (a) RJR could not make a "safer" cigarette, as that would create substantial legal concerns; (b) Research & Development would have to work closely with the Legal Department if RJR were to allow Research & Development to try to develop a safer cigarette; and (c) one of the serious legal concerns that RJR had was that any work on a safer cigarette would amount to an implicit admission that existing RJR products are unsafe. Juchatz TT, 11/18/04, 6575:18-6576:25, 6583:4-6584:14, 6585:4-6586:5, 6590:19-6591:20, 6592:23-6593:21, 6594:25-6595:23, 6597:6-6598:1, 6599:8-6599:19.

3879. Despite the concerns raised by RJR counsel and what appears to be the close scrutiny of DiMarco's activities, he himself does not appear to have felt that his operation of the R&D department was compromised. Dr. DiMarco, an RJR employee for over thirty years, stated in 1999 that his discussions with RJR lawyers were simply to make sure that he was going to run the research and that the company was committed to his research. DiMarco, Falise Dep., 10/29/99, 193:18-194:14. Indeed, he emphasized that, at all times, he controlled his department. DiMarco, Falise Dep., 10/27/99, 57:25-58:22. In a 2001 deposition, Dr. DiMarco indicated that he did not recall feeling, during January 1983, that he was not in control of the R&D Department or that he was frustrated. DiMarco, Burton Dep, 8/14/01, 65:11-66:5. Dr. DiMarco did not recall an occasion on

which he was told by the president of RJR what research he could or could not perform. DiMarco, Burton Dep., 8/14/01, 202:9-202:15; 203:2-17.[35] For more detail on DiMarco, see Section V(D)(5)(b)((2))((a)), supra.

b. BAT Group

3880. BAT Industries plc (which became BAT plc in 1998) was a vast empire of frequently-shifting companies in the United Kingdom, the United States, and Australia. Throughout the 1980s and most of the 1990s, BAT Industries was the parent company of Defendant B&W in the United States and Defendant BATCo in the United Kingdom. BATCo is the former parent of B&W, but was a sister corporation from 1979 to 2004. BATUS, a holding company, is now the immediate parent company of B&W. These many far-flung corporate entities, along with numerous other operating companies owned by BAT Industries, including British American Tobacco Australia Services Limited ("BATAS"), formerly W.D. & H.O. Wills,[36] cooperated and coordinated their

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[35] While Defendants told the Court that they intended to produce Dr. DiMarco to explain these events, and he was on the defense witness list, Juchatz TT, 11/18/04, 6618:21-6619:8, Defendants did not call Dr. DiMarco.

[36] BATAS was formerly known as W.D. & H.O. Wills (Australia) Limited ("Wills"). "Prior to August 23, 1999, BATCo, through intermediate holding companies, held approximately 67% of the shares of W.D. & H.O. Wills Holdings Limited ("Wills"). The remaining shares were publicly traded." R &R #102 at 25 (citing to Affidavit of BATCo Assistant Company Secretary, Geoffrey C.W. Cunnington at ¶ 2). "In 1999, the British American Tobacco Group merged with Rothmans, another international cigarette manufacturer. . . . On or about August 23, 1999, . . . Wills in a 'buy back' acquired the shares held ultimately by BATCo (67%) and Rothmans Holdings Limited then acquired the 33% of the Wills shares that had been publicly traded." Id. at 26. "A subsidiary of Wills, WD & HO Wills (Australia) Limited was renamed British American Tobacco (Australia) Services Limited ("BATAS")." Id. "In the spring of 2001, a new intermediate holding company was created called British American Tobacco (Australasia Holdings) Pty Limited ('Australasia Holdings'), which acquired all outstanding shares of British American Tobacco Australasia Limited and thus became the Australasian resident holding company of BATAS. Australasia Holdings is owned 68.06% by BAT Holdings (Australia) BV (formerly known as Rothmans Australia BV) and 31.94%

(continued...)

activities and policies to prevent documents from being discovered in United States litigation and federal regulatory proceedings, and from being disclosed to the American public.

3881. Shortly after joining B&W as Vice President of Research and Development in 1989, Jeffrey Wigand, as part of his orientation, was required to go to Kansas City, Missouri to meet for three days with lawyers from the law firm of Shook Hardy & Bacon for an orientation session. Id. at 30:16-31:2.

3882. At the session Wigand was "coached by lawyers regarding the company line on smoking and health, and addiction." The company line was "[t]hat causation had not been proven and that nicotine had not been shown to be addictive." Id. at 30:10-30:15. Wigand described the orientation session as follows:

> Lawyers were instructing me, a scientist, how to interpret epidemiological studies. In every instance, I was instructed that the evidence in the public health domain had not satisfactorily proven causation. I was told that studies that demonstrated a link between smoking and cancer were fraught with errors. Moreover, I was told that epidemiology could not be relied upon because it was just statisticians doing guess work.

Id. at 32:5-33:6.

3883. Scott Appleton, a scientist who specialized in toxicology and was hired by Wigand while he was head of Research and Development at B&W, was also required to attend a similar lawyer training session at Shook Hardy & Bacon. Wigand WD, 34:11-35:10; 680901663-1665 (US 79219).

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[36](...continued)
by BATCo through another holding company." Id.

3884. In September 1989 the Brown & Williamson Research Policy Group ("RPG") met for several days in Vancouver British Columbia. Wigand WD, 35:21-23; see also 901096811-6811 (US 89367) (memorandum from Jeffrey Wigand to Alan Heard listing recommended agenda items for the meeting); 620202422-2432 (US 89368) (meeting agenda). The RPG was comprised of the top scientists from each of the BAT Group's cigarette companies, including B&W, BATCo, Imperial Tobacco of Canada, W.D. & H.O. Wills of Australia and others. Wigand WD, 36:1-17.

3885. Several sensitive issues were discussed at the Vancouver meeting including

> nicotine analogues, biological assays and biological testing methodologies (including NTP protocol), environmental tobacco smoke (ETS), Y-1 genetically enhanced-nicotine tobacco, how to selectively reduce the particular noxae that were in tobacco smoke, fire safe cigarettes, and FDA regulation.

Wigand WD, 39:3-40:13; see also 620202422-2432 (US 89368). Following the meeting, BATCo scientist Ray Thornton prepared a detailed thirteen-page set of minutes, "which summarized the discussion and the actions of the meeting." Wigand WD, 41:9-18; 401034784-4796 (JD 011303).

3886. The Court does not credit the testimony of either J. Kendrick Wells or Jeffrey Wigand about what happened to the Vancouver conference minutes. Wells' testimony was simply not credible and Wigand's was unreliable, contradictory, and impeached on a number of points. However, a comparison of the thirteen-page draft minutes and the three-page final minutes demonstrates that significant material was deleted from the longer draft. Compare 401034784-4796 (JD 011303) and AA0374-0374 (JD 011304).

3887. After the Vancouver conference, there was concern amongst the BAT Group executives that scientists' statements would contradict the public statements and legal positions being taken by the company. As a result, Patrick Sheehy, then Chairman and CEO of BAT Industries,

ordered BAT Group lawyers to bring the scientists together for a meeting to "solidify a method by which records related to scientific meetings and scientific research would be handled in the future." Wigand WD, 54:2-55:16; 202347085-7086 (US 22032).

3888. The meeting was convened by Stuart Chalfen, the Chief Solicitor of BAT Industries. The meeting was held in New York City in January 1990 (the "NYC meeting"). It was run by Nick Cannar, head of BATCo's legal department, who also prepared the meeting agenda. 202347085-7086 (US 22032).

3889. At the meeting, BAT representatives discussed litigation concerns:

> Concern about volume of research documentation spread around the Group; Discovery; Difficulties faced by author company in explaining documents in a foreign court particularly if it is not even a party to the proceedings in which those documents are to be produced. . . .

202347085-7086 (US 22032); Wells WD, 46:1-5.

3890. The NYC meeting agenda also set forth procedures to ensure that minutes from future scientific meetings would not contain "contentious" material. The agenda states:

> 2. Improve quality of [scientific] documents by:
>
> a) Educating scientists in each research centre about document writing/document creation.
>
> b) Regular lawyer reviews and audits of scientific documents produced in each company.
>
> c) Arrange a system to ensure that all research related conference minutes involving representatives of more than one Group company are vetted by the lawyer for the company issuing the minutes before the minutes are sent out.

202347085-7086 (US 22032).

3891. As suggested at the meeting, BAT thereafter held a series of mandatory training sessions about writing and document creation for company scientists. "The sessions were called 'caution in writing' seminars and at Brown & Williamson they were presented by lawyers, predominantly from Shook, Hardy & Bacon." Wigand WD, 59:13-23. At the seminars, scientists were instructed by lawyers "on how to sanitize the documents they created." Id. at 60:1-6. The scientists were told "how to avoid writing documents with contentious words and topics." The contentious words included words like "safer," "addictive," "disease," and "cancer." Id. at 64:15-23.

3892. As a follow-up to the New York City meeting, BAT also implemented "lawyers' reviews" whereby, company scientists could only send documents containing sensitive information to sister companies if the document was first "reviewed and approved by a company lawyer." Wigand WD, 60:7-14.

3893. As also suggested at the NYC meeting, BAT implemented a policy to have lawyers vet research-related conference minutes. The word vetting as used within the BAT Group of companies meant "[d]eliberately and consciously removing contentious and controversial information from company documents that would benefit an adversary in litigation." Wigand WD, 35:15-20. As Wigand testified:

> Nick Cannar told us that before meeting minutes could be circulated, they would be reviewed by the lawyers and, if necessary, the lawyers would remove contentious information before the minutes could be circulated.

Id. at 61:3-6.

3894. At the NYC meeting, lawyers Nick Cannar and Kendrick Wells:

> agreed that the cost sharing agreement would be revised to specifically state that BATCo owned the documents that it created

> and that it could demand them back at any time. So, for example, the thought was that if lawsuits in the United States were seeking documents created by the Fundamental Research Center, then BATCo could demand all copies of the documents back from the United States and Brown & Williamson would be saved from having to produce them in litigation.

Wigand WD, 28:14-29:4.

3895. Following the NYC meeting the agreement was changed "so that now documents were the property of BATCo and BATCo could demand the return of the documents at any time." Id. at 27:23-28:2. The BAT Group companies' cost-sharing agreements were re-written to "recognize[] [each] company's claim to ownership/confidentiality of its research reports" and to provide for the "return of all copies of these [research] documents upon demand." 202347085-7086 (US 22032). "[T]he cost sharing agreement set forth an arrangement by which the various Cigarette Affiliated Companies (CAC) shared the cost for the Fundamental Research Center in Southampton, England." Wigand WD, 27:5-8, 27:9-18. In 1992, Brown & Williamson wrote BATCo a letter regarding the revised Cost Sharing Agreement, in which it stated that it would "not . . . return documents if returning the documents would be inconsistent with Brown & Williamson's discovery obligations in pending litigation." (no bates) (JE 021689 at 682508295); (no bates) (JD 012922 at 682010312-17).

3896. In a May 1991 memorandum from Kendrick Wells to Mick McGraw, B&W General Counsel, Wells wrote:

> Jeff [Wigand] believes that he now sends me a copy of all documents from BATCo . . . in the nature of meeting reports and scientific memos. He also sends appropriate scientific research reports. I told him that it was important that we had an opportunity to review the BATCo. materials. As a case in point, I recommended that we should follow up with BATCo. on statements made in a set of studies done

> for BATCo. at Harwell. They include statements that means are available which will remove minute foreign materials from tobacco. B&W R&D looked at this question a year or so ago and decided that no such means existed. The question could be involved in a safer product claim. Thus, we should communicate with BATCo. to discuss their assertion that such means are available.

680901663-1665 at 1664 (US 79219); see also Wigand WD, 76:25-77:28.

3897. Brown & Williamson itself suppressed certain scientific research particularly through lawyer oversight and vetting. In an August 1980 memorandum, Kendrick Wells, at that time corporate counsel to B&W, listed numerous edits that would be required before BAT scientist, Dr. Lionel Blackman could publish "Change of Stance on Public Smoking and Health," which Blackman had drafted. In justifying the edits, Wells wrote:

> The successful defense of product liability litigation and opposition to adverse legislation in the United States depends upon two essential arguments: (1) The scientific evidence does not prove a causal relationship between smoking and health and (2) the smoker voluntarily encounters the known risks of smoking.
>
> A concession by a cigarette manufacturer to the charge that cigarettes cause human disease or a statement which contradicts the concept of voluntary choice of smoking by the consumer could cripple or destroy B&W's defense to smoking and health lawsuits and opposition to legislative attacks. This would be true even though the statements were made by BAT.

680050985-1001 at 0986 (JD 053700). "Change of Stance on Smoking and Health" as originally drafted by Blackman was never released to the public. Wells WD, 21:6-8.

3898. Wells also advised Dr. Blackman to remove the statement that "cigarettes are harmful to health in proportion to delivery" from a presentation he gave to INFOTAB in 1981 called "Basic Approach to Government and Medical Authorities," because such a statement "would abandon, in effect, all substantive arguments that the relationship of smoking and health is unproven." After

speaking directly to Wells, Blackman removed that language based on Wells's legal advice. 680585041-4042 (US 21006); 680585063-5064 (US 21007); 2024954637 (US 37176); 2024954638 (US 37177). No evidence was offered as to what came of this presentation after it was given to INFOTAB.

3899. B&W edited adverse references to addiction out of another BAT report written by Dr. Blackman, titled "The Controversy on Smoking and Health: Some Facts and Anomalies." By letter dated October 25, 1984, B&W attorney J. Kendrick Wells wrote BAT counsel Alec Morini that "review" of BAT publications by B&W was necessary in light of ongoing smoking and health litigation. Wells went on to provide forty-five paragraphs of revisions to Blackman's draft and a marked-up report, including:

> 2. Delete Donald Gould reference. The article identifies cigarettes as a drug.
>
> 3. Delete reference to Dr. W.S. Cain. The article identifies short terms and longer term pharmacological and physiological factors as important in the derivation of "habitual cigarette smoking. . . ."
>
> 5. Delete. The point made here might be said to run counter to arguments that cigarette smoking is not addictive. . . .

680582499-2507 at 2499-2500 (US 54052).

3900. Wells attached a marked-up copy of Blackman's report to his October 25 cover letter, where he indicated his edits and the corresponding paragraph numbers from his letter. The three paragraphs quoted above were ultimately removed from the report. 680582512-2512 (US 85396).

3901. On May 29 and 30, 1984, attorneys from B&W and BATCo held a conference on United States products liability litigation. During the course of that conference, "Project Rio," a

biological testing program to develop cigarettes with less biological activity, was discussed. According to a memorandum written by Wells, the attorneys

> were able to hold significant discussions about implications for U.S. products liability litigation . . . regarding Project Rio. BAT Legal acknowledged the needs for lawyer involvement in the project and for possible restructuring, but there was not enough time to plot a course of action.

Wells considered follow-up and further summarized the meetings in a June 12, 1984 file note:

> [W]e should arrange a meeting in London with BAT Legal . . . to delineate more specific counsel to BAT, including proposals for the structure and organization of BAT programs and statements which would hold to the minimum feasible level their potential impact upon U.S. products liability litigation. . . . For example, if Project Rio must continue, restructuring probably will be required to control the risk of generating adverse evidence admissible in U.S. lawsuits.
>
> * * *
>
> Direct lawyer involvement is needed on all BAT activities pertaining to smoking and health from conception through every step of the activity.
>
> The problem posed by BAT scientists and frequently used consultants, who believe cause is proven [i.e., that smoking causes disease] is difficult.

685092972-2974 at 2973 (US 31031).

3902. Wells edited many more scientific documents to remove material that might be damaging to B&W in litigation. 680583045-3045 (US 85395); 690128746-8921 (US 25461); 680858743-8743 (US 21723); 682000188-0188 (US 89376); see also 680585135-5135 (US 22976).

3903. The Legal Department at B&W generally reviewed scientists' statements on smoking and health before they were made public. The review was conducted in part so that the Law

Department could tell the scientists that these sorts of statements could have adverse consequences for the company in product litigation. Wells WD, 16:4-19.

3904. On some occasions, the legal department at BATCo similarly worked with scientists. On September 18, 1991, Sharon Boyse, Manager of the Smoking Issues Corporate Affairs Department at BATCo, wrote to G. Symmes of W.D. & H.O. Wills in Australia instructing him that the scientific content of a document prepared by the Tobacco Institute of Australia was "NOT acceptable to BAT until those changes are made!" In the letter, Boyse instructed scientists at Wills to remove any suggestion from a document that scientific articles had "claimed a statistical association between ETS exposure and the development of lung cancer." The letter went on to require removal of any suggestion that tobacco smoke contained carcinogens because the studies that suggested that tobacco smoke contained carcinogens "are animal studies. . . ." 750075351-5352 (US 16182); 304002839-2840 (US16183); 304002839-2840 (US 79027).

3905. Richard Binns, the former Manager of BATCo's Group Research & Development Centre at Southampton, complained of the expansive role of lawyers in BATCo's science, writing that:

> I am being asked to make significant and sometimes swingeing [sic] changes in documents produced recently by R&D staff. It is suggested that this must be done by finding a "managerial explanation" for the changes, without reference to the involvement of Legal Department. I will find this impossible to do. Senior R&D staff will not be so easily deceived. Personally, I am not prepared to lie to staff for very doubtful reasons. Therefore, the current lack of clarity about the relationship between R&D and Legal Dept. has raised questions which for me are ethically disturbing, particularly if extended beyond the present localized situation.

109878083-8089 at 8089 (US 21767); Read PD, United States v. Philip Morris, 07/25/03, 157:20-159:3.

3906. As Defendants note, it is both reasonable and legitimate for lawyers to advise their clients about the potential use of documents in litigation against them. However, the totality of the Factual Findings demonstrate a pattern of behavior amongst all BAT Group Defendants in which legal considerations and lawyers' strategies dominated both the direction and disclosure of scientific research.

c. Philip Morris

3907. Defendant Philip Morris suppressed and concealed many scientific research documents, even going so far as to send them to a foreign affiliate in order to prevent the disclosure of documents in litigation and in federal regulatory proceedings.

3908. In 1970, Helmut Wakeham, Philip Morris's Vice President for Research & Development, recommended that Philip Morris purchase INBIFO, a research facility in Cologne Germany, arguing that Germany "is a locale where we might do some of the things which we are reluctant to do in this country. . . ." 2022244451-4453 at 4451 (US 20361).

3909. Philip Morris did in fact purchase INBIFO to conduct its smoking and health research. A 1970 memorandum from Joseph Cullman, President of Philip Morris, discusses the benefits of conducting research overseas: "The possibility of getting answers to certain problems on a contractual basis in Europe appeals to me and I feel presents an opportunity that is relatively lacking in risk and unattractive repercussions in this country." 1000216742-6742 (US 20081). In addition, "[e]xperiments can be terminated at will as required without delay." 1003123055-3094 at 3058 (US 20154).

3910. After acquiring INBIFO, Philip Morris tried to avoid any direct contact with the research results that it produced or worked on. Handwritten notes of Thomas Osdene, a senior Philip Morris research official who acted as primary liaison with INBIFO, laid out the method for handling documents related to health and smoking. His notes state as follows:

> (1) Ship all documents to Cologne. . . .
>
> (2) Keep in Cologne.
>
> (3) OK to phone & telex (these will be destroyed).
>
> (4) Please make available File Cabinet. Jim will put into shape by end of August or beginning of Sept.
>
> (5) We will monitor in person every 2-3 months.
>
> (6) If important letters have to be sent please send to home -- I will act on them + destroy.

1000130803-0803 (US 34424). Despite this process, "plenty of telexes" and "lots of communications" went back and forth between INBIFO in Cologne, Germany and Philip Morris USA in Richmond, Virginia. Farone TT, 10/7/04, 1943:18-1944:4.

3911. In 1977 in a letter to Max Hausermann, Philip Morris Vice President of Research & Development in Switzerland, Robert Seligman, Philip Morris Vice President of Research & Development in the United States, confirmed the company's policy of prohibiting direct contact with INBIFO. Seligman wrote:

> We have gone to great pains to eliminate any written contact with INBIFO and I would like to maintain that structure.
>
> * * *
>
> Therefore, I am advising Jerry Osmalov to continue sending samples to Neuchatel for transshipment to INBIFO. If this procedure is

> unacceptable to you, perhaps we should consider a "dummy" mailing address in Koln for the receipt of samples. The written analytical data will still have to be routed through FTR if we are to avoid direct contact with INBIFO and Philip Morris U.S.A.

2000512794-2795 (US 20295).

3912. In the 1977 letter from Robert Seligman to Max Hausermann, Seligman discusses a letter that had breached the Philip Morris policy. Seligman suggested to Hausermann that he "retrieve [and presumably destroy] the March 24 letter Helmut Gaisch sent to Jerry, including all copies. My copy is returned herewith." 2000512794-2795 (US 20295).

3913. As recently as 1993, Philip Morris maintained a system whereby research documents were "sent to Richmond for a review and [ ] then returned to INBIFO" with all "[s]upporting data and documents . . . kept at INBIFO." 2043725390-5391 (US 20449).

3914. Philip Morris did not want "to have results of animal research in its domestic facilities -- particularly research conducted at a Philip Morris-owned lab -- lest that information get out and undercut Philip Morris' public position that cigarettes were not a health threat." Farone WD, 149:10-152:15.

3915. Dr. DeNoble was hired to establish a behavioral pharmacology laboratory at Philip Morris USA to support the nicotine analogue program. DeNoble WD, 4:23-5:2. The goal of the nicotine analogue program was to develop a substitute for nicotine that would retain the physiological and behavioral effects of nicotine on the central nervous system, specifically nicotine's reinforcing qualities, but would not retain nicotine's adverse effects on the cardiovascular system. Id. at 5:7-11; see also Section V(D)(5)(a)((3)), supra, for more detailed discussion about Philip Morris's nicotine analogue program. In connection with the analogue program, the behavioral

pharmacology laboratory "needed to develop a variety of tests that could be used in the characterization of the behavioral effects of nicotine in rats." DeNoble WD, 15:13-22. These test procedures that Drs. DeNoble and Mele developed, and the results of their experiments using them, were written up in various reports. They also sought permission to submit some of their studies to various journals for publication. Philip Morris USA permitted some of these studies to be published, but forbade publication of others. For example, Dr. DeNoble published a paper, titled Behavioral Effects of Intraventricularly Administered (-)-Nicotine on Fixed Ratio Schedules of Food Presentation in Rats, which appeared in Psychopharmacology in 1982. (no bates) (JD 040124).

3916. However, Philip Morris prevented publication of DeNoble's and Mele's research results which were unfavorable to their public positions on nicotine and addiction. One of the studies that Philip Morris USA did not allow to be published demonstrated that rats will self-administer nicotine. Self-administration studies establish whether a stimulus is reinforcing. DeNoble TT, 1/6/05, 9013:8-9014:9. Given the substantial credible evidence that DeNoble's results were noteworthy and significant, the Court does not find that Philip Morris's explanation, that it chose not to publish the report because other scientists had previously shown the same results, to be credible. Henningfield WD, 161:23-165:15.

3917. When Victor DeNoble, former Associate Senior Scientist at Philip Morris, and his fellow researcher, Paul Mele, performed research on rats demonstrating that nicotine caused self-administration and induced tolerance, they initially received Philip Morris's approval to publish their research results. However, following DeNoble's presentation of those results to Philip Morris senior management in New York City, the approval to publish was withdrawn. Farone TT, 10/7/04, 1947:19-1950:20; Farone WD, 156:3-15; Rowell TT, 3/23/05, 16645:15-16646:1, 16654:12-

16655:15. DeNoble explained that it was clear from a comment made to him at the presentation that Philip Morris senior management would not allow the research results to be disclosed. Ross Millhiser, a Philip Morris executive stated: "Why should I risk a billion-dollar industry on rats pressing a lever to get nicotine?" DeNoble WD, 13:20-15:7, 22:6-25:12; Mele WD, 14:2-14:14, 20:3-22:12.

3918. Philip Morris also denied Drs. DeNoble and Mele permission to publish a paper regarding studies which demonstrated both pharmacological and behavioral tolerance to nicotine in rats. DeNoble WD, 27:1-28:13; Mele WD, 11:13-14:10; (no bates) (US 20100 at 38) (tolerance develops to the behavioral effects of nicotine following chronic administration). Tolerance can demonstrate dependence on a drug. Mele WD, 13:16-14:1. Again, the Court finds Philip Morris's claims that it chose not to publish these results because tolerance to nicotine had already been demonstrated in the same fashion and to the same degree, despite the evidence to the contrary, not credible. Henningfield WD, 161:23-165:15.

3919. Philip Morris also did not allow DeNoble and Mele to publish the results of a study demonstrating that nicotine affects the vestibular nucleus -- the area of the brain that affects balance and coordination. DeNoble WD, 14:11-15:7. Their research demonstrated why nicotine often makes people dizzy when they first start smoking. Id. Philip Morris was the first to make this discovery, but did not allow DeNoble and Mele to publish a paper on the particular brain sites responsible for producing this effect from ingesting nicotine. Id.

3920. Patrick Sirridge of Shook, Hardy & Bacon wrote to Philip Morris's Assistant General Counsel Fredric Newman transmitting an analysis of DeNoble's published literature, unpublished manuscripts, and in-press manuscripts. The analysis concluded that

> research engaged in, as well as some possibly under consideration, by Philip Morris has undesirable and dangerous implications for litigation positions the industry takes in regards to smoking behavior. . . . In the final analysis, the performing and publishing of nicotine related research seems ill-advised from a litigation point of view. . . .

2021423403-3461 at 3422 (US 87038*); DeNoble WD, 25:2-25:12, 38:1-39:11.

3921. Ultimately, in 1984, Philip Morris abruptly, with only one day's warning, shut down DeNoble's laboratory, ordering the researchers to terminate their work immediately and to kill the remaining rats that were the subjects of ongoing research. DeNoble was informed that the lab was closed because of the threat their work posed in litigation against Philip Morris. DeNoble WD, 25:2-25:12, 38:1-39:11. William Farone, former Director of Applied Research, was told by Fred Newman, Philip Morris's Assistant General Counsel, that the DeNoble laboratory was shut down because Philip Morris wanted to bury "any research that showed smoke caused disease or nicotine was addictive." Farone TT, 10/12/04, 2091:23-2092:14; Farone WD, 156:3-15.

3922. Philip Morris's claim that shutting down DeNoble's lab and ending the research was merely a business decision is simply not credible.

3923. After DeNoble and Mele left Philip Morris in 1984, they renewed their attempts to publish their research results concerning nicotine addiction. In 1985, Philip Morris denied DeNoble the permission to publish. Notwithstanding that denial, DeNoble and Mele submitted two papers concerning nicotine addiction for publication. After the first paper was published, DeNoble received a threatening letter from Philip Morris attorneys in April 1986. In August 1986, DeNoble and Mele spoke at an American Psychological Association convention concerning other work that they had done at Philip Morris. Thereafter, in September 1986, DeNoble received a second threatening letter

from Altria in-house counsel Eric Tausig. Following receipt of that letter, he called the journal to which he had submitted two papers for publication and sought to have them withdrawn from publication. He was able to pull back only one of them. To the present day, his paper on nicotine self-administration in rats has never been published in a scientific or medical journal. DeNoble WD, 39:12-45:19; DeNoble TT, 01/06/05, 9081:20-9082:14. DeNoble was released from his confidentiality agreement with Philip Morris in 1994. DeNoble TT, 1/6/05, 9043:19-23.

3924. Philip Morris's lawyers exerted significant control over research into nicotine. William L. Dunn, a Philip Morris scientist, wrote in a 1980 document titled "The Nicotine Receptor Program" that, despite the fact that the psychopharmacology of nicotine is "where the action is for those doing fundamental research on smoking," and where "most likely will come significant scientific developments profoundly influencing the industry, . . . it is where our attorneys least want us to be. . . ." 1000127789-7790 at 7789 (US 34442).

3925. According to Dunn, there were two reasons why Philip Morris's lawyers did not want nicotine research conducted. The first reason was so the tobacco companies could claim ignorance "of any relationship between smoking and disease." Such an approach was "implicit in the legal strategy employed over the years in defending corporations within the industry from the claims of heirs and estates of deceased smokers." The second reason for not engaging in nicotine research was that any action by the tobacco industry, including research, that treated nicotine as a drug "could well be viewed as a tacit acknowledgment that nicotine is a drug," which could impact any future regulation of tobacco by the government. 1000127789-7790 at 7789 (US 34422). While nicotine research was permitted, the Company did not want to "be visible about it." 1000127789-7790 at 7789 (US 34422). Because of the commercial necessity of research into nicotine, Dunn

acknowledged that "our attorneys . . . will likely continue to insist upon a clandestine effort in order to keep nicotine the drug in low profile." 1000127789-7790 at 7790 (US 34422).

3926. Philip Morris consultants also suppressed certain scientific research. On January 15, 2003, in an appeal from a criminal defamation conviction, a Swiss court sustained two allegations of fraud against Ragnar Rylander, and concluded that he was a covert consultant for Philip Morris and that he had suppressed research findings that were adverse to the tobacco industry. In its findings, the court stated:

> Concerning the allegation that the respondent was "secretly employed by Philip Morris," exhibits show that he had entered into a consulting agreement with Philip Morris in 1972 and that he had not made this fact public. Indeed, . . . the respondent did everything not to let his ties to Philip Morris become publicly known in order to, in his own words, "retain as far as possible the image as an independent scientist." In addition, following the publication of an article in the "European Journal of Public Health," he attempted to conceal the existence of a formal contract with Philip Morris, and this led the journal's Committee on Publication Ethics to take an unfavourable decision in his regard.
>
> * * *
>
> The respondent has had frequent contacts with Philip Morris for many years. These contacts are troubling for several reasons. In 1991, within the framework of a study on respiratory diseases in children, the respondent modified a data base so that no link could be made between passive smoking and the frequency of respiratory infections. At an international conference in May 1992 he affirmed that no relation had been found between respiratory infections in children and their exposure to smoke. . . . Two months earlier, however, he had agreed to have his name on a document distributed to participants in a meeting of epidemiologists and indicating that a correlation had been found between passive smoking and the frequency of bronchitis in children.

TLT1050091-0101 at 0099-0100 (US 88744).

d. Lorillard

3927. At times, Lorillard suppressed scientific research on smoking and health. In 1977, Alexander Spears of Lorillard told a scientist that he would not be permitted to deliver a research paper unless he deleted data from a study related to human smoking habits. 01416267-6267 (US 20287); Spears PD, Texas v. American Tobacco, 07/24/97, 216:11-218:23.

3928. In a 1978 handwritten note related to the industry's Scientific Liaison Research Committee, Curtis Judge, Lorillard's Chief Executive Officer, complained that "[w]e have again 'abdicated' the scientific research directional management of the Industry to the 'Lawyers' with virtually no involvement on the part of the scientific or business management side of the business." The note further argued that a reconstituted scientific and policy leadership committee should not "report to the Committee of Counsel. . . ." 01346204-6205 (US 34532) (emphasis in original).

2. Document Destruction Policies

3929. At various times, different Defendants attempted to and did destroy documents which were adverse to their public and litigation positions on smoking and health. While these efforts were often part of larger, legitimate institutional document retention policies, at other times -- as with the BAT Group -- they were clearly intended to render unavailable written materials which could prove damaging to or inconsistent with Defendants' litigation position and public relations stance.

a. BAT Group

3930. For decades, Brown & Williamson implemented permanent retention policies and placed "legal holds" on documents in its possession related to smoking and health litigation because of its extensive involvement in such proceedings. (no bates) (JD 012740 at 680081625); (no bates) (JD 012741 at 680260666); (no bates) (JD 012742); (no bates) (JD 012743); (no bates) (JD 011283);

(no bates) (US 76154); (no bates) (JD 011288); (no bates) (JD 013217). These legal holds required individual departments, including Research & Development and Marketing, among others, to preserve documents in connection with litigation filed against the company, and they superseded all other retention policies. (no bates) (JD 011281).

3931. For example, in 1977, after receiving an FTC subpoena, Brown & Williamson employees were instructed to retain all documents responsive to that subpoena. See, e.g., (no bates) (JD 011282 at 679006817-18).

3932. In 1994, Brown & Williamson was named as a defendant in the Castano litigation and ordered to retain certain documents pre-dating March 1994. Castano v. American Tobacco, Civil Action No. 94-1044A (E.D. La. 1994); (no bates) (JD 011288). In accordance with its policy, Brown & Williamson again issued a broad legal hold on documents as required by the Court in Castano. (no bates) (JD 011288); (no bates) (JD 012747).

3933. Despite these benign document retention policies, B&W allowed destruction of certain documents to prevent the disclosure of adverse information. For example, in a 1981 memorandum, titled "thinkpiece on additives issue," Kendrick Wells, then corporate counsel for Defendant B&W, quoted Robert Northrip of Shook, Hardy & Bacon: "If company testing began to show adverse results pertaining to a particular additive, the company control would enable the company to terminate the research, remove the additive, and destroy the data." 682764441-4461 at 4458 (US 21030).

3934. Outside of B&W itself, BAT Group documents demonstrate that the companies' document management policies were motivated, in substantial part, by a concern that BATCo and other BAT Group research might be attributed to B&W in smoking and health litigation in the

United States. As early as 1970, attorneys at Shook, Hardy & Bacon wrote a seven-page letter to B&W's General Counsel expressing concern that BAT Group research documents would be subject to discovery and that these documents "constitute a real threat to the continued success in the defense of smoking and health litigation." 301097079-7085 at 7081 (US 46580); see also Cannar TT, 06/17/04, 260:10-262:30, 263:4-15, 264:26-265:3; 680800858-0865 (US 30917); Wells WD, 64:17-65:16; Wells WD, 5:15-6:18, 109870594-0596 (US 34873). Although the letter never instructs B&W as to what should be kept in its files, it stated that "employees in both companies [BATCo and Brown & Williamson] should be informed of the possible consequences of careless statements on this subject." 301097079-7085 at 7085 (US 46580).

3935. On May 29-30, 1984, Kendrick Wells, Robert Northrip, David Schechter, BATUS General Counsel, BAT executives and in house attorneys, and trial counsel met in New York to discuss United States product liability litigation. 521015673-5675 (US 52687). The group noted that "developments have rendered products liability actions against tobacco manufacturers more difficult to defend in the 1980's and that adverse evidence which could be attributed to the defendants is a serious problem." 521015673-5675 at 5673 (US 52687). At that meeting, trial counsel concluded that it "is likely that statements by a tobacco affiliate of B&W would be admitted and smoking and health research done in-house or by contract by any company owned by the BAT certainly would be admissible." 521015673-5675 at 5673 (US 52687); Schechter WD, 10:3-10:9. The group also decided that "[d]irect lawyer involvement is needed in all BAT activities pertaining to smoking and health from conception through every step of the activity." 521015673-5675 at 5674 (US 52687); Schechter WD, 12:4-12:8.

3936. In February 1985, BAT Industries directed David Schechter to investigate the "attribution issue" -- whether statements and positions of affiliates of B&W could be attributable to it in litigation. Schechter WD, 12:20-14:17; 680582454-2462 (US 54049*); see also 516003172-3172 (US 21732).

3937. In 1985, Schechter retained the firm of Simpson, Thatcher & Bartlett, to explore the bases on which BAT Group research could be discovered in litigation in the United States against B&W, and on which knowledge of such research could be attributed to B&W. Schechter WD, 20:12-22:5; 301060827-0855 (US 28152).

3938. Later that year, Schechter also asked the New York firm Paul, Weiss, Rifkind, Wharton & Garrison to "consider hypothetically whether documents in the possession of B.A.T. Industries or its United Kingdom subsidiary, BATCo[], could be discovered by a plaintiff in a U.S. lawsuit against Brown & Williamson." 521015579-5582 at 5579 (US 52686); Schechter WD, 28:15-29:17; see also Wells WD, 6:19-8:4.

3939. Paul Weiss concluded in a memorandum that "[y]ou should act on the assumption that discovery of the documents would be available." Schechter WD, 29:18-30:2; 521015579-5582 at 5579 (US 52686).

3940. Thus, by 1985, outside counsel from Paul, Weiss and Simpson, Thacher had both concluded that research reports in the possession of BAT Industries and BATCo could be discovered in litigation brought in the United States against B&W. Schechter WD, 30:18-32:5, 32:9-33:3, 33:14-20, 38:16-39:3; 521015578-5578 (US 52685).

3941. In 1985, Nicholas Cannar became Head of BATCo's Legal Department. At the direction of Richard Baker, the BAT Industries Chief Solicitor, Cannar became responsible for the

document retention policies for BAT companies worldwide. Gulson WD, 22:22-24. Alison Kay Kinnard was also involved in the design and management of the document management programs. 325351561-1562-1562 (US 29245). Those programs required, in general, that all BAT Group operating companies institute a records management policy requiring destruction of documents, including research and development documents, if they had already been retained for a certain period of time. Cannar TT, 06/21/04, 340:35-341:4, 356:77-358:27, 360:1-364:6; see also 202347085-7086 (US 22032); Schechter WD, 45:11-48:10.

3942. BATCo's legal department had already become concerned, in early 1985, that the circulation of documents from its Group Research and Development Centre ("GR&DC," one of the BAT entities which held meetings all over the globe) to B&W, might expose those documents to production in United States litigation. B&W had expressed the concern that ". . . some of the broad-ranging initiatives being pursued in [GR&DC] might be misinterpreted . . . in a way which would require [B&W] to explain why they didn't think that research was relevant to litigation in the United States" and that "the group's research effort might be misinterpreted in the context of litigation in the United States." Cannar TT, 06/21/04, 386:40-387:2, 412:35-413:12, 415:27-416:34.

3943. During the process of constructing what became the1985 Document Retention Policy, BATCo asked its outside counsel, Lovell, White & King ("Lovell"), to perform a review of BAT Group smoking and health documents located at BATCo's Southampton, England GR&DC in order "to place [it] in such a position as to be able to answer any Requests for Production or Interrogatories emanating from U.S. Courts. . . ." (no bates) (US 34839 at 107443681); 202313482-3483 (US 92077). The impact that sensitive documents might have on smoking and health litigation in the United States was a primary concern driving BAT Group document retention policies. B&W, the

American company, paid for the document review at BATCo, the British company. 301156374-6374 (US 16004); 301157557-7557 (US 16005); 301156376-6376 (US 16006).

3944. On May 15, 1986, at a meeting at its research facility in Millbank, England, BATCo legal personnel instructed the leadership of the GR&DC to dispose of documents under the rubric of "spring cleaning" before the GR&DC files were copied for possible production in health and smoking litigation in the United States.

> [Nick Cannar of the BAT legal department] said that Mr. [Patrick] Sheehy [Chairman of BAT Industries] did not wish it to be seen that BATCO had instituted a destruction policy only when the possibility of their being involved in litigation became real and after they had instructed solicitors. Thus, it was decided that no destruction policy should be adopted, rather that R&DC [Research & Development Centre] would tidy up the loose papers held by individuals, which "spring clean" could involve the destruction of documents such as previous drafts.
>
> * * *
>
> It was agreed that such a "spring clean" of all of the loose papers held outside the official filing systems is essential to enable L.W.&K.'s [BATCo's lawyers Lovell, White & King] "task force" to carry out stages I and III (the listing and reviewing of the files).

107443680-3689 at 3682 (US 34839).

3945. During his trial testimony in this case in Australia in 2004, Cannar invoked the Australian self-incrimination statute (referred to in the Cannar transcript as "Section 128" of the Evidence Act of 1995) to avoid answering over one hundred questions relevant to his role in document management polices of BAT Group companies, including BATCo, B&W, and Wills.[37]

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[37] Section 128 Privilege in respect to self-incrimination in other proceedings states:

(1) This section applies if a witness objects to giving particular evidence on the

(continued...)

[37](...continued)

ground that the evidence may tend to prove that the witness:

(a) has committed an offense against or arising under an Australian law or a law of a foreign country; or

(b) is liable to a civil penalty.

(2) Subject to subsection (5), if the court finds that there are reasonable grounds for the objection, the court is not to require the witness to give that particular evidence, and is to inform the witness:

(a) that he or she need not give the evidence; and

(b) that, if he or she gives the evidence, the court will give a certificate under this section; and

(c) of the effect of such a certificate.

(3) If the witness gives the evidence, the court is to cause the witness to be given a certificate under this section in respect of the evidence.

(4) The court is also to cause a witness to be given a certificate under this section if:

(a) the objection has been overruled; and

(b) after the evidence has been given, the court finds that there were reasonable grounds for the objection.

(5) If the court is satisfied that:

(a) the evidence concerned may tend to prove that the witness has committed an offence against or arising under, or is liable to a civil penalty under, an Australian law; and

(b) the evidence does not tend to prove that the witness has committed an offence against or arising under, or is liable to a civil penalty under, a law of a foreign country; and

(c) the interests of justice require that the witness give the evidence; the

(continued...)

For example, Cannar asserted the self-incrimination privilege in response to numerous questions concerning the importance of document retention policies to BATCo and the BAT Group, the purpose of Wills's document retention policy, the circumstances leading to preparation of the Foyle Memorandum, as well as many other related topics. Cannar TT, 06/16/04, 150:11-21, 151:14-15, 151:37-152:1, 167:29-168:8; Cannar TT, 06/17/04, 194:47-195:39, 202:5-39; Cannar TT, 06/24/04, 619:15-19.

3946. Cannar's testimony in this case about his role in BAT's document management policies was remarkably evasive and uninformative. Until 2003, when he retired, Mr. Cannar worked for BAT in various high level legal and executive capacities, including serving as Head of

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[37](...continued)

court may require the witness to give the evidence.

(6) If the court so requires, it is to cause the witness to be given a certificate under this section in respect of the evidence.

(7) In any proceeding in an Australian court:

(a) evidence given by a person in respect of which a certificate under this section has been given; and

(b) evidence of any information, document or thing obtained as a direct or indirect consequences of the person having given evidence; cannot be used against the person. However, this does not apply to a criminal proceeding in respect of the falsity of the evidence.

(8) In a criminal proceeding, this section does not apply in relation to the giving of evidence by a defendant, being evidence that the defendant;

(a) did an act the doing of which is a fact in issue; or

(b) had a state of mind the existence of which is a fact in issue.

(9) A reference in this section to doing an act includes a reference to failing to act.

Legal for BATCo and the Director of Legal Services for Wills. Cannar played a central role in BAT document management projects and policies. Nevertheless, when faced with substantive and specific questions, Cannar, whose legal representation in this litigation was paid for by the BAT Group, repeatedly could not remember or refused to answer questions on the grounds that the answer might incriminate him. Indeed, Justice Brownie, the Australian court official overseeing the Cannar testimony for introduction in this case, made specific findings regarding Cannar's credibility in the context of a motion to treat Cannar as a hostile witness. In general, with respect to Cannar's testimony, Justice Brownie stated:

> I think it is abundantly clear that Mr Cannar may reasonably be supposed to have knowledge about a wide range of matters . . . listed in the letter of request and that, generally speaking, he has not been making a genuine attempt to give evidence about them.
>
> * * *
>
> He gave evidence, in a fragmented way, over four days last week . . . looking back now, and considering the transcript, it is noteworthy that he really has not said very much at all. . . .

Cannar TT, 06/21/04 order (US 16236),[38] 3:16-21, 4:9-14. With respect to Cannar's repeated assertions against self-incrimination, Justice Brownie found the assertions "spectacularly" suspect given that when the self-incrimination claim was overruled, Cannar would simply assert a lack of memory. In this regard, Justice Brownie stated:

> some of the objections can scarcely be regarded as reasonably taken. For example, he did not commence to work for any tobacco company until 1981, but he claimed privilege against self-incrimination in respect of such matters as his graduating in law in 1969 and the

[38] The orders of the Australian Court were rendered in open court and are recorded as separate volumes of the Cannar Trial Transcript. They have also been assigned US Exhibit numbers.

> details of his legal career before 1981. These are merely the most spectacularly unimpressive claims for privilege.
>
> * * *
>
> He repeatedly claimed privilege and then, upon being directed to answer, said that he could not remember. It was not just his asserted lack of memory that seemed to me to be significant, but rather the combination of the claim for privilege followed by a ruling that he should answer the question, followed immediately by an assertion of non-recollection.
>
> There was also the manner in which this happened repeatedly, as if he was fencing for time or delaying the inevitable or both.

Cannar TT, 06/21/04 order (US 16236), 5:1-7, 5:20-30. This Court agrees with and accepts Justice Brownie's findings. As a witness, Nick Cannar was not credible. For decades, he had worked for BAT and had every reason to lie in order to protect his client. Moreover, on the stand, he was so evasive and asserted Section 128 privilege so often that his testimony, credible or not, was of no value.

3947. In the late 1980s, executives at B&W became concerned over statements being written by company scientists in minutes of scientific meetings, as discussed in the previous section. See ¶¶3942. Andrew Foyle, a solicitor at Lovell, met with Wills's chief scientists Graham McGregor and Tas Wilson in Australia to learn how the Wills 1985 document management policy had been implemented by the Wills Research Department. McCabe at ¶ 25. Wilson and McGregor informed Foyle that unpublished enclosures to letters distributed by BAT's GR&DC had been destroyed and ". . . the 1985 retention policy had been applied and, consistent with that policy, documents would be destroyed when they reached the end of their retention period." Foyle TT, 04/28/04, 22:1-23:6, 24:9-25:11, 49:11-50:18, 57:9-20.

3948. Following that meeting in Australia and pursuant to instructions from Nick Cannar at BATCo, Foyle prepared the Foyle Memorandum in 1990, and sent it to Fred Gulson in Australia, who was Wills in-house Solicitor and Company Secretary from 1989-1990. Foyle TT, 04/28/04, 17:10-14, 18:7-19:4. Gulson was the original recipient of the Foyle Memorandum. That Memorandum included a review of Wills's 1985 Document Retention Policy in light of ongoing product liability litigation and expressed concern that discovery requests against B&W might extend to BATCo's documents. McCabe at ¶ 22.

3949. The March 1990 Memorandum written by Foyle confirmed that W.D. & H.O. Wills (Australia) Limited ("Wills"), now known as BATAS, a subsidiary of both BAT plc and BATCo, had adopted a Document Retention Policy in December 1985 with the aid of Clayton Utz, an Australian law firm, after Cannar had issued his instructions to the BAT operating companies. Foyle wrote:

> Wills' current document retention policy was introduced on the 30th December [sic] 1985 at a time when the tobacco companies in Australia anticipated the possibility of product liability litigation, although no case had actually been brought against any company. Clayton Utz [Wills's counsel] had previously been instructed to take steps to prepare the Industry, and Wills in particular, for litigation. One of their first actions was to review the document retention policy of the Company, hence the new policy.

(3/90 Foyle Memorandum excerpted in McCabe v. British Am. Tobacco Australia (Svcs.) Ltd., (2002) V.S.C. 73 at ¶ 23 (Supr. Ct. of Victoria at Melbourne Mar. 22, 2002) (Austl.), reversed on appeal; subsequent history omitted.[39] According to Gulson, this statement from the Foyle

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[39] In the Memorandum Opinion accompanying Order #896, issued March 14, 2005, the McCabe decision was discussed at length. At p. 3 of that Opinion, the Court ruled, as it had on a number of previous occasions, that "a court opinion is a public document of which it can take (continued...)

Memorandum accords with his understanding of the genesis of the Wills Document Retention Policy. Gulson WD, 14:14-21. In addition, Gulson noted that "the facts relating to my tenure at Wills are set forth accurately," in the McCabe decisions' findings. Gulson WD, 13:19-23, 26:5-11. Upon observation at trial, the Court found Mr. Gulson's demeanor and testimony credible. His testimony was clear, internally consistent, and not impeached. Mr. Gulson had no reason to lie and demonstrated no affirmative bias against the Defendants. In addition, it is significant that he agreed to come to the United States to be a witness in this case without any compensation, other than his travel expenses, only to face inconvenience and cross-examination. For all these reasons, the Court fully credits Mr. Gulson's testimony.

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[39](...continued)
judicial notice, and therefore need not and will not be admitted into evidence." Consequently, the McCabe opinion was not admitted as an exhibit, although the Court took judicial notice of it.

In addition, it is important to reiterate the manner in which the Opinion spelled out the use which could be made of the McCabe opinion. Opinion #896 examined Australian law at some length, including the appellate decision reversing McCabe (see BATAS v. Cowell, [2003] VSCA 43 (V.S. Ct. - Ct. App. Apr. 28, 2002) (Austl.) ("Cowell II"), and concluded, at p. 9, that "any portions of those documents quoted in the McCabe opinion may be used by strangers to the litigation in any way they see fit. Defendants cite no case law to the contrary, nor has this Court found any." The Court also concluded, at p. 10, that "neither BATCo nor BATAS made the requisite zealous effort to guard the confidentiality of the contents" of the McCabe opinion and had, consequently, waived their privilege.

In particular, the Government was "not precluded from eliciting testimony from Mr. Gulson about publicly available portions of the McCabe opinion. . . . Mr. Gulson may offer testimony as to his personal knowledge about events or documents quoted in the McCabe opinion, including events relating to the creation of the Foyle Memorandum. He may testify whether he thinks or believes that the McCabe quotes from the Foyle Memorandum are accurate or are consistent with his memory. However, he cannot reveal anything that was in the Foyle Memorandum that is not directly quoted in the McCabe opinion." Op. and Order #896 at p. 14. All of Mr. Gulson's testimony which is relied upon in these Findings of Fact falls within the parameters set forth in Op. and Order #896.

3950. Gulson explained that Wills's 1985 Document Retention Policy was comprised of two components, the written policy and the un-written purpose and application of the policy which were not reduced to paper for fear of discovery. Regarding the two distinct components of the document management policy, Gulson testified:

> The written document's primary purpose was to provide cover for the actual document destruction enterprise, to ascribe an innocent housekeeping justification for the widespread destruction of sensitive documents. The Document Retention Policy wasn't simply the written policy itself, but the corporate knowledge of how the Policy was to be applied apart from the written language. My recollection of the Document Retention Policy comes not from the written document, but how it was explained to me by Nick Cannar, Andrew Foyle, Brian Wilson, a partner at Clayton Utz, and others, rather than from the document itself, since the written document was incomplete in terms of describing the actual workings and purpose of the Document Retention Policy.

Gulson WD, 16:21-17:7, 17:24-18:6.

3951. When he received the Foyle Memorandum, Gulson sent it, at Foyle's direction, to Brian Wilson, a lawyer at the Australian law firm of Clayton Utz, for answers to the questions Foyle raised regarding the use and implementation of the Document Retention Policy. Gulson WD, 32:18-33:9; McCabe at ¶ 22. Foyle wanted Gulson to direct these questions to Wilson because:

> There were serious concerns at BATCo that Wills' Document Retention Policy might leave the BAT Group vulnerable. Foyle was trying to strike the proper balance between destroying more documents, thereby risking an adverse inference against the companies; and not destroying more documents, thereby risking their discovery and use against companies in litigation.

Gulson WD, 29:20-30:5. Foyle also wrote:

> For purposes of this exercise it can be assumed that, over the years, Wills has received copies of most of the sensitive documents generated by BATCo but that most of these (with the exception of the

> research reports) will have been destroyed as a result of the [1985] retention policy. It should also be assumed that a number of Wills employees have a detailed knowledge of the subjects to which many of the sensitive documents referred.

McCabe at ¶ 98.

3952. In the Memorandum, Foyle sought advice from Clayton Utz, the Australian law firm, which had drafted the 1985 Document Retention Policy, on the issue of whether the destruction of documents by Wills could result in a finding of adverse inference if litigation did actually commence. In the Memorandum he wrote:

> 1. To what extent is there a risk that the destruction of documents in accordance with the 1985 retention policy will cause the Court to apply the adverse inference principle, taking into account:
>
> (a) the wording of the policy,
>
> (b) the circumstances prevailing at the time it was introduced (e.g., whether product liability actions had been threatened against Wills or the industry generally),
>
> (c) the extent to which Wills will need to claim privilege for documents produced in 1985 and later, on the grounds that the documents were produced in contemplation of anticipated proceedings.

Id. at ¶ 29.

3953. Foyle was also concerned about BATCo research which was destroyed by Wills: "Might BATCO's documents be more at risk? For example might the Court order Wills to retrieve from BATCO copies of the BATCO documents destroyed by Wills?" Id. at ¶ 31.

3954. In his memorandum, Foyle expressed numerous problems with Wills's 1985 Document Retention Policy in light of anticipated litigation. His first concern was that: "(a) The

wording of the policy (coupled with timing of its introduction) might lead to the inference that the real purpose of the policy was to destroy sensitive smoking and health documents." McCabe at ¶ 27. Gulson confirmed this concern as "particularly pressing . . . since the real purpose of the Policy was, in fact to destroy sensitive smoking and health documents." Gulson WD, 27:2-9.

3955. Foyle next expressed the concern that:

> (b) Aspects of the implementation of the policy might support that inference, for example the immediate destruction of the unpublished enclosures to the SRG [Wills's Scientific Research Group] letters.
>
> (c) The retention of a set of the BATCO research reports means that a plaintiff will have access to much sensitive BATCO research. The information in the reports is enough to prompt searching questions about the underlying research policy and also questions about what follow up action was taken by BATCO in the light of the research results.
>
> (d) The retention of the BATCO reports might encourage a plaintiff to seek discovery of BATCO's documents, either by asserting that Wills has control over documents in the possession of BATCO, or by using the Hague Convention. The research reports might enable a plaintiff to frame a Hague Convention request for documents with the requisite degree of specificity and/or to identify the BATCO employee from whom oral testimony is required.
>
> (e) Wills's access to the BATCO computer gives them the de facto right to details of results of BATCO's research. The summaries of the reports which are on the database are sufficiently informative to be of real interest to a plaintiff's lawyer.
>
> (f) The knowledge that Wills' senior scientists have of BATCO research could rule them out as a witness at any trial in Australia.

McCabe at ¶ 27. These additional concerns expressed by Foyle in his memorandum were also confirmed by Gulson, who explained that the computer link with the GR&DC in Southampton was actually severed because of BATCo's concern that its scientific documents might be made available to plaintiffs in Australian litigation. Gulson WD, 27:3-28:15.

3956. In view of all of these concerns, Foyle proposed a new document management policy for Wills, making the following observations:

> 1. It is understood that the destruction of documents now or in the past by Wills contravenes no law or rule in Australia and that, in that sense, Wills can do what it likes with its documents. Presumably, if a court disapproved strongly of the destruction of the documents, then it might draw adverse inferences from that fact.
>
> 2. It should be assumed that Wills' documents (what is in them and what has happened to them) will be a matter of great interest to a plaintiff's lawyer in a product liability action. How Wills responds to questions about its documents will require careful thought, especially because of the implications which the answers may have for the BAT group as a whole. It would be sensible, therefore, to assess the nature and extent of any problems which the current document retention policy may pose and to take appropriate remedial action now, rather than wait for the litigation to begin. Generally, what is needed is a strategy for handling the documents issue in litigation.

McCabe at ¶ 28; Gulson WD, 28:17-19:9. Gulson explained that when Foyle wrote in his Memorandum -- that "Wills' documents (what is in them and what has happened to them) will be a matter of great interest to a plaintiff's lawyer in a product liability action" -- he was referring to the fact that some documents would be harmful to the BAT Group, if produced in litigation, because the "documents may raise questions regarding what happened to the other, destroyed documents." Gulson WD, 29:1-9.

3957. Finally, Foyle posed the following questions to Clayton Utz regarding the specifics of a revised document management policy:

> 3. Should changes be made to the way in which the policy is currently being applied, for example, in relation to the SRG documents?
>
> 4. What should be done about the copies of the BATCO research reports held by Wills? In this connection:
>
> (a) Would the continued retention of these reports compromise Wills position via a vis the destruction of its other [scientific] documents? This question should be answered on the basis of the information given in this memorandum on the content of the reports. If more information is needed it can be supplied by LWD [Lovell, White, Durrant]. It would be undesirable for Clayton UTZ to seek information from Wills about the reports.
>
> (b) Is there any reason why Wills should not now destroy its copies of most of the reports, if the motive for doing so were that the information in the reports is not relevant to Wills' Current "research mission"?
>
> (c) Would the termination, or the restriction, of Wills' access to the reports database on the BATCO computer cause any problems?
>
> 5. Would implementation of the proposed new retention policy hinder or help Wills' position on the documents issue?

McCabe at ¶ 32; Gulson WD, 29:10-32:17.

3958. In a March 29, 1990 letter responding to the questions raised in the Foyle Memorandum, Clayton Utz attorney Brian Wilson wrote to Gulson:

> Wills' destruction of documents has not occurred during litigation in relation to which those documents might be relevant. If it had, that would be extremely strong evidence of an intention "to do something likely to interfere with the course of justice. . . ."

> The destruction has occurred, instead, in a situation where litigation has been, and still is, contemplated. But it can be said that it has not occurred only because of that fact and in order adversely to affect the litigation. This is where the wording of the 1985 retention policy statement [for which Clayton Utz had been the architect] becomes very important.

McCabe at ¶ 38 (excerpting Letter from Brian Wilson to Fred Gulson (Mar. 29, 1990)); see also Gulson WD, 33:10-20 (indicating that the text of the Wilson letter was accurately reproduced in the McCabe decision). Wilson followed this statement with a list of justifications for a document management policy -- including cost efficiency, litigation support, and sabotage prevention -- which could be offered as "clear evidence of an intention which is the complete opposite of an intention 'to do something likely to interfere with the course of justice.' This positive intention cancels out the negative impression created by destruction per se." Gulson WD, 33:10-20. The thrust of Wilson's advice was that as long as an excuse for destruction could be found, then BATCo could destroy documents without fear of an adverse inference in future litigation. Gulson WD, 33:25-34:2. Gulson believed that, in reality, the documents were actually being destroyed "due to litigation concerns," id. at 34:3-6, and the Court credits his testimony on this point.

3959. In early April 1990, Gulson arranged a meeting with Brian Wilson, John Oxland, and other lawyers from Clayton Utz to discuss their advice. 501582007-2008 (US 89419). In a letter pre-dating the meeting, Nick Cannar wrote to Gulson with a list of items to discuss during his visit including: "2. Document retention policy -- We have developed a draft research document retention policy for the B.A.T. Industries Group and a copy is enclosed. I would like to discuss this proposed policy with you and how it might be applied in Australia." 501582007-2008 (US 89419).

3960. At the meeting, Cannar, Wilson, Oxland and Gulson discussed Wills's Document Retention Policy in the context

> of a larger, BAT Group wide review of the document retention policy. All of the BAT Group companies' document retention polices were kept in lock step as much as possible, to ensure that no company would leave an opening through which damaging documents could be discovered and used against the rest of the BAT Group.

Gulson WD, 35:11-22.

3961. According to John Oxland's minutes of the April 1990 meeting, Wilson advised Wills and BATCo that Wills should "[k]eep all research docs which became part of the public domain and discover them. As to other documents, get rid of them, and let the other side rely on verbal evidence of people who used to handle such documents." McCabe at ¶ 42 (excerpting April 1990 Oxland minutes). Gulson's recollection is consistent with the meeting notes. Gulson WD, 36:7-16 ("to keep research documents that were in the public domain, and to destroy adverse research documents that the public or plaintiff's counsel would not be aware of").

3962. Wilson's recommendation was accepted and implemented by Wills. Id. at 36:16-18. In short, it was determined that the existing "Wills Document Retention Policy should be continued, that potentially damaging documents should continue to be destroyed, and that an innocent explanation should be provided for destruction." Id. at 36:18-23.

3963. Cannar, Gulson and the Clayton Utz lawyers had another meeting that same day in April 1990. At the second meeting, the lawyers discussed the ability of potential plaintiffs to discover a database maintained by Clayton Utz for the Tobacco Institute of Australia, which included "scientific documents from [TIA] member companies, profiles of likely witnesses, [and] information on judges." Because this database was maintained by a law firm, Cannar, Gulson and the Clayton

Utz lawyers concluded that the documents could be withheld on grounds of privilege and that the member companies could destroy their copies to avoid production in litigation. Id. at 38:3-43:23; 304003742-3742 (US89400); 304003686-3690 (US 89418).

3964. Following the meetings in April 1990 with Clayton Utz, Gulson wrote to S.J. Walker, a lawyer at the Australian law firm of Allen Allen & Hemsley, to seek a second opinion. Gulson sought the second opinion "[b]ecause the Document Retention Policy was a ruse." Gulson WD, 44:10-20, 32:20-24.

3965. Gulson was particularly concerned that the selective destruction of documents, which had occurred, could ultimately provide a roadmap for future plaintiffs to Wills's destruction of documents. Gulson expressed this concern in a May 16, 1990 letter to Walker: "The retention by Wills on a selective basis of certain reports may highlight the fact that other documents have been destroyed and could well compromise the position of Wills with respect to the practice and operation of the Document Retention Policy." McCabe at ¶ 46 (excerpting Letter from Fred Gulson to S.J. Walker (May 16, 1990)); see also Gulson WD, 45:14-46:2.

3966. As the foregoing Findings of Fact demonstrate, one purpose of Wills's 1985 Document Retention Policy was to destroy sensitive documents under the guise of well-accepted, good business practices. According to Gulson: "When I arrived at Wills, the Document Retention Policy had been to destroy damaging documents while keeping those that were beneficial to the company, and that remained the Policy at the time I departed Wills." Gulson WD, 47:15-17. Gulson emphasized that "[t]he Document Retention Policy wasn't simply the written policy itself, but the corporate knowledge of how the Policy was to be applied apart from the written language." Id. at 16:23-17:2.

3967. When asked to describe the Document Retention Policy, Gulson answered:

> It was the official title for what was more commonly known as the "Document Destruction Policy." The Policy was a program to ensure that all sensitive documents, all documents that if made public or discovered in litigation could potentially damage Wills, or Wills' affiliate companies in the BAT group, were sanitized.

Id. at 9:18-21. To "sanitize" Wills's documents meant to "destroy them or otherwise make them undiscoverable." Id. at 9:22-23.

3968. When asked about the purpose of the Document Retention Policy, Gulson responded that the Legal Department has responsibility for implementing it, and that

> [t]he purpose of the Document Retention Policy was twofold, to protect the litigation position of Wills, and to protect the litigation positions of other BAT Group companies, especially our US affiliate Brown and Williamson, by ensuring that potentially damaging documents would not be discovered from Australia.

Id. at 9:24-10:1-4.

3969. Gulson explained that, while it was unusual to place control and direction in the Legal Department, it

> was consistent with the purpose of Wills Document Retention Policy, since it was actually a document destruction policy. While it was important that the Document Retention Policy appear to be a rote housekeeping measure, of the kind that would normally be run by an audit or accounting department, the purpose of the Document Retention Policy was to protect Wills and the BAT Group from litigation by ensuring that potentially damaging documents were destroyed.

Id. at 12:15-24. In short,

> [t]he written document's primary purpose was to provide cover for the actual document destruction enterprise, to ascribe an innocent housekeeping justification for the widespread destruction of sensitive documents.

Id. at 16:22-24.

3970. When questioned very directly on the impact of the 1985 Document Retention Policy, Gulson confirmed that pursuant to that policy, "Wills was in fact destroying potentially damaging reports, while retaining favorable ones," although he personally never witnessed any such destruction. Id. at 45:24-46:2; Gulson TT, 2/17/05, 13824:1-6.

3971. Indeed, after the flurry of advice Gulson received in 1990 from Foyle, Wilson, and Allen Allen & Hemsley regarding Wills's Document Retention Policy, the written policy at Wills was revised only slightly "to ensure that from the outside the Document Retention Policy appeared to be an innocuous housekeeping process . . . ." Id. at 47:3-18.

3972. A primary focus of the Wills Document Retention Policy and the related policies at other BAT Group operating companies was to prevent any weak links in terms of the production of scientific documents in litigation by one BAT Group company that would come back to haunt, by attribution, another BAT Group company. The concern was explained by Wills in-house counsel, Frederick Gulson as follows:

> The central research facility for the various BAT Group operating companies around the world was located at Southampton in England. Research from Southampton would be distributed to the other BAT Group companies around the world, including Wills. In addition, other BAT operating companies had their own research departments and facilities of varying sizes. The facility at Wills was not particularly big, but there were more significant research facilities at some of the larger operating companies, including Brown & Williamson in the United States, and BAT Germany's operating company in Hamburg. The companies all shared research. If incriminating smoking and health research documents were discovered by the public or a plaintiff in Australia, not only would the documents have been shared with the rest of the BAT Group companies, it probably came from one of the other BAT Group companies. As a result, a failure by Wills to safeguard sensitive

> documents in Australia, would threaten BAT operating companies across the globe. It was for this reason that the Document Retention Policy received such attention.

Id. at 6:4-24, 9:24-10:16.

3973. Andrew Foyle reiterated this concern to Gulson in both conversations and in the Foyle Memorandum. Foyle told Gulson that

> the importance of having and strictly adhering to the Document Retention Policy was to prevent potentially damaging documents from being discovered that could damage not only Wills, but also its parent and sister companies, in light of Will's possession and access to documents from Southampton and elsewhere in the BAT Group. There was a particular concern that Brown & Williamson would be vulnerable in litigation in the United States, and that the documents could be very damaging for it.

Id. at 26:12-17:1.[40]

3974. This concern was echoed in a contemporaneous letter prepared by Gulson and sent to S.J. Walker, a lawyer at Allen Allen & Hemsley. At the time Gulson wrote about:

> the potential and substantial problem that would face our major shareholder in the event that any discovery made in Australia of BATCo's research could be used by future plaintiffs in other jurisdictions especially in the USA.

Gulson WD, 44:23-45:5.

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[40] John Welch, CEO of the Tobacco Institute of Australia (the Australian counterpart of the Defendant Tobacco Institute) from 1991 to 1992 also gave testimony that the TIA member companies destroyed potentially damaging documents, including in particular scientific studies, so as to keep those documents "out of litigation and out of the hands of those that could use the information to attack the industry." Welch WD, 9:5-16, 11:15-12:8. The TIA "member companies" included the Australian affiliates of BATCo, B&W, Reynolds and Philip Morris. Id. at 4:10-4:14. Because Welch's testimony was internally inconsistent, as well as inconsistent with the contemporaneous documentary evidence, it cannot be credited and is not relied upon.

3975. Because scientific documents were shared throughout the BAT Group of companies, Cannar and Foyle had a "grave concern" that "if a document were discovered from Wills it could be used against BATCo or Brown & Williamson or another operating company." Id. at 45:5-13.

3976. The BAT document management program taught employees that "retained documents could have an effect on litigation, potentially the outcome of the litigation." Schechter WD, 53:7-10. The program encouraged employees to "limit the creation of documents" and to "avoid retaining any document longer than was needed for the operation of the business." Schechter WD, 53:11-14.

3977. In March, 1990, Brown & Williamson implemented a new document retention policy. See, e.g., (no bates) (JD 012743); (no bates) (JD 012744). The 1990 policy set forth, among other things, the requirement that departments follow retention schedules specifying the documents that needed to be retained, the period of retention, and the types of documents that could or should be discarded. (no bates) (JD 012743); (no bates) (JD 012744). When the 1990 policy was implemented, the decision was made to not discard any document dated earlier than 1988, regardless of subject matter and regardless of whether the document had any relation to smoking and health. (no bates) (JD 012743); (no bates) (JD 012744).

3978. Under the 1990 policy recipients were permitted to discard unaltered copies. (no bates) (JD 012743); (no bates) (JD 012744). Any documents that were otherwise scheduled to be discarded under the 1990 policy had to be retained if the Law Department placed a legal hold on them. (no bates) (JD 011288 at 334004672). In addition, all R&D reports were scheduled for permanent retention. Honeycutt, United States Dep., 4/23/02, 24:3-25:14; (no bates) (JD 012743); (no bates) (JD 012744); (no bates) (JD 013217).

3979. In 1990, B&W mandated similar training sessions. 681000002-0002 (US 88651) (memorandum from B&W President Tommie Sandefur to all B&W employees telling them that "[d]uring the fourth quarter of 1990, employee meetings will be held to discuss records management at B&W and your role in the process.").

3980. The training materials used at the document handling sessions encouraged company employees to use oral rather than written communications. Wigand WD, 67:8-23; 503119213-9241 at 9216 (US 29646*) ("Another aspect is the 'sensitivity' of what we need to communicate. This is not just a matter of sensitivity from a legal point of view but there's also a matter of commercial sensitivity. Only put it on paper if you really need to. If you are in doubt, verbal communication is likely to be best.").

3981. As part of its efforts to conceal information and reduce its litigation exposure, BATCo sought to reduce the amount of documents its employees generated. As described in its "Records Management: Creation Retention" manual, BATCo repeatedly preached to its employees to use the "mental copy" rule. The "mental copy" rule asks employees to "imagine that the memo, note or letter you are about to write will be seen by the person that you would least like to read it." The employee is then to "send a 'mental copy' of your document to a newspaper, one of your competitors, a government agency, or potential plaintiff. Now: would you still write the memo? If so -- would you still write it the same way?" 325274431-4448 at 4434 (US 87012). That same document asked employees to "Think *before* you write," and to question "does it *really* need to be in writing to do the job?" 325274431-4448 at 4434 (US 87012) (emphasis in original); see also 321667716-7716 (US 88345); 325274431-4448 at 4433 (US 87012) ("Memos and notes can be barriers to effective communications and often need additional verbal explanation. Talking to someone face-to-face or

on the phone is often the better way."); 325274431-4448 at 4435 (US 87012) ("Remember that verbal communication is best if you are dealing with a sensitive subject."); see also 503119213-9241 at 9230 (US 29646*) ("In order to help your [sic] decided how to write something, having decided it really needs to be a writing, we suggest that you use what we call the 'mental copy rule.' Imagine that what you are about to write will be seen by the person you would least like to see it. Send a mental copy (not to the real one of course!) of your record to the newspaper, to Philip Morris, to the Government or to a potential opponent in a court case.").

3982. In a 1990 B&W records management video, Tommy Sandefur states that before writing a memorandum or letter, an employee should ask "is it necessary," "where will that piece of paper end up? Would you feel comfortable if a competitor, the government or the news media saw a copy of your document?" and "does it really need to be in writing? A phone call or face-to-face meeting is usually more effective." "Verbal communication is also the best way to share sensitive or confidential information." 632150212-0222 at 0214-0215 (US 87019).

3983. At a January 1990, meeting in New York City of representatives from various BAT Group components, including B&W and BATCo, participants were encouraged to establish document retention policies that would purge company files of any documents not currently subject to a document request in ongoing litigation because of the "[d]ifficulties faced by author company in explaining documents in a foreign court. . . ." Each company was expected to "[t]ighten the document retention policy . . . to the extent permitted by current litigation/discovery requests." 202347085-7086 (US 22032); 536489722-9722 (US 79172).

3984. On June 29, 1992, Sharon (Blackie) Boyse, a BATCo scientist, sent a facsimile to Jorge Basso Dastugue, a manager at BATCo's Argentine company Nobleza-Piccardo. The facsimile

included a price quote from Healthy Buildings International ("HBI") to prepare information and materials for a public relations program on Indoor Air Quality in Buenos Aires. In the facsimile cover sheet, Boyse instructed Dastugue to keep HBI's involvement in the project quiet:

> Please also note, more importantly, that this an extremely sensitive document! HBI are [sic] currently under a considerable amount of investigation in the US about their connections with the industry. All references to companies in the quote has [sic] therefore been removed. **Please do not copy or circulate this in any way and please destroy this fax cover sheet after reading!** I know this sounds a little like James Bond, but this is an extremely serious issue for HBI.

304058260-8263 at 8260 (US 85632) (emphasis in original).

3985. In the summer of 1992, Simon Potter, an attorney with the law firm Ogilvy Renault in Montreal, which represented BAT's Canadian affiliate, Imperial Tobacco Limited, sent a letter to Stuart Chalfen, Solicitor of BAT Industries [the equivalent of General Counsel]; David Schechter, General Counsel of BATUS, which was B&W's immediate holding company; and John Meltzer, a lawyer at BAT's outside counsel Lovell, White, Durrant. The letter indicates that unless he received instructions to the contrary, Imperial Tobacco Limited planned to destroy sixty documents, including scientific studies. The letter includes a list of documents to be destroyed, including one document with the notation "not destroyed because never received by Imperial." 202313423-3425 (US 20377); Schechter WD, 60:9-62:14; 202313418-3421 (US 92072).

3986. In an August 7, 1992 letter to Chalfen, Schechter, and Meltzer, Simon Potter confirmed that "the documents mentioned in my letter of July 30 have indeed been destroyed." 202313429-3429 (US 20378); Schechter WD, 62:15-63:15.

3987. David Schechter believed that Imperial Tobacco destroyed scientific documents in part to protect B&W in litigation, and the Court credits his statement on this point. 202313423-3425 (US 20377); 202313429-3429 (US 20378).

3988. In 1992, Graham Read, Head of Research and Development at BATCo, reported to Peter Clarke, BATCo's Solicitor, on "Imperial's access to R&D reports." Read stated that "[w]hether a requested report is faxed or couriered [from BATCo to Imperial], we attach an accompanying form seeking confirmation that it has been destroyed after use." 600232153-2154 (US 53322); Read PD, United States v. Philip Morris, 6/13/02, 59:14-67:11.

3989. The effort to sanitize the research files within the BAT Group of companies in 1990 was not limited to Wills in Australia. In 1990, Nick Cannar instructed Allison Kay Kinnard to create a program to administer document management policies at BATCo in the United States. Though he was uncertain about the destruction of research documents resulting from this program, Cannar stated that it probably occurred because ". . . that was the path we went down." Cannar TT, 6/21/04, 340:35-341:4, 356:77-358:27, 360:1-364:6.

3990. Starting in 1991, David Schechter was sent to Australia on many occasions at the request of BAT Industries's General Counsel to manage document issues in Australia. Schechter WD, 39:9-43:4. The trips were paid for by BATCo, who also paid for lawyers from Shook, Hardy & Bacon to accompany Schechter to Australia. Id.

3991. As part of his role managing the Australia litigation, Schechter had discussions with Wills's General Counsel regarding whether Wills's documents -- including smoking and health documents Wills received from other BAT Group companies -- could be destroyed during or after trial. Id. at 42:15-43:4. Schechter played an important role in monitoring Wills's document retention

policy on behalf of B&W and other BAT Group entities. Gulson WD, 49:23-4, 50:17-51:15. He communicated regularly with BAT Group executives regarding document management issues. 202215750-5750 (US 89404).

3992. From 1990 to 1996, a number of plaintiffs brought proceedings against Wills, the last one being Phyllis Cremona in 1996. In conjunction with that litigation, Wills undertook a review of its scientific documents in 1996 that led to the creation of a database of scientific documents known as the "Cremona database." McCabe at ¶¶ 59, 116. In 1996, Graham Maher, an attorney with the Australian law firm Mallesons, representing BATAS, began "to review documents which might become relevant in any future litigation. . . . Together with others, he summarized documents and had them scanned." Id. at ¶ 109; (no bates) (US 16226 at ¶ 2). As part of the effort to create the Cremona database, virtually all of the 30,000 documents identified by Wills as being potentially responsive to the Cremona litigation were imaged on computer discs, indexed, and summarized. McCabe at ¶ 112; (no bates) (US 16226 at ¶ 11). The document review also included ratings by the attorneys of each document, on a scale of one to five, according to how damaging it was likely to be to the company in any litigation, with a rating of five meaning the document was a "knockout" blow against the company. McCabe at ¶ 114.

3993. After Cremona and Harrison (another pending case) were settled in March 1998, an existing litigation hold order requiring the preservation of documents was revoked. Id. at ¶ 128; see also 1226-1249 (US 16217); 1066-1066 (US 16218); 1294-1294 (US 16219); 1296-1296 (US 16220). Following the revocation of the hold order, Cannar concluded that "now is a good opportunity to dispose of documents if we no longer need to keep them. That should be done outside the legal department." McCabe at ¶ 128; (no bates) (US 16225 at ¶ 36). Cannar instructed longtime

Wills employee Mal Nicholson to take the position of Records Manager and entrusted him with the responsibility for implementing the destruction policy. McCabe at ¶ 128; (no bates) (US 16225 at ¶ 36).

> For the next three months, Nicholson was engaged in the implementation process. The process did, in fact, involve lawyers, but they were lawyers from Mallesons, who reviewed all documents which had been collected for Cremona and Harrison, and once they confirmed that documents had passed the retention dates then they were destroyed.

McCabe at ¶ 129.

3994. During this time, Robyn Chalmers, outside counsel for Wills with the firm Mallesons, advised Wills:

> I confirm that there is no specific obligation on you to retain documents for the purposes of legal proceedings where no such proceedings have been commenced. You are entitled to destroy any documents subject to the legislative requirements but as you have been advised previously, the court may draw an adverse inference from the destruction of such documents, depending on the circumstances of the destruction. Moreover, you may be required to produce any copies retained where originals are destroyed or to give oral evidence regarding the nature and content of the original documents. Arguments in your defence where records have been destroyed would include compliance with the legislative retention periods and a necessity to maintain your archives within responsible limits, given the administrative and storage costs of keeping a large quantity of data.

McCabe at ¶ 137; PMV0010213-0214 (US 88753). Despite Chalmers's advice, the document destruction went forward. McCabe at ¶ 139.

3995. Testifying in McCabe, Maher admitted that the effect of the policy was not only to destroy the documents but to obliterate knowledge of the fact of their prior existence. McCabe at ¶ 160. Maher's testimony confirmed that "[t]here was a sense of urgency" and that "the department

managers were told they had to confirm compliance with the policy by 15 April 1998." Id. at ¶ 154; 1066-1066 (US 16218); 1296-1296 (US 16220). "The process of destruction of documents in which the defendant engaged included destruction of CD Roms on which they were all imaged." McCabe at ¶ 160. Chalmers confirmed that "the only copies of the Cremona database (one held at Wills and one at Mallesons) were destroyed." McCabe at ¶ 163.

3996. It is patently clear from the extensive Findings of Fact set forth herein, that, in the words of Frederick Gulson, Wills's in-house counsel, the 1985 Document Retention Policy which was drafted for Wills, but in fact protected all BAT Group affiliates, subsidiaries, sister and parent corporations,

> was a contrivance designed to eliminate potentially damaging documents while claiming an innocent "housekeeping" intent. . . . The whole purpose was to keep evidence out of the courts.

Gulson WD, 19:18-21. Moreover, it is also patently clear that the Foyle Memorandum, which purported to re-examine the effectiveness of that 1985 Policy, was intentionally drafted to further its purposes and to ensure that it was adapted to the demands of an ever-more threatening litigation environment.

3997. Finally, members of the BAT Group, in furtherance of the Policy's purposes, destroyed documents, routed them from one country or BAT facility to another, erased a useful litigation database as well as the fact that the documents it contained had ever existed as soon as the pre-existing judicial hold was lifted, and constantly exhorted their many employees to avoid putting

anything in writing. All these activities were taken for one overriding purpose -- to prevent disclosure of evidence in litigation.[41]

b. R.J. Reynolds

3998. At times, RJR attempted to and did destroy documents to protect its position in litigation. In 1969, RJR's research department confirmed to the legal department that it did

> not foresee any difficulty in the event a decision is reached to remove certain reports from Research files. Once it becomes clear that such action is necessary for the successful defense of our present and future suits, we will promptly remove all such reports from our files.

500284499-4499 (US 21677).

3999. The document, titled "Invalidation of Some Reports in the Research Department," also states:

> As to reports which you are recommending be invalidated, we can cite misinterpreting of data as reason for invalidation. A further reason is that many of these are needless repetitions and are being removed to alleviate overcrowding of our files.
>
> As an alternative to invalidation, we can have the authors rewrite those sections of the reports which appear objectionable.

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[41] The Court would note that on April 14, 2004, more than a year before this case went to trial, Special Master Levie found that the Government had established a prima facie showing that the crime fraud exception applied, and therefore overcame BATCo's claims of attorney-client privilege and/or work product protection for the Foyle Memorandum. He recommended that the Court order BATCo to produce a copy of the Foyle Memorandum to the Government within two days. R&R #155.

While the subsequent history of R&R #155 is fairly tangled, and involved several trips to the Court of Appeals, this Court did not reach the central substantive issue -- whether the Government had established the crime fraud exception. With the benefit of hindsight, and on the strength of fully cross-examined, in-person testimony from several key witnesses for the Government (a luxury which the Special Master did not have), the Court concludes that the Special Master's ruling in this regard was eminently correct.

500284499-4499 (US 21677).

4000. In 1991, at the same time or shortly before the FTC initiated proceedings against RJR's Joe Camel advertising campaign, RJR persuaded employees of the advertising agency of Young & Rubicam to destroy documents concerning the Joe Camel advertising campaign with the intent to prevent the documents from being available for use in the FTC's proceedings. This plan was confirmed in a November 1, 1991 facsimile cover sheet and letter sent from Mark Morrissey of Young & Rubicam to RJR stating, "[a]s we discussed . . . [t]his is what I'm going to destroy. . . . Also, under our current scrutiny, a wise move to rid ourselves of developmental work!!" The letter set forth a list of documents related to the Joe Camel campaign that were destroyed. 507647971-7975 at 7971 (US 51232*). Edmund Leary, the recipient of this document, confirmed that this memorandum related to the destruction of materials that were not going to be pursued in brand marketing. Leary, United States Dep., 5/2/02, 75:16-20.

3. Improper use of Attorney-Client and Work Product Privileges

4001. At various times during which litigation and federal regulatory activities were pending, Defendants improperly sought to conceal research material behind the attorney-client privilege and the work product doctrine in order to avoid discovery. To accomplish that purpose, Defendants' lawyers exercised extensive control over joint industry and individual company scientific research and often vetted scientific documents.

4002. For example, correspondence with an institute or an individual regarding CTR special projects was not turned over to CTR, but was instead kept at the law firm generating the letters. Moreover, Don Hoel of Shook, Hardy & Bacon believed that such correspondence was never even

provided to CTR nor produced in any litigation. Hoel PD, United States v. Philip Morris, 06/27/02, 81:10-82:9.

a. BAT Group

4003. Beginning in at least 1965, B&W and BATCo began their efforts to keep scientific research from disclosure. These efforts included sending smoking and health documents outside the United States to foreign affiliates to prevent their disclosure in U.S. litigation and in regulatory proceedings. 107443680-3689 at 3682 (US 34839). B&W and BATCo also attempted to create improper attorney-client privilege or work product protection over documents through various means, including routing them through lawyers, maintaining scientific materials in lawyers' files, and indiscriminately marking them as "privileged and confidential" or with other similar designations.

4004. In a January 17, 1985 memorandum, titled "Document Retention," Kendrick Wells directed members of the Research & Development Center to collect certain documents he identified on an attached list relating to the behavioral and biological studies area for shipment to BATCo. Wells directed Earl Kohnhorst, Vice President of Research, Development, and Engineering, to tell the research personnel that the removal of the documents "was part of an effort to remove deadwood from the files and that neither he nor anyone else in the department should make notes, memos, or lists." Wells specifically explained to Kohnhorst that "the 'B' series are 'Janus' series studies [a program of biological research on the effects of smoking, which showed tumor growth in animals] and should also be considered as deadwood." 680530888-0890 at 0888-0889 (US 21772); see also Wells WD, 40:1-41:15. Despite the instructions, it appears that these documents were not actually destroyed. Wells TT, 2/3/05, 12057:23-12058:18; Appleton WD, 38:3-39:13.

4005. On February 17, 1986, Wells sent a memorandum to Ernest Pepples, B&W's General Counsel. The memorandum established procedures to limit records relating to health and science research conducted by B&W's sister companies from entering the country even though the BAT Group operating companies, including Defendants B&W and BATCo, were part of a cost-sharing agreement that funded the research. The established policy limited the documentation sent to the United States to "concise reports, estimated to be about one-half page in length, twice each year. . . . [T]he brevity of the reports will reduce the potential for receipt by B&W of information useful to a plaintiff. . . . " This memorandum indicated that the B&W lawyers did a detailed analysis of each of the projects and ultimately either approved or disapproved of receipt of information related to each project. 680582253-2257 at 2253 (US 21004). Again, it appears that this plan was never implemented. Wells TT, 2/3/05, 12059:20-12060:10.

4006. At the same time that Wells was attempting to limit the entry of sensitive BAT research materials into the United States, BATCo lawyers Anne Johnson and Nick Cannar were reporting on the same sensitive issues to BATCo executive Eric Bruell. In a February 26, 1986 memorandum to Bruell, Johnson and Cannar noted the "fundamental differences between BATCo and B&W" arising out of both (1) "differences in the legal situation" and (2) "differences in their operating responsibilities." Cannar stated that B&W was urging BATCo to adopt the position that "decisions to undertake research should be managerial decisions not scientific decisions"; that "smoking and health research should not be undertaken"; and that "information/document management distribution should be kept to a minimum to avoid documents becoming available to [a] plaintiff in litigation." 109870594-0596 at 0594-0595 (US 34873); see also 682003345-3360 (US 88344*).

4007. As part of the effort to avoid documents being made available in litigation, BAT lawyers vetted scientific documents. On September 21, 1994, BATCo attorney H.A. Morini sent a note to Dr. Lionel Blackman, then Director of Research at BATCo, regarding a conversation with Ernest Pepples about the procedure for communications between B&W and the BATCo research department. Morini instructed Blackman that "'[c]ontentious' items emanating from GR&DC, particularly in regard to biological activity should be given legal clearance before dissemination" and that "transmission to B&W should be through me to Pepples thus maintaining the legal privilege -- 'attorney work product.'" Morini also advised that "[n]on 'contentious' issues can be sent direct from GR&DC to B&W care of Gil Esterle." Esterle was a B&W scientist. 503114322-4322 (US 21695).

4008. Graham Read, employed by BATCo in its research area since 1976 and head of research and development at BATCo from 1992 to 1998, confirmed that, at least twice during his tenure with the company, scientists were required to clear their documents through the legal department before the documents could be circulated or distributed. According to Read, the reason for the clearance process was the "clearly very substantial legal environment, legal issues occurring in the US." Read PD, United States v. Philip Morris, 07/25/03, 82:19-88:2, 93:21-95:1, 103:9-106:4, 107:20-108:10; 109870722-0723 (US 34874); 516003171-3171 (US 20872); 516003172-3172 (US 21732); 516003173-3174 (US 22076).

4009. Additionally, BAT lawyers protected sensitive documents with improper use of privilege. For example, in 1975, BATCo Secretary P.J. Ricketts issued a document encouraging employees to give documents and information to attorneys in an attempt to create privilege where none existed. Ricketts advised:

> In most cases information which has been given and papers and documents which have been physically handed over to the Company Solicitor will be privileged: a result of which he will not be forced to disclose any documents etc., to these authorities unless in exceptional circumstances, he is required to do so by Court Order. Privilege extends only to the documents, papers etc., actually in the possession of the Solicitor and not to any copies.
>
> * * *
>
> Legal Department should, therefore, be informed and all relevant papers handed over to the Company Solicitor immediately if interest is shown by an outside authority in any matter which has been the subject of these special procedures.

Documents subject to these "special procedures" included "questions of product liability." 107468159-8160 (US 34847) (emphasis in original).

4010. In the late 1970s, B&W developed a mechanism to prevent smoking and health documents generated by its research facility in Southampton, England from becoming discoverable in litigation in the United States. The mechanism involved utilizing a blanket designation that all scientific documents were created "for defense of potential litigation"; maintaining control of the documents by the legal department; and disseminating the documents to scientists only after prior approval by the legal department. In a June 1979 memorandum, B&W Assistant General Counsel for Product Litigation Kendrick Wells stated that

> [c]ontinued Law Department control is essential for the best argument for privilege. . . . The general policy should be clearly stated that access to the documents and storage of the documents is under control of the Law Department and access is granted only upon approval of request.

680585391-5392 (US 21526).

4011. At the time this memorandum was written, a scientist at B&W by the name of Jim Rosene was already holding "sensitive" materials in his office rather than sharing them with other scientists at B&W. Among the materials sequestered by Rosene were the Janus studies, which demonstrated tumor growth in animals as a result of exposure to cigarette condensate. Id.; Wells WD, 8:18-10:13.

4012. Wells wrote a second memorandum in November 1979 outlining a plan to "afford protection against discovery" of scientific documents that demonstrated a link between smoking and health problems by falsely designating them as work product prepared in anticipation of litigation. In that memorandum to Ernest Pepples, B&W's Vice President of Law, Wells outlined a plan for routing all scientific documents from BATCo through a B&W scientist designated as an agent of the General Counsel. The scientist would "separate reports which were relevant to smoking and health, or otherwise sensitive for special handling" and the documents "designated as sensitive" would be "sequestered." Moreover, the plan specifically provided that "in the operational context BAT would send documents without attempting to distinguish which were and which were not litigation documents." 521016231-6232 (US 20886); 680585389-5392 (US 21008). Ernest Pepples, B&W Vice President for Law, responded to Wells's memorandum by writing the word "agreed" on the memorandum along with his initials ("E.P.") and the date ("11-19-79"). 521016231-6232 (US 20886); Wells WD, 13:15-14:4.

4013. In January 1985, at the request of Pepples, BATCo instituted a new policy which required that BATCo send "contentious" research and development reports to Robert Maddox, an attorney in private practice in Louisville, Kentucky, where B&W's headquarters is located, rather than to scientists at B&W. The instructions stated that "[t]he recipient list must not contain the name

of any B&W person, nor that of Maddox or of his company." 107444869-4869 (US 34840); 107444871-4871 (US 20002); 107620309-0310 (US 34853); 503128498-8499 (US 50315); 109745204-5206 at 5206 (US 26342); 109745207-5207 (US 26343); 109745208-5208 (US 26344); 109745211-5212 (US 26345); 109745213-5213 (US 26346); 109745214-5215 (US 26347); Brookes PD, United States v. Philip Morris, 05/02/02, 120:12-121:7; Wells WD, 38:10-39:22; 685092972-2974 (US 31031); 521015673-5675 (US 52687).

4014. In a handwritten letter attributed to Richard Binns, the former Manager of BATCo's Group Research & Development Centre at Southampton, he discusses BATCo's practice of routing scientific research to B&W through attorney Robert Maddox: "Report -- stopped sending direct to B&W in Jan. Maddox farce. B&W withdrawn from circulation lists (but get 2 copies)." 109878083-8089 (US 21767); Read PD, United States v. Philip Morris, 07/25/03, 181:22-184:11, 186:8-189:21; Read WD, 57:3-11; Read TT, 03/22/05, 16442:22-16443:17, 16445:13-16447:2, 16448:11-16453:1. Another document -- from a Research & Development file used by Binns at the Southampton facility -- addresses document circulation relating to B&W, and states that:

> Generally, during the Barclay investigation some years ago we sent all correspondence to E. Pepples marked 'Attorney privileged'" Today, we seem to have a "mail drop" which is only slightly less obvious than Russians leaving microdots in matchboxes on Hampstead Heath. Why not continue the "Attorney privileged" route.

102880241-0259 at 0253, 0255-0259 (US 26242). No evidence was presented as to whether B&W ever claimed attorney-client or work product privilege over those documents routed through Maddox.

4015. On March 21, 1988, Andrew Foyle, with BATCo's outside counsel Lovell, wrote to Ray Thornton, head of research at BATCo, regarding a collection of scientific evidence related to Buerger's disease. In an attempt to create lawyer-client privilege, Foyle wrote that

> [b]ecause correspondence on the subject of Buerger's disease exchanged between you and your colleagues in other companies might not be privileged, it is important that the contact between the scientists should be routed through the lawyers.

300517039-7040 (US 16025); 300517039-7040 (US 16118). Foyle admitted that, in fact, ". . . if Ray Thornton wanted information from another company, . . . that he would tell us, and Lovell would make the necessary enquiries." Foyle TT, 04/27/04, 89:2-8, 100:8-105:7. According to Cannar, this seemed "to be a perfectly normal way to gather evidence for a piece of litigation and to help prepare a defence to litigation." Cannar TT, 06/23/04, 526:20-527:23.

b. R.J. Reynolds

4016. Defendant RJR also improperly used the attorney-client privilege for its research documents.

4017. For example, in an attempt to create attorney-client privilege over records received by RJR from CTR in the normal course of its business, in 1983, RJR decided to "remove CTR related smoking and health materials from our premises <u>for legal reasons</u>." They were sent to the law firm of Jacob, Medinger & Finnegan via a former RJR scientist Frank Colby, who was leaving the company to work at the law firm. Horrigan PD, <u>United States v. Philip Morris</u>, 10/25/01, 36:11-40:13; Long PD, <u>United States v. Philip Morris</u>, 10/18/01, 46:6-47:19; 506050931-0935 (US 77438).

c. Liggett

4018. Liggett also created mechanisms by which improper and unwarranted attorney-client privilege or work product protections were invoked for documents that it believed would likely be sought in litigation and would provide information to the public on the adverse impact of smoking on health.

4019. In 1978, despite the scientific nature of Project XA, Joseph H. Greer, Liggett's General Counsel, ordered that all documents related to it be sent to him or a legal department staff member. The project was put under the control of the Legal Department. In 1979, Liggett Vice President, R.B. Seidensticker, followed up on Greer's earlier directive related to Project XA. By this time, the project had become formally known as the "Law Department's XA Project." Seidensticker asked Greer to

> please issue a memorandum to those concerned requesting that any materials which have not already been turned over to the Law Department related to XA, be it financial, scientific, production or marketing, should be transferred to the Law Department no later than Thursday, June 28.

LG2005942-5942 (US 21527).

4020. During the 1990s, Liggett scientists were directed to label their work as privileged and confidential in order to prevent its discovery in civil litigation. As stated by Liggett's Manager of Science Issues,

> we had become sensitized to labeling a lot of documents privileged and confidence [sic] without thinking[,] it was kind of just a matter of fact thing to do. . . . [M]ost of the documents that we put out, I think, are always subject to discovery. And not knowing exactly where -- where this was gonna go, it was just considered almost standard practice to do that.

Dietz PD, United States v. Philip Morris, 07/01/02, 150:3-155:12; see, e.g., LWDOJ9290576-0582 at 0576 (US 21217); see also Dietz PD, United States v. Philip Morris, 05/29/03, 96:24-107:16.

d. Findings by Other Courts

4021. Several courts, and the Special Master in this case, have ruled that Defendants have attempted to designate documents as privileged despite there being no valid basis for assertion of the privilege, or that the claimed privilege was inapplicable due to the crime-fraud exception,[42] or that the claimed privilege was lost as a result of its abuse.

4022. Earlier in this case, the Court adopted in its entirety the findings of Report & Recommendation #146, in which the Special Master found that "Brown & Williamson made efforts not to physically receive smoking and health research of which it was otherwise aware in order not to have to disclose such information and threaten its litigation." United States v. Philip Morris, No. 1:99-cv-2496 (D.D.C. Feb. 23, 2004) (order #499 adopting Report & Rec. #146). The Special Master further noted that BATCo's participation in this fraud was engineered by routing documents to B&W through outside attorneys rather than to B&W itself. United States v. Philip Morris, No. 1:99-cv-2496 (D.D.C. Feb. 5, 2004) (Report & Rec. #146 at 79, adopted by order #499).

4023. Again in this case, the Special Master, in Report & Recommendation #155, concluded that:

> legal advice was sought ("Foyle . . . wrote a memorandum about the Document Retention Policy describing what he found, and effectively inviting Clayton Utz to go back to the drawing board and destroy more documents"), legal advice was given ("Wilson . . . proposed a strategy for handling the documents issue . . . its purpose was to get

[42] The crime-fraud exception to a finding of privilege overcomes the privilege if it was employed in furtherance of the planning or commission of a crime or fraud. United States v. Zolin, 491 U.S. 554 (1989).

> rid of all the sensitive documents, but do so under the guise of an innocent house keeping arrangement . . ."), and legal advice was followed ("Cannar ordered that Wills adopt the strategy proposed by Wilson").

United States v. Philip Morris, No. 1:99-cv-2496 (D.D.C. April 14, 2004) (Report & Rec. #155 at 40-41, quoting Gulson Aff. at ¶¶ 20, 21, 27). The Special Master further concluded that there was

> credible evidence to show that counsel was consulted with the intent "to destroy, create privilege over, or remove from the company's control, documents belonging to [Wills's] overseas affiliates" in order "to get rid of everything that was damaging in a way that would not rebound on the company or the BAT group as a whole."

Id. at 41 (quoting Gulson Aff. at ¶¶ 24, 25).

4024. In April 1997, the Florida Circuit Court upheld a special master's ruling that lawyers for Defendants American, Reynolds, B&W, BATCo, Philip Morris, Liggett, Lorillard, CTR, and the Tobacco Institute "undertook to misuse the attorney/client relationship to keep secret research and other activities related to the true health dangers of smoking." Florida v. American Tobacco, Civ. Action No. CL 95-1466 AH (Palm Beach Cty. Fla., filed Feb. 21, 1995).

4025. In Minnesota v. Philip Morris, the court struck claims of attorney-client privilege as a result of continued and blatant disregard of court orders, the authority of the court, and the judicial process by B&W and American. State of Minnesota v. Philip Morris, No. C1-94-8565, 1998 WL 257214, at *9 (Minn. Dist. Ct. Mar. 7, 1998), mandamus denied sub nom., State by Humphrey v. Philip Morris, No. CX-98-414 (Minn. App. Mar. 17, 1998), petitions for further review denied sub nom., State v. Philip Morris, Nos. CX-98-414, CX-98-431, 1998 WL 154543 (Minn. Mar. 27, 1998), stay denied, 523 U.S. 1056 (1998) ("Minnesota v. Philip Morris").

4026. In adopting the Report and Recommendation of the Minnesota Special Master, Judge Kenneth J. Fitzpatrick ruled that BATCo and B&W (among other defendants)

> have been found to have committed numerous abuses of privilege and certain violations of Court Orders and the Rules of Court. . . . The record supports the factual findings of the Special Master. Application of the law of privilege, and the crime-fraud exception were properly applied by the Special Master.

Minnesota v. Philip Morris, No. C1-94-8565 (Minn. Dist. Ct. Dec. 30, 1997).

4027. In Minnesota v. Philip Morris, the court found that Defendants Philip Morris, RJR, B&W, BATCo, American, Lorillard, CTR, and the Tobacco Institute "claimed privilege for documents which are clearly and inarguably not entitled to protections of privilege;" "that many documents examined contained nothing of a privileged nature, establishing a pattern of abuse;" and that these Defendants "have been found to have committed numerous abuses of privilege." Based upon the "intentional and repeated misuse of claims of privilege [which are] intolerable in a court of law," the court found that "an appropriate sanction for such abuse is release of all documents for which privilege is improperly claimed." The court also adopted the special master's findings that for several categories of documents, including scientific reports, the crime-fraud exception to the attorney-client privilege applied. Minnesota, 1998 WL 257214 at *9.

4028. In Washington v. American Tobacco, the court issued several rulings in which it determined that numerous documents for which Defendants American, B&W, Liggett, Lorillard, Philip Morris, Reynolds, CTR, and the Tobacco Institute had asserted privilege were subject to the crime-fraud exception and were therefore "de-privileged." The bases for the findings included "that defendants attempted to misuse legal privileges to hide research documents;" "that attorneys controlled corporate research and/or supported the results of research regarding smoking and health;"

"that the industry, contrary to its public statements, was suppressing information about smoking and health;" and "that Special Account #4 was used to conceal problematic research." Washington v. American Tobacco, No. 96-2-15056-8 SEA (King Cty. Sup. Ct. 1998).

4029. In Sackman v. Liggett Group, the court found that attempts by Liggett, Philip Morris, B&W, Reynolds, Lorillard, and CTR to designate CTR Special Project documents as privileged was inappropriate. 173 F.R.D. 358, 362-64 (E.D.N.Y. 1997). The court concluded that, despite lawyer involvement in Special Projects, the documents were not privileged because they were prepared to further the public relations position of the tobacco manufacturers and that any usefulness in litigation "was merely an incidental benefit." Sackman, 173 F.R.D. at 363.

4030. The court in Burton v. R.J. Reynolds found that numerous documents identified as privileged by Reynolds and American were in fact not privileged, including memoranda relating to research and development, letters from outside counsel on scientific research, literature reviews prepared by scientists at the direction of counsel, minutes of research-related meeting, and notes made by employees at industry meetings on smoking and health research. 170 F.R.D. 481, 490 (D. Kan. 1997); Burton v. R.J. Reynolds Tobacco, 167 F.R.D. 134, 142 (D. Kan. 1996).

4031. In Carter v. Brown & Williamson, the court found that even if a privilege existed, an issue that the court did not reach, the crime-fraud exception applied to certain B&W documents (the Merrell Williams documents). Carter v. Brown & Williamson, Case No. 95-00934 CA (Duval Cty. Cir. Ct., Fla., Tran. July 26, 1996, at 1329-32).

4032. In Haines v. Liggett Group, 140 F.R.D. 681, 689 (D.N.J. 1992), vacated on procedural grounds, 975 F.2d 81 (3rd Cir. 1992), the court, following an in camera review of 1,500 documents, confirmed "plaintiff's contentions of the explicit and pervasive nature of the alleged fraud by

defendants [Liggett, Lorillard, Reynolds, Philip Morris, and the Tobacco Institute] and defendants' abuse of the attorney-client privilege as a means of effectuating that fraud." Specifically, the court found "that the attorney-client privilege was intentionally employed to guard against . . . unwanted disclosure." Haines, 140 F.R.D. at 684. Finally, the court stated that defendants and their lawyers "abused the attorney-client privilege in their efforts to effectuate their allegedly fraudulent schemes." Id. at 695.

4033. In (Re Mowbray) Brambles Australia Ltd. v. British American Tobacco Australia Services Ltd. [2006] NSWDDT 15, at Par. 56, 57, the Dust Diseases Tribunal of New South Wales concluded, after considering evidence that included the trial testimony of Frederick Gulson in the present litigation, that "BATAS in 1985 drafted or adopted the Document Retention Policy for the purpose of a fraud. . . ."; that "[t]he terms of the policy would appear to be so contrived that BATAS may secure legal sanction for the stated policy, while nevertheless selectively destroying prejudicial documents"; and that BATAS' communications to its lawyers made for the purpose of obtaining advice about document destruction under the 1985 Document Retention Policy "were communications in furtherance of the commission of a fraud. . . ."[7]

4. Conclusions

4034. The foregoing Findings of Fact demonstrate that, over the course of approximately fifty years, different Defendants, at different times, took the following actions in order to maintain their public positions on smoking and disease-related issues, nicotine addiction, nicotine

[7] While it would appear, although it is not perfectly clear, that Defendant BATAS has not yet had an opportunity to present evidence and argument against application of the Australian crime-fraud exception to the privileged documents in issue, Mr. Gulson was fully cross-examined by BATAS and his testimony was credited by that Court. Id. at ¶ 51, 52.

manipulation, and low tar cigarettes, in order to protect themselves from smoking and health related claims in litigation, and in order to avoid regulation which they viewed as harmful: they suppressed, concealed, and terminated scientific research; they destroyed documents including scientific reports and studies; and they repeatedly and intentionally improperly asserted the attorney-client and work product privileges over many thousands of documents (not just pages) to thwart disclosure to plaintiffs in smoking and health related litigation and to federal regulatory agencies, and to shield those documents from the harsh light of day.

4035. While it is true that some of these efforts were unsuccessful and some of the elaborate document "retention" policies were either not fully implemented or not implemented at all, the fact remains that many were fully complied with. Consequently, we can never know the full extent of the evidence destroyed and lost to public view.

VI. THE PROVISIONS AND IMPLICATIONS OF SETTLEMENT AGREEMENTS BY DEFENDANTS

A. Liggett's Settlement Agreement with Various States

4036. In the mid-1990s, Liggett, along with the major tobacco companies (Philip Morris, R.J. Reynolds, Brown & Williamson, Lorillard and American), was named as a defendant in lawsuits brought by certain states' Attorneys General. These lawsuits involved claims seeking reimbursement of costs associated with smoking, as well as claims of targeting and marketing to youth. In late 1995, Liggett began negotiating a series of settlements of those lawsuits. LeBow WD, 1:19-23.

4037. In March 1996, Liggett reached a settlement agreement which resolved the claims of the Attorneys General of five states: Florida, Louisiana, Massachusetts, Mississippi and West Virginia. (no bates) (LGI 11). Among the most significant terms were Liggett's agreement to