UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, Plaintiff, v. PHILIP MORRIS USA INC., f/k/a PHILIP MORRIS INC., et al., Defendants.	)	Civil Action No. 99-CV-02496 (GK)

WRITTEN EXAMINATION
OF
JEFFREY WIGAND, Ph.D.

SUBMITTED BY THE UNITED STATES PURSUANT TO ORDER #471

I. BACKGROUND AND QUALIFICATIONS

Q. Please state your full name.

A. Jeffrey S. Wigand.

Q. Where do you reside?

A. Mt. Pleasant, Michigan.

Q. Please tell the Court what relationship, if any, you have had with any of the Defendants in this case?

A. For over four years, from 1989 to 1993, I was employed by Brown & Williamson. From 1989 to 1991 I was the Vice President of Research and Development. In l991, I was also placed in charge of environmental matters, and my title became Vice President of Research and Development/Environmental.

A. CURRENT PROFESSIONAL ACTIVITIES

Q. Could you please tell the Court what you do professionally?

A. I have four basic areas of professional interest. First, in 1998 I founded a non-profit educational organization called Smoke Free Kids, which continues today. Second, I consult with organizations and governments around the world on tobacco and related health policies. Third, I teach moral philosophy and ethics at numerous law schools and business schools. Fourth, I do a very limited amount of consulting work in smoking related litigation, usually in a non-testifying capacity.

Q. What is the mission of Smoke Free Kids?

A. Smoke Free Kids is dedicated to providing learning opportunities to children about the dangers associated with tobacco products and how they, the kids, are targeted by the tobacco industry. Issues we address include the low tar lie, the misnomer that cigarettes

are a natural product, and the issue of ETS. Primarily by working with children in a classroom setting, the foundation strives to give them enabling knowledge to make healthy choices prior to smoking initiation.

Q. What ages do you work with through Smoke Free Kids?

A. I spend most of my time making presentations to kids in the fourth, fifth, and sixth grades.

Q. What do you teach these kids?

A. I use interactive teaching and learning to reveal myths about cigarettes and smoking, and the true health consequences of smoking.

Q. Have you taught at other educational levels through Smoke Free Kids?

A. Yes. I have also taught at numerous medical institutions on issues related to smoking and health, including Wright State Medical School, University of Florida at Gainesville, University of Miami, University of Pittsburgh, and University of Louisville.

Q. You also indicated that you have worked as a consultant for governments and organizations. With what governments or organizations have you consulted?

A. I have consulted with the Ministers of Health for the government of Canada, the Province of Newfoundland, and the Province of British Columbia; the Minister of Health/Justice for the State of Israel; and the Ministers of Health for the governments of Australia, Scotland, and Malta. In the United States, I have consulted with the Centers for Disease Control and Prevention (CDC) and the Office of Smoking and Health (OSH). I have also served as a consultant or advisor to various city and state governmental agencies, including the City of New York and the State of Florida, and I have testified before the Massachusetts State Senate.

Q. Let me ask you some specific follow-up questions about a few of these consulting activities. What was the subject of your testimony before the Massachusetts State Senate?

A. I testified, I believe it was in 2002, about the feasibility of designing a fire safe cigarette and how it would act to save lives and loss of property.

Q. In addition to your work with Smoke Free Kids and your consulting work, you also mentioned that you teach moral philosophy and ethics. Can you explain this more fully for the Court?

A. Through fellowships and visiting professorships I have, over the last approximately five years, taught and lectured at several law schools and graduate schools. For example, in the January 2004 interim semester I taught ethics at the University of Houston Law Center. I have also lectured at the Kennedy School of Government, at Central Michigan University, the Yale School of Public Health, and the University of Florida at Gainesville.

Q. Finally, you mentioned consulting work in litigation. In how many cases have you testified at trial?

A. I have testified in Court in five cases.

Q. In each case did you testify as an expert witness?

A. No. I believe I testified as an expert in only two of those cases, the Logden case in New Hampshire and the Falise case in New York. In the other three cases – the state case in Mississippi, the Wiley case, and the Smith case – I was a fact witness

Q. Did you receive remuneration for testifying in those cases?

A. Sometimes, if I was retained as an expert witness, but not in all cases.

Q. Have you done consulting work in any other smoking and health related lawsuits where you did not testify?

A. Yes, in a handful of other lawsuits including some of the state cases, I provided assistance as a consultant.

Q. Has your work as a testifying expert in smoking and health cases provided the bulk of your income over the last ten years?

A. No. In fact I have generally been paid very little for my work in litigation. I believe the total money I have received, including from the media lawsuits, has certainly been less than $100,000. And, sometimes that money was paid as a donation to Smoke Free Kids in lieu of personal remuneration to me.

Q. Are you being paid to be here today?

A. The government has told me that they will reimburse my lodging and meals, while I am here to testify, but that is it.

Q. Have you received any other compensation from the United States in connection with this case?

A. No.

Q. Have you received any remuneration from the United States to act as a consultant on this case?

A. No.

B. <u>HIGH SCHOOL TEACHER</u>

Q. Prior to your work with Smoke Free Kids, where did you work?

A. I was a high school teacher at du Pont Manual High School in Louisville, Kentucky from 1994 to 1998.

Q. What subjects did you teach?

A. I taught Biology, Chemistry, Physics, Math, and Japanese.

Q. Did you receive any awards or recognition as a high school teacher?

A. Yes, I did.

Q. What awards and recognitions were those?

A. I was chosen as Kentucky State Teacher of the Year in 1996 and, also in 1996, I was selected by Sallie Mae as one of 51 First Class Teachers nationally.

C. EDUCATION AND MILITARY EXPERIENCE

Q. I would like to take you now back to your college years and ask you about your educational background. Do you have a bachelor's degree?

A. Yes. I received my bachelor's degree in chemistry, with distinction, from the State University of New York-Buffalo in 1969.

Q. Have you received other degrees since that time?

A. Yes. In 1972 I received a master's degree in biochemistry and in 1973 I received my Ph.D. in biochemistry, both from the School of Medicine and Biomedical Sciences at the State University of New York-Buffalo. I also received a Master of Arts degree in Teaching with a specialty in math and science from the University of Louisville in 1995, after I left Brown & Williamson.

Q. Have you received any honorary degrees?

A. Yes. I have received honorary degrees from Connecticut College, Worcester Polytechnic Institute, and the Medical Board of Nova Scotia.

Q. Have you had military service?

A. Yes, in the United States Air Force.

Q. When was that?

A. From June of 1961 through August of 1965.

Q. Where did you serve?

A. For about nine months I served at Larson Air Force Base in Moses Lake, Washington. Then I served at Misawa Air Base in Japan.

D. WORK EXPERIENCE BEFORE BROWN & WILLIAMSON

Q. Briefly outline your employment history prior to joining Brown & Williamson.

A. Before joining Brown & Williamson, I spent about 20 years in the health care industry, primarily in the area of medical devices. After graduating with my Ph.D. in 1973, I first went to work for Boehringer-Mannheim. At Mannheim I started a fine biochemicals division in which we researched biochemicals for use in research laboratories and in developing clinical diagnostic tools. From there I was recruited through a head hunter for a position at Pfizer Corporation. At Pfizer I was involved in the acquisition of many non-pharmaceutical health care companies including producers of orthopedic devices, surgical instruments, heart valves, and CAT scanners. From there I was recruited by Union Carbide to set up a wholly owned subsidiary in Japan for the medical products arm of the company. This involved the licensing of non-pharmaceutical medical products from other companies around the world, putting them through clinical trials, and seeking approval for the sale of the products in the Japanese market.

In 1979, Union Carbide shut that business down and I moved back to the United States. When I returned to the United States, I joined Johnson & Johnson as the Group Director and Marketing Director of the Ortho Diagnostics Systems Division. In this

position I worked on clinical diagnostics issues for the president of the division and also worked with the development folks at Johnson & Johnson.

Q. What did Johnson & Johnson's Ortho Diagnostic Systems Division do?

A. They made medical devices and reagents that were used in the diagnosis and treatment of medical conditions.

Q. Please tell the Court the next step in your career.

A. In 1981, my boss left Johnson & Johnson and recruited me to join him at a company called Technicon as the Senior Vice President of Marketing for its Diagnostic Systems Division. This was a substantial step up, as I now had almost 1,200 staff in my division and was responsible for $250 million in revenues. I also worked for Timex, working on home health care medical products, and Merck before I became the president and chief operating officer for Biosonics, a start-up company that was developing prototypes of a medical device that would provide electro-stimulation for nerve rejuvenation. I left Biosonics in 1987, but was paid through 1988.

Q. From Biosonics, where did you go?

A. I did some consulting work for a period. After some six months of interviews, I was offered the position at Brown & Williamson at the end of 1988.

Q. Having spent your entire career in the health industry, what led you to work for a company like Brown & Williamson, which produced a product that, when used as intended, kills?

A. First and foremost, I needed to support my family. The offer from Brown & Williamson offered a substantial jump in salary and, at this point in time, my daughter who had a birth defect had been born and, as such, my family was very dependent upon health

insurance. Plus, my wife was from Louisville so it meant that we could move close to her family. Second, during the extensive interview process, I became convinced – based upon assurances from Earl Kohnhorst, who became the Executive Vice President of Research and Development, Engineering and Manufacturing in 1991, and Alan Heard, who was the senior scientific adviser to the Chairman of the entire British American Tobacco organization – that one of the foci of my job would be to search for safer nicotine delivery devices. I thought that it was possible to put what I had learned in the health industry to use developing a less toxic cigarette. In retrospect, knowing what I know now, it was an unrealistic expectation.

E. BROWN & WILLIAMSON EMPLOYMENT

Q. What was your title when you left Brown & Williamson in 1993?

A. I was the Vice President of Research and Development/Environmental.

Q. How long were you Vice President of Research and Development/Environmental at Brown & Williamson?

A. Initially I was hired as the Vice President of Research and Development in January of 1989. In 1991 I was promoted and took on the responsibilities for company-wide environmental issues.

Q. What were your responsibilities with respect to environmental issues?

A. I was responsible for the company's compliance with the Clean Water Act and all other environmental obligations of the company.

Q. To whom did you report during your tenure at Brown & Williamson?

A. Initially when I arrived, I reported to Thomas E. Sandefur, Jr. In 1991, I believe, I began reporting to Earl Kohnhorst.

Q. What was Mr. Sandefur's position?

A. At that point in time, he was President and Chief Operating Officer.

Q. Did Mr. Sandefur remain President and Chief Operating Officer throughout your time at Brown & Williamson?

A. No. In 1993, Mr. Ray Pritchard, who had been Chairman and Chief Executive Officer, retired and Mr. Sandefur became Chairman and CEO of Brown & Williamson.

Q. What was Mr. Kohnhorst's position when he became your supervisor?

A. In 1991, Mr. Kohnhorst returned to Brown & Williamson from its parent corporation, BATUS, as Executive Vice President of Research and Development, Engineering and Manufacturing.

Q. As the Vice President of Research and Development at Brown & Williamson, what were your responsibilities?

A. I was responsible for all aspects of Brown & Williamson's research including basic research, applied research, the manufacturing development center, the duPont center (which was a testing center), technical issues in manufacturing, and interacting with the other BAT research and development centers.

Q. Please tell the Court how you came to be employed by Brown & Williamson.

A. Early in 1988 I responded to an advertisement looking for a manager of the research function of a company in the Mid-West. I believe the advertisement was either in the New York Times or the Wall Street Journal. I sent my resume in response to that advertisement.

Q. What occurred after you sent your resume?

A. I was contacted by telephone by a gentleman by the name of Bill Lodenbach.

Q. Who was Bill Lodenbach?

A. He was a headhunter, but told me that he had previously been the Senior Vice President of Personnel at Brown & Williamson.

Q. What happened after you were contacted by Mr. Lodenbach?

A. We had some preliminary discussions on the telephone, at which time he asked me several questions about my understanding of smoking issues and whether I had any adverse positions on tobacco.

Q. What happened next?

A. I had an interview with Mr. Lodenbach in New York City about a month or two later. Then there was a sequence of meetings and conversations with several people from Brown & Williamson. The interview process was capped off by a day or day-and-a-half interview with Alan Heard in New York City. Following that meeting I was offered the job at Brown & Williamson.

Q. Beyond Mr. Heard, with whom did you interview from the BAT Group of companies?

A. I had numerous conversations. In the beginning I generally spoke with Mr. Lodenbach, and then later in the process I began having telephone conversations and face-to-face meetings with several people from Brown & Williamson and other companies in the BAT Group. I met with Ray Pritchard, the Chairman and CEO; Tommie Sandefur, the President and Chief Operating Officer; John Bullis, Vice President for Personnel at Brown & Williamson; Earl Kohnhorst, who at the time was working for Brown & Williamson's parent company BATUS; Hank Frigon, the Chairman and CEO of BATUS;

Tony Hall, the head of personnel at BATUS; and Alan Heard, who was a senior scientific advisor to Sir Patrick Sheehy, the Chairman of BAT Industries.

Q. What was BAT Industries?

A. At the time, BAT Industries was the ultimate parent company of Brown & Williamson. BAT Industries owned cigarette operations, and other business interests, around the world. Most people around the company simply called it "Big BAT."

Q. During the interview process, did any of the BAT Group executives make representations regarding the types of work you would be doing at Brown & Williamson?

A. Yes.

Q. Please tell the Court about those conversations.

A. We discussed generally that I would be the chief scientific officer at Brown & Williamson, and that I would have responsibility for managing the entire Research and Development function. In the interviews, I was told that my charge would be to develop a technical organization which was capable of addressing the issues of smoking and health in the 1990s and into the next century. Effectively I was told that certain skill sets and abilities were lacking within Research and Development and that they were looking for a leader to correct these deficiencies.

We also had discussions about how I could use my extensive background in biological/pharmaceutical sciences and healthcare to help develop new skill sets within the Research and Development function. Finally, they said that they wanted to develop a safer product, and anticipated that bringing it to market would require FDA approval; and I would be in charge of the FDA application process.

Q. Were you told specifically what some of the deficiencies in research and development were?

A. Yes. I was told that the organization was currently empirically based rather than analytically based, that it had high manual labor costs in the product design area, that the product development cycle was too long and slow, that there were too few employees with advanced degrees, and that the staff was aging and not up to speed on advancements in their fields.

Q. When you say that the research and development function was "empirically based," what do you mean?

A. Empirically based research and development relies primarily on experience and observation, which in layman's terms means trial and error. Analytically based science is driven by the postulation of theories, which are then tested in the laboratory.

Q. Why was an empirically based – or trial and error based – research and development department considered a deficiency?

A. The trial and error approach does not allow you to get to the root cause of what you are studying, and it generally has a high failure rate. In addition, the regulatory approval process is analytically based. I was told by Mr. Kohnhorst and Mr. Heard, who worked in the research and development arena, that if regulatory approval did become necessary that Brown & Williamson would need to be in a position to meet the analytical obligations of regulatory approval. They did not feel that, in 1988, Brown & Williamson had the skill necessary to do that.

Q. During the interview process, did you have any conversations about specific projects and goals?

A. Yes. I had conversations with Alan Heard, the chief scientific advisor to BAT Industries Chairman Sir Patrick Sheehy, in which we discussed our desire to really ratchet up the technical ability necessary to explore safer cigarettes within BAT generally and Brown & Williamson specifically. We discussed how I could use my educational and work experience to improve the research and development function. Also, in several conversations during the interview process, I discussed a desire to create a Medical Scientific Advisory Board to provide an unbiased analysis of our scientific activities within the company, particularly in relationship to the development of a safer product.

Q. Given your lack of prior experience in the tobacco industry, did they explain why they were interested in you?

A. Since I was a biochemist from the health products field, but didn't have any experience in the tobacco business, this question was very much on my mind at the time of the interviews. So, I specifically asked them why they were even considering me. And, there was, in fact, a significant amount of conversation regarding how my abilities could assist Brown & Williamson.

Q. What were you told in this regard?

A. The scientific folks, like Alan Heard and Earl Kohnhorst, said that I brought significant biological science experience and, very importantly, experience with the FDA regulatory approval process. That experience was important for two reasons: First, as I mentioned, they hoped to develop a safer cigarette, and if FDA approval were needed, my experience with the FDA application process would be very valuable. Second, the FDA application process is very analytically based.

Q. Were you told what other skills were important for the job?

A. Yes. I was also told that the Research and Development Department needed a different skill set and fresh blood, so strong management skills were important. Since I was from the outside, I could add a new perspective regarding changes to the skill portfolio needed to effectively run an analytical research and development function. I was also told that my involvement in product design and testing would help with the issues of slow product design and reducing the reliance on high manual labor in the laboratories.

Q. Is it fair to say that you understood that a main focus of your work would be directed at safer cigarettes?

A. Absolutely. There were several conversations regarding safer cigarettes as well as other safer nicotine delivery devices. I was told by Earl Kohnhorst and Alan Heard that I would be spending substantial energies on issues of new, safer products.

Q. We will come back to the issue of safer cigarettes, but for now let me just ask you this: Once you arrived at Brown & Williamson, were you in fact allowed to spend substantial energies on safer cigarettes?

A. No. It became clear to me that Brown & Williamson had no desire to pursue a safer cigarette and, in fact, feared that such an effort would suggest that its current products were not safe.

Q. How did you become aware of this?

A. After I had been at the company for about a year, Brown & Williamson's president, Tommie Sandefur, flat-out told me that Brown & Williamson would not pursue research into a safer cigarette.

Q. Earlier you mentioned a medical scientific advisory board. What discussions did you have about this during the interview process?

A. During the interview process I told everyone I talked to that to bring Brown & Williamson into line with first rate research and development functions, it would need to add a medical scientific advisory board.

Q. Who would have made up this medical scientific advisory board?

A. Predominantly experts from outside Brown & Williamson.

Q. What would be the purpose of such a medical scientific advisory board?

A. It would allow the work of internal scientists to be reviewed, critiqued, and hopefully, improved by a board of outside experts. I thought that this could be particularly helpful in the seemingly uncharted territory of safer products, where you needed to establish baselines against which to measure any new products.

Q. What was the reaction of the company executives when you raised this during the interview process?

A. Generally, all of the people with whom I interviewed expressed support for the idea. Alan Heard, the scientist from BATCo was particularly supportive.

Q. After you were hired, were you allowed to form a medical scientific advisory board?

A. No. In fact, after I had been at the company for a short period of time, Tommie Sandefur told me in late 1989 or early 1990 that there would be no scientific advisory board. This conversation was around the same time period that he told me that Brown & Williamson would not do any research into safer cigarettes.

Q. When did you leave Brown & Williamson?

A. On March 23, 1993.

Q. Why did you leave Brown & Williamson?

A. I was fired.

Q. Did you receive annual performance appraisals while you were at Brown & Williamson?

A. Yes.

Q. What performance categories did Brown & Williamson's performance appraisals use?

A. There were three performance categories: excellent contribution, solid contribution, and needs improvement.

Q. Did you receive an overall rating in each of your annual performance appraisals?

A. Yes.

Q. Dr. Wigand please refer to U.S. Exhibit 89,365. What is this document?

A. This is a portion of my performance review form 1989. There were several portions of the review, some completed by the employee being rated and some by that employee's supervisor. This is the portion that I completed for 1989.

Q. Is your overall rating for 1989 set forth here?

A. No.

Q. Do you recall what your overall rating was for 1989?

A. Yes. In 1989, the three performance levels I talked about earlier (excellent, solid and needs improvement) were put on a continuum and your rating was put on that continuum. My rating was at the high end of solid, almost excellent.

Q. Now, doctor, please turn to J.D. Exhibit 012890. What is this document?

A. This is my review for 1990.

Q. And, if you turn to page 10, what is your overall assessment for 1990?

A. In 1990, the company moved away from the sliding scale and went to just three fixed boxes: needs development, solid contribution or excellent contribution. In 1990 I received a "solid contribution" rating.

Q. What did your supervisor say regarding your overall performance?

A. Earl Kohnhorst, my supervisor, wrote:

> Dr. Wigand has made a great deal of progress in setting high standards or performance, productivity goals and attention to organizational development, skill development, and recruiting. His actions have set the stage for improving performance to meet established corporate objectives and provide for smoothing the transition as R&D is currently facing significant turnover from expected retirement. As I have covered, this "change management" has resulted in some damaged relationships. Restoration and team building are major objectives Jeff has to address this year in order for us to reap the total benefit of the many positive thrusts he has begun.

Q. What is the "change management" to which Mr. Kohnhorst is referring?

A. As I indicated regarding the conversations during the hiring process, Brown & Williamson was looking for a lot of change in the Research and Development Department. The Department needed new people and new ways of doing its work. I was responsible for leading that change.

Q. What impact did the "change management" have on your relationships within the company?

A. Needless to say, as a change agent, I was not universally liked. Change made people uncomfortable and they saw me as the source of that change.

Q. Finally, doctor, please turn to J.D. Exhibit 012889. What is this document?

A. This is my 1991 review.

Q. If you turn to page 9, what was your overall assessment in 1991?

A. Again it was "solid contribution."

Q. What did your supervisor say about your overall performance in 1991?

A. He said:

> Overall, I am happy with the imporvment that Jeff has shown. Importantly Jeff and R&D had a very fine year of achieving the tough objectives we set out for 1991. It was not a year without problems, but considering the dramatic organizational and staffing changes, it was an excellent accomplishment.

Q. So in all four years you were at the company, what were the overall ratings that you received?

A. In each year, either solid or just short of excellent.

Q. So, why were you fired?

A. I was fired because of conflicts and confrontations I had with Mr. Sandefur over issues of safer cigarettes and my desire to pursue a vigorous biological testing program.

Q. When were you fired in relation to Mr. Sandefur's ascension to the position of Chairman and Chief Executive Officer?

A. Within two to three months after Mr. Sandefur became CEO.

Q. Did you receive any awards or formal recognition while you were employed at Brown & Williamson?

A. Yes, both. I was awarded discretionary bonuses each year I was there, as well as annual salary increases. In addition to those bonuses and salary increases, two days before I was fired, my staff in the Research & Development Department presented me with a Steuben cut-glass eagle as a quality recognition award. Also during my time at the company I

was featured on the front cover of the company news magazine for my Total Quality Management (TQM) initiatives.

Q. What was inscribed on the quality recognition award your staff gave you?

A. "Coach, Teacher and Friend."

II. RELATIONSHIP AMONG VARIOUS BAT ENTITIES

Q. During your time at Brown & Williamson, did you become familiar with the relationship between Brown & Williamson and its sibling companies?

A. Yes, as a top executive I interacted with many individuals from the other BAT companies.

Q. During your tenure with Brown & Williamson, what was the working relationship between BAT Industries and Brown & Williamson?

A. Even before I began work, my initial conclusion was that BAT Industries was very involved in the management of its subsidiaries, even in the hiring process.

Q. What was the basis for that conclusion?

A. As I discussed earlier, I was interviewed for a day and a half by Alan Heard, who was the senior scientific advisor to Patrick Sheehy, the Chairman of the Board of BAT Industries.

Q. After you started working at Brown & Williamson, was your initial conclusion confirmed in any way?

A. Yes. Sheehy would frequently visit Brown & Williamson's offices in Louisville. And, during my tenure at Brown & Williamson, the control of scientific policy and direction shifted away from the research and development directors and became more centralized and more controlled by Patrick Sheehy through the Tobacco Strategy Review Team, which he chaired.

Q. Can you explain how that shift in control came about?

A. Yes. When I initially arrived at Brown & Williamson, scientific direction was at least nominally set by a BAT Group organization called the Research Policy Group (RPG). This was composed of the top scientist from each of the BAT Group companies. We would meet and confer and set the direction of the BAT Group's research activity over the coming year.

However, over the course of the first year after my arrival, Sheehy determined that scientific direction should no longer be set by scientists and instead should be set by the top management, meaning the chief executives of each of the CAC companies, through an organization that was initially called the Tobacco Strategy Review Team (TSRT). He ultimately changed the name of the TSRT to the Tobacco Strategy Group (TSG).

Q. What were the CAC companies?

A. CAC stood for the Cigarette Affiliated Companies. They were Brown & Williamson in the United States, BATCo in the U.K., Souza Cruz in Brazil, BAT Cigaretten-Fabriken in Germany, and W.D. & H.O. Wills in Australia.

Q. Dr. Wigand, U.S. Exhibit 89,361 mentions this change in name. Could you explain this document to the Court?

A. Yes. This is in July of 1992, and this is when Sheehy changed the name of the Tobacco Strategy Review Team (TSRT) to the Tobacco Strategy Group (TSG). The new name reflected what the group had already been doing for some time, that is, setting the direction of all scientific activity within the entire BAT Group of companies. As Sheehy writes in his letter:

> We felt that the term "Review Team" was slightly misleading, given the Team's responsibilities for initiating strategies rather than simply reviewing them.

This formal name change finally recognized what had occurred over the preceding two years, which was a shift toward excluding scientists from determining the direction of science within the BAT group. In effect, this name change recognized that top management in the BAT Group had taken the role of establishing research and development direction away from the company scientists. No longer did the scientists on the RPG produce a research agenda for review. Rather the Chief Executives on the TSRT set all scientific policy and direction from the start.

Q. Do you recognize the handwriting at the top of the document?

A. Yes. At the very top is handwriting by, I believe, Mr. Pritchard's secretary, distributing the note to several people including Earl Kohnhorst. Mr. Kohnhorst then has the document distributed to "Jewell" and "Wigand."

Q. What is written under your name?

A. The word "Destroy."

Q. What did "Destroy" mean here?

A. That meant that I was to destroy the document; I was to review it and destroy my copy. It also meant I was not to copy it or distribute it to others.

Q. Now looking at the membership of the TSG as listed in U.S. Exhibit 89,361, were any of these men scientists?

A. I don't believe so. If any of them had a scientific background I was not aware of it. Certainly, none of the members were working in the research and development function at that time.

Q. Dr. Wigand, please explain to the Court the significance, if any, of U.S. Exhibits 89,362, 89,363, and 89,364.

A. Each of these documents demonstrates the control of science within the BAT Group of companies by the TSG (or TSRT) and its chairman, Sir Patrick Sheehy at BAT Industries.

Q. Can you explain specifically how U.S. Ex. 89,362, demonstrates this control?

A. This is a letter from Alan Heard to the chief scientific officers of each of the operating companies. As he states at the very beginning of the letter:

> It has been agreed by the Tobacco Strategy Review Team that Fundamental Research will in future be centered on Southampton....

Q. What is the significance of this letter?

A. This demonstrates TSRT and Patrick Sheehy's efforts to pull all basic research to the center where it could be more effectively controlled. Among the most important of the scientific efforts was biological testing and assessment. So this statement is strengthening the Group-wide position that fundamental research (including biological testing) would be conducted in Southampton, England and not in the United States.

Q. How does U.S. Ex. 89,363 demonstrate control of science by the TSG or TSRT and Sir Patrick Sheehy?

A. This is a letter dated November 19, 1991, which I prepared and sent to each of the heads of research at the other BAT Group companies. As I stated in the very first sentence:

> At the Tobacco Strategy Review Team Meeting in September, Sir Patrick Sheehy gave a team the [following] objectives. . . .

This again demonstrates that the direction of Group-wide science – including the operation of special project teams like this – was controlled by Sir Patrick Sheehy, the head of BAT Industries. The specific program that I mentioned in this letter was ultimately code named "Worldwide Best."

Q. What was "Worldwide Best"?

A. Worldwide Best was the application of reverse engineering of Marlboro and the optimal use of ammonia technology in non-menthol products to develop a product equal to or better than Marlboro, which was the industry leader; in essence to establish non-menthol superiority.

Q. Could you identify the significance of the final document that I provided to you, U.S. Exhibit 89,364?

A. This letter, dated March 27, 1991, is from Alan Heard to the heads of the research and development functions throughout the BAT Group. Again, in the very first sentence, we see the control that TSRT as led by Sir Patrick Sheehy had over the scientific operations of the entire BAT Group.

Q. To what language are you referring?

A. As the letter states:

> [a]s I indicated a few weeks ago, the TSRT has generated guidelines for technical meetings that severely impact on our modus operandi.

Q. What was the impact of this TSRT directive?

A. The upshot of this policy was to severely limit the number of meetings held by the scientists throughout the BAT Group. As the letter goes on to state:

> [a]ny ad hoc specialist meetings must be generated by or approved by TSRT.

Q. What was the purpose behind limiting the meetings of the scientists?

A. I discussed this question with Alan Heard and Richard Binns, the head of the Fundamental Research Center at Southampton, England. Both of those individuals told me that this policy was initiated for two reasons. First, by limiting how often the scientists could meet, control of scientific policy would most effectively rest with the TSRT. Second, the less interaction there was among company scientists, the less likely it would be for potentially damaging information to be reduced to writing in the form of a document and ultimately become discoverable in U.S. litigation. It was really U.S. litigation that was driving the development of policies related to document production, retention, and distribution in 1989 and 1990, and this crackdown on the opportunity for scientists to create such documents stemmed from the fears about discovery of documents in U.S. litigation.

Q. Dr. Wigand, I have shown U.S. Exhibit 53,015 to you. What is this document?

A. This is a presentation that outlines the organization and operations of the scientific function within the BAT Group in 1991. I believe it was prepared by Alan Heard.

Q. Directing your attention to the first page of this exhibit, what entity does it show at the top of the "BAT RESEARCH ORGANIZATION?"

A. This shows that BAT research was headed by BAT Industries. In fact, it shows me reporting to BAT Industries as head of Brown & Williamson research and development.

Q. Now, directing your attention to page 2 of the exhibit. Can you tell the Court how it characterizes the TSRT's role in "RESEARCH COORDINATION?"

A. Yes, this indicates that the TSRT would "formulate overall strategic objectives." In other words, each of the top scientists at the CAC companies received their instructions from the TSRT, which was headed by the Chairman of BAT Industries.

Q. Please remind the Court how many scientists sat on this TSRT, which was setting "strategic objectives" for scientific research.

A. Well, I believe that Alan Heard acted as a scientific advisor to the TSRT, but was not a member of the team. As far as I know, none of the actual members of that team were scientists or came from research and development backgrounds.

Q. Were there other areas of science, beyond direction of research and development activities, which were controlled by BAT Industries?

A. Yes. Basically everything related to science was controlled by TSRT, including the Group-wide position on smoking and health.

Q. Dr. Wigand, please take a look at U.S. Exhibit 53,346. What is this document?

A. This is a 1984 cover note and attached statement of company position regarding smoking and health that was issued by BAT Industries to all of its operating companies.

Q. How does the content of this document relate to the policies in place at Brown & Williamson during your tenure at the company?

A. It is entirely consistent with what I just said about the control of smoking and health issues by BAT Industries during my tenure at the company. Group-wide policies were set by BAT Industries, and each operating component within the BAT Group was expected to follow the policy. In this case, BAT Industries is telling the operating companies the position they are expected to take on smoking and health.

Q. Were you employed at Brown & Williamson in 1984?

A. No, but as I indicated this was completely consistent with the policy that was in place from 1989 to 1993, while I was employed at Brown & Williamson.

Q. When you were at Brown & Williamson, were you aware of why all of the BAT Group companies were expected to adhere to the centrally issued policies?

A. Yes. There were two fundamental issues relating to products liability litigation that had to be protected. First, the BAT Group of companies needed to maintain a public and legal position that causation had not been proven. In fact, that is spelled out very clearly in this exhibit. The concern was that statements that admitted any connection between smoking and ill health:

> could adversely affect the position of Brown & Williamson in current US product liability litigation in the US.

Second, the company needed to maintain the public and legal position that smoking was a matter or personal choice. Since the industry had always argued that smoking was free choice, if documents indicated the addictive nature of nicotine, the defense of free choice would be gone.

Q. Were scientists at other BAT Group companies also aware of the basis for the centrally issued position on smoking and health?

A. Yes. From my conversations with scientists from BATCo, like Richard Binns, and with scientists from all of the other BAT operating companies, it was clear that they understood that smoking and health policy and the control of statements related to smoking and health were driven by the effort to protect Brown & Williamson in litigation in the United States.

Q. Dr. Wigand, I would like to ask you about one last issue related to the relationships between the various BAT entities. Are you familiar with something called the cost sharing agreement?

A. Yes.

Q. Could you please tell the Court what the cost sharing agreement was?

A. Yes, the 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.

Q. Please explain for the Court how the arrangement functioned?

A. Basically each of the CAC companies was responsible to support a portion of the cost for research and development at Southampton. The amount was based on a formula that I understood to be connected to the profitability of Brown & Williamson in relationship to the profitability of the other BAT Group companies that participated in the cost sharing arrangement. In most years, the amount of money spent by Brown & Williamson to support the Fundamental Research Center was in fact greater than the amount of money we spent to maintain our own research and development facilities here in the United States. This was because the Brown & Williamson research and development center was substantially smaller than the operation at Southampton.

Q. Did the operation of the cost sharing agreement change during your tenure at Brown & Williamson?

A. Yes. Before 1990, the idea was that basic research would be done at Southampton, but be shared by all of the companies participating in the cost sharing agreement, regardless of the percentage of the contribution. Post-1990 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.

Q. Was the cost sharing agreement in place when you arrived at Brown & Willaimson?

A. Yes.

Q. Dr. Wigand, please take a look at J.D. Exhibit 011368. What is this document?

A. This is the cost sharing agreement that was in place when I arrived at the company.

Q. Was the cost sharing agreement revised during your tenure with Brown & Williamson?

A. Yes, after a meeting in New York City in January 1990, the lawyers revised the cost sharing agreement.

Q. Dr. Wigand, please take a look at U.S. Exhibit US 56,544. What is this document?

A. This is the cost sharing agreement after it was revised following the 1990 New York City meeting.

Q. Why was the cost sharing agreement revised?

A. The meeting in New York City in January 1990 grew out of a concern related to the discoverability of scientific documents in the United States. At the meeting in New York, the lawyers, predominantly Nick Cannar of BATCo and Kendrick Wells of Brown & Williamson, discussed how the cost sharing agreement could be used to protect scientific documents from production in U.S. litigation. Cannar stated that he did not want controversial documents created by BATCo or other companies within the BAT Group produced in American litigation. So, Cannar and 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.

Q. Can you point the Court to the specific language that was added to the cost sharing agreement?

A. Yes. On the third page item number 5.(3) states:

> B&W will upon request immediately return to BATCo all BATCo Documents.

And on the second page item (c) states:

> "BATCo Documents" means the Research Material and copies thereof and any other documents or material in B&W's possession whether prepared by BATCo or by B&W or by any other person containing information which is included in or derived from or refers to the Research Material.

Q. The revised cost sharing agreement stated that all documents were the property of BATCo even though Brown & Williamson was paying part of the costs for the research and development and scientific efforts?

A. Yes.

Q. Was such a procedure provided for in prior cost sharing agreements?

A. No. Prior to the new agreement, no such restriction was imposed.

III. SUPPRESSION OF INFORMATION

A. LAWYER ORIENTATION OF SCIENTISTS

Q. Dr. Wigand, did lawyers involve themselves in the scientific aspects of Brown & Williamson?

A. Yes. But, I would say that they were more than just involved; they really played a significant role in boxing-in the scientific process and the sharing of scientific information.

Q. How soon after your arrival at Brown & Williamson did you become aware of this fact?

A. Within the first few months.

Q. How did you first become aware that lawyers would be involved in the scientific function of the company?

A. The first indication of this came during my orientation.

Q. How did lawyer involvement in the scientific affairs of the company manifest itself during your orientation?

A. As part of my orientation at the company I was coached by lawyers regarding the company line on smoking and health, and addiction.

Q. What was the "company line" on smoking and health, and addiction?

A. That causation had not been proven and that nicotine had not been shown to be addictive.

Q. Can you please tell the Court how these coaching sessions occurred?

A. Very soon after my arrival at the company, as part of my orientation I was sent to Kansas City Missouri to meet with attorneys from the law firm of Shook, Hardy & Bacon to discuss the issues of smoking and health.

Q. When did this coaching session occur?

A. I believe it was in February of 1989.

Q. And, when did you start working at Brown & Williamson?

A. In January of 1989.

Q. How long did this orientation session last?

A. I was there for three days.

Q. Do you recall which lawyers from Shook, Hardy & Bacon participated in the meetings?

A. I know for sure that Chuck Wall, Bill Shinn, and Kendrick Wells were there throughout. Chuck Wall effectively ran the session. Robert Northrip was there during much, but not all, of the session. Other attorneys whose names I cannot recall also participated at various times.

Q. What occurred at these meetings?

A. Even before I arrived for the meetings, Kendrick Wells gave me a list of articles related to Smoking and Health that I was asked to read.

Q. What articles were you instructed to read?

A. I reviewed the scientific literature that had been published on smoking and health issues, the Swedish Twin studies, the Auerbach studies, etc. At the time, cervical cancer had begun being associated with smoking and so I was given several articles that suggested that cervical cancer was not caused by tobacco smoke it was caused by HPV (human papiloma virus).

Q. Please tell the Court what U.S. Exhibit 89,366 is.

A. This is a cover letter from Kendrick Wells, the Assistant General Counsel for Product Litigation, to me dated February 1, 1989. I was in Germany at the time visiting and learning about the research capabilities at BAT Cigaretten-Fabriken. Along with the cover letter, as you can see, he sent me several articles regarding cervical cancer. I was

instructed by Wells to be ready to discuss these with the outside lawyers at Shook, Hardy and Bacon when I arrived in Kansas City.

Q. Did you in fact review the articles before your meetings?

A. Yes.

Q. Please describe the sessions with Shook, Hardy & Bacon for the Court.

A. They were all about epidemiology. 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.

Q. What was meant by saying that "causation" had not been "proven"?

A. That meant that, despite the overwhelming epidemiological evidence that smoking causes disease, the sessions focused on Brown & Williamson's position that the mechanism by which smoking causes disease had not been established.

Q. From Brown & Williamson's standpoint, why was their position that "causation had not been proven" of significance?

A. The company relied upon the assertion that causation had not been proven in lawsuits and publicly to support the conclusion that smoking was not the cause of lung cancer and other diseases.

Q. Please continue with your description of the "orientation" meetings with the lawyers from Shook, Hardy & Bacon?

A. Well, throughout the meetings, the lawyers lectured to me regarding the industry's position with respect to the existing science. Specifically, the lawyers explained that epidemiologists had only put forth a "causal hypothesis," but that the current scientific evidence linking smoking to the cause of disease was fraught with error and therefore unreliable. The second major area of concentration that the attorneys addressed was the industry position that nicotine was not addictive.

Q. Was Brown & Williamson's position on causation and addiction consistent with the industry position?

A. Yes.

Q. What was Brown & Williamson's position on causation and addiction?

A. The basic platform of Brown & Williamson's legal defense was (1) that the causal connection between smoking and disease had not been proven and, as such, that it was still an open question regarding whether smoking causes disease, and (2) that nicotine was not addictive.

Q. Did the attorneys explain to you why Brown & Williamson took the position that nicotine was not addictive?

A. Yes.

Q. What reasons did they give?

A. They said that nicotine use did not meet the definition of addiction in the 1984 Surgeon General's report because it did not cause intoxication. They also told me that nicotine was not addictive because many people can and do quit. They asserted that it did not cause loss of control or change social behavior as alcohol and cocaine did.

Q. Did the attorneys tell you why it was important to maintain the position that nicotine was not addictive?

A. Yes.

Q. What were you told?

A. I was told by Kendrick Wells and Ernest Pepples, and the Shook, Hardy & Bacon lawyers that this position was important because part of their legal defense was that smoking was a free choice. If it were ever demonstrated that Brown & Williamson was aware that nicotine was addictive, then Brown & Williamson's defense in litigation – that choosing to smoke was the result of an individual exercising their own free will – would be destroyed.

Q. Dr. Wigand, let me call your attention to U.S. Exhibit 79,219. What is this document?

A. This is Kendrick Wells' file note related to a meeting he had with me in May of 1991 concerning the hiring of Scott Appleton as a toxicologist, the routing of "draft" documents through lawyers, and other topics related to scientific matters.

Q. We will return later to other issues addressed in this file note, but for now let me draw your attention to the fourth sentence, where he wrote, "Scott should visit Shook, Hardy & Bacon." What does this refer to?

A. Wells told me he wanted to send Appleton to a training session at Shook, Hardy & Bacon.

Q. Was this the same sort of session that you attended at Shook, Hardy & Bacon?

A. Yes. This was a session where the lawyers could basically drill a scientist concerning the company position on sensitive issues. The sessions established the confines within which each scientist was to work the confines of what could be said publicly.

Q. What were those "confines"?

A. As I indicated, we were expected to adopt the assertions that causation had not been proven and that nicotine was not addictive. We were told that any public statement contrary to those positions would be damaging to the company's legal position and to the industry's legal position.

Q. Did Scott Appleton, in fact, attend a session at Shook, Hardy & Bacon?

A. Yes.

B. LAWYER VETTING OF SCIENTIFIC DOCUMENTS

Q. During your tenure at Brown & Williamson, did you become aware that lawyers were editing scientific documents?

A. Yes.

Q. When did you become aware that lawyers edited scientific documents?

A. I believe the first overt involvement of a lawyer in the vetting of scientific documents occurred in the fall of 1989.

Q. What do you mean by "vetting"?

A. Deliberately and consciously removing contentious and controversial information from company documents that would benefit an adversary in litigation.

Q. What occurred in the fall of 1989 regarding the vetting of documents?

A. There was a meeting of the Research Policy Group (RPG) in Vancouver, British Columbia, Canada, in September 1989.

Q. Can you remind us what the RPG was?

A. The RPG was comprised of the number one scientist from each of the Cigarette Affiliated Companies (CAC). This group met to discuss research policy and integration of research across all CAC companies. When I first arrived at Brown & Williamson, the RPG set strategic and tactical priorities for BAT Group research and development.

Q. Did the role of the RPG in setting strategic and tactical priorities for BAT Group research change during your tenure at Brown & Williamson?

A. Yes. Not long after the RPG meeting in Vancouver in September of 1989, the role of the RPG changed significantly.

Q. We'll come back to the changing role of the RPG. But, for now, can you tell the Court which BAT Group companies sent their number one scientists to the RPG meetings?

A. Yes. I was the representative from Brown & Williamson. There were also representatives from Souza Cruz, which is the BAT company in Brazil; BATCo, which was the U.K. entity; BAT Cigarettan-Fabriken, which was the German company; Imperial Tobacco, the Canadian company; and from W.D. & H.O. Wills, which was the Australian company that later became known as BATAS.

Q. Was Kendrick Wells, the Assistant General Counsel for Product Litigation, at the September 1989 meeting in Vancouver?

A. No.

Q. Were there any lawyers in this scientific meeting?

A. There were no lawyers at the meeting in Vancouver.

Q. Dr. Wigand, please identify U.S. Exhibit 89,367 for the Court.

A. This is a memorandum that I wrote to Alan Heard on June 26, 1989.

Q. Why did you write this memorandum?

A. Mr. Heard, who was the top scientist at BAT, was to lead the Vancouver meeting. I sent this memorandum to him to outline the issues that I wanted him to put on the agenda.

Q. In the memorandum you have a series of numbered items. Please take a look at item number six and explain to the Court what is meant by "S&H"?

A. "S&H" stands for smoking and health.

Q. Did you indicate to Mr. Heard that you wanted smoking and health issues placed on the agenda?

A. Yes. I had several issues related to smoking and health that I listed in the memorandum which I thought we needed to address. As I wrote, these included:

- What should the role of the SRG be?
- Does the Group have a developed/recommended position on bioassay protocol?
- Is improvement of "Tar Quality" a viable objective?
- Is so, what are "best approaches e.g., biotech, tobacco modification, etc."
- Should there be a Group position/list developed of chemical compounds for targeted removal/reduction?

Q. Can you explain to the Court the second bulleted item, where you suggested an agenda item on "bioassay protocol"?

A. Yes. This is a reference to my concern that state-of-the art science was not being used to evaluate additives. From my perspective, the entire BAT Group needed to determine how we were going to evaluate the toxicity of additives, product changes, or new products. This required the adoption of a state-of-the-art bioassay protocol, which would measure the toxicological effects of the additives, product changes, and new products.

Q. The next bulleted item references "improvement of 'Tar Quality.' " What did you mean by "improvement of 'Tar Quality'"?

A. Improved tar quality meant reduction in overall tar numbers and selective reduction of noxae contained in the smoke.

Q. What does noxae mean?

A. It means poisonous or toxic substances.

Q. How would reducing overall tar numbers, and selectively reducing noxae, improve tar quality?

A. Effectively this is a reference to a safer cigarette. The idea behind tar quality was to selectively reduce noxae from the tar created when the cigarette was smoked. This bullet point and the two that follow it are suggesting that we discuss developing a list "of chemical compounds for targeted removal/reduction" to make cigarettes safer. It also poses the question of the best ways to achieve the selective reduction of noxae.

Q. Please look earlier in this exhibit, U.S. Exhibit 89,367, at item number 3, and explain that to the Court.

A. In item number 3, I told Mr. Heard that I wanted to talk about the development of an "External Advisory Board" at the Vancouver meeting.

Q. Does this relate in any way to the medical scientific advisory board that you discussed during the interview process?

A. Yes. This is the same thing. The "External Advisory Board" that I asked to discuss here would function as the medical scientific advisory board that we discussed during my interview process.

Q. Dr. Wigand, please look at U.S. Exhibit 89,368. What is this document?

A. This is an August 17, 1989 letter from Alan Heard to me confirming the September 1989 RPG meeting in Vancouver, Canada, along with a copy of the agenda for the meeting.

Q. In the letter, Mr. Heard states that "it is absolutely essential that we allow adequate time for the more contentious items to get a good airing and conclusion." To what is Mr. Heard referring when he says "contentious items?"

A. Mr. Heard was basically indicating that we would be talking about things like smoking and health, biological activity, safer cigarettes, biological testing, ETS, and addiction, which were considered very sensitive within the company because of the litigation exposure in the United States. He is using what was effectively a code word within BAT to refer to these sensitive issues.

Q. What "sensitive issues" does the agenda indicate would be discussed at the meeting?

A. The agenda indicates that among other things, we would discuss the following:

> <u>Smoking and Health</u>
> A critical 're-think' of S&H topics for sponsored research.
>
> Potential implications for modifications of existing products.
>
> <u>Regulatory Issues</u>
> Probable trends in Biological Testing for tobacco products.
>
> "Other Noxa" – clarification of objectives
>
> Proposals for standardising and co-ordinating Group approach to Additives
>
> <u>Product Innovation</u>
> Low nicotine cigarettes – Group experience in comparison with 'Next'
>
> Ammonia Technology for smoke improvement
>
> Review of Airbus (Nova): aims, progress, future

A proposal for an external advisory panel in relation to product innovation.

Environmental Tobacco Smoke

Q. What scientific issues were actually discussed at this meeting in Vancouver, British Columbia?

A. Among other issues, we discussed nicotine analogues, biological assays and biological testing methodologies (including NTP protocol), environmental tobacco smoke (ETS), Y-1 genetically enhanced tobacco, how to reduce selectively the particular noxae that were in tobacco smoke, fire safe cigarettes, and FDA regulation. We also had a discussion regarding the function of the Scientific Research Group (SRG) and how to fund various SRG studies.

Q. What was the SRG?

A. The SRG was a panel within the BAT Group of companies which would identify and fund scientific research outside of the BAT companies. The research was done by external contractors, exclusively outside of the United States.

Q. Were you a member of the SRG?

A. No.

Q. Were you familiar with the research that the SRG was funding?

A. Yes, I was very aware of the research that was being funded by the SRG.

Q. In the conversations at the Vancouver meeting, or otherwise, did you ever express a desire to have the SRG pursue specific types of research?

A. Yes. At the Vancouver meeting and at other times, I requested that the SRG fund research related to addiction and causation. I also wanted the SRG to fund research that would move us toward a safer product.

Q. Were you ever successful in having the SRG fund research related to these topics?

A. No. The research funded by the SRG while I was at Brown & Williamson was never focused on addiction, causation, or making safer products.

Q. How would you characterize the research that was funded by the SRG?

A. It focused on research related to allegedly beneficial aspects of smoking, such as relieving some of the effects of ulcerative colitis. It also funded research that was interesting and potentially valuable, but did not focus directly on the issues that were central to the tobacco industry: smoking and health, addiction, and the causal mechanism.

Q. After the conference of scientists in Vancouver, did one of the scientists prepare minutes of the discussions?

A. Yes. The meeting was coordinated by Alan Heard, but the discussions at the meeting were memorialized by Dr. Ray Thornton, who prepared minutes following the meeting.

Q. Who is Dr. Thornton?

A. Dr. Thornton worked for Mr. Heard in the U.K.

Q. Please describe the minutes prepared by Dr. Thornton.

A. He generated a 12-page document which summarized the discussion and the actions of the meeting. While it hit the high points of the three-day session, it certainly was not a transcript of the proceedings.

Q. Following the meeting, did you receive a copy of the minutes that Dr. Thornton prepared?

A. Yes. The minutes were sent to me for my technical review.

Q. What did you do with the minutes when you received them?

A. I reviewed them for technical clarity and made some comments, and had a clean copy circulated to the upper management at Brown & Williamson.

Q. Specifically to whom did you circulate the minutes?

A. To Messrs. Pritchard and Sandefur.

Q. After you circulated the minutes to management, what happened?

A. Mr. Sandefur called me and told me to report immediately to Mr. Pritchard's office to discuss the minutes. I remember this well because at the time Mr. Pritchard's office was in a different building from mine and I had to drop everything to go across town to meet with them.

Q. Who was in Mr. Pritchard's office when you arrived?

A. Ray Pritchard, the Chairman and CEO of Brown & Williamson; Tommie Sandefur, the President and Chief Operating Officer of Brown & Williamson; and Mick McGraw, the General Counsel of Brown & Williamson.

Q. What were you told when you arrived at Mr. Pritchard's office?

A. When I arrived it was immediately apparent that Tommie Sandefur was exercised. He was angry that I had been involved in conversations regarding things like addiction, reduced noxae, biological testing, and safer cigarettes. He indicated that the text of the minutes was full of "contentious material" that should never have been memorialized and that it represented a legal liability for Brown & Williamson if discovered.

Q. What was Mr. Sandefur's demeanor during this meeting?

A. He was incredibly hostile. He kept repeating that the minutes had to be changed and that Brown & Williamson would be in a lot of trouble if these minutes got out. Pritchard and

McGraw basically sat back as Sandefur ranted and raved about how the minutes put us in jeopardy.

Q. Did he mention specific topics that concerned him?

A. Yes, he was concerned with the information related to biological testing and the discussion of Y-1 genetically enhanced tobacco. But, more than anything, he was unhappy with the discussion of safer cigarettes and addiction. He said that if statements about safer cigarettes became public, then it would become clear that Brown & Williamson's current products were unsafe.

Q. What happened next?

A. Mr. Sandefur told Mr. McGraw to "get Kendrick Wells up here."

Q. Was Mr. Wells summoned?

A. Yes. Mick McGraw got on the phone and called Mr. Wells and told him to immediately come up to Mr. Pritchard's office.

Q. What happened when Mr. Wells arrived?

A. Mr. Sandefur reiterated that the minutes were unacceptable as written and again talked about several of the different topics that he found troublesome. He then told Mr. Wells that he should re-write the minutes to "get rid of all the controversial stuff that Wigand got involved with."

Q. Following the meeting were the minutes revised?

A. Yes.

Q. In what way were they revised?

A. Roughly 10 of the 12 pages of the minutes were eliminated, and the remaining text was substantially revised.

Q. What was eliminated?

A. Kendrick Wells eliminated references to material that was considered controversial, including references to smoking and health, Y-1, the discussion of ETS, and any reference to a safer cigarette. Specific areas removed included the discussions on biological testing, the Scientific Advisory Board, ETS, the compendium on smoking and health, Y-1, and ammonia technology.

Q. Dr. Wigand, what is J.D. Exhibit 011303?

A. This is a draft of the original set of minutes prepared by Dr. Ray Thornton.

Q. How long is that set of minutes?

A. It is 12 pages, plus a 1-page attachment.

Q. What is J.D. Exhibit 011304?

A. These are the final minutes after Kendrick Wells vetted them and they were approved by Mr. Pritchard. I was ordered to send them in this form to Alan Heard for distribution to the scientists who had attended the RPG meeting.

Q. How long is that set of minutes?

A. It's two and a half pages.

Q. Are these two exhibits, J.D. Exhibit 011303 and J.D. Exhibit 011304, from the same meeting?

A. Yes.

Q. Who wrote the final, two and a half page version of the minutes?

A. The permanent copy of the minutes – the one that is two and half pages long – was written by Kendrick Wells, who did not even attend the meeting.

Q. I would like to discuss some of the material that was removed from the draft minutes by Kendrick Wells. Earlier you mentioned the issue of biological testing. Was that subject actually discussed at the meeting?

A. Yes.

Q. Was information regarding biological testing removed from the draft minutes by Mr. Wells?

A. Yes.

Q. What information regarding biological testing was removed from the draft minutes by Mr. Wells?

A. If you look at page 3 of the draft minutes you will see that at the very bottom of the page it states:

> Currently, BAT has under development a range of bio-assay tests, but as yet these are not available on a large-scale routine basis. The aim should be to achieve at least a capability equivalent to the U.S. National Toxicology Programme (N.T.P.) "Routine" schedule.

The minutes also discuss testing on page 4 under the heading "Smoke Chemistry" where the draft minutes stated:

> Data is needed on pyrolysis and interactions between smoke components and adventitious chemicals. Our research results generated internally must stand up to external review.

All of this was removed.

Q. What is the significance of the information that was removed here?

A. You will notice that it had been agreed by the scientists, that the company should pursue a testing program that included all of the components of the National Toxicology

Program (NTP) testing protocol, including testing substances generated by pyrolysis (that is burning) and also testing each substance in combination with the other smoke components and not just neat (that is by itself). These practices would have overcome the deficiencies in biological testing that I discussed earlier.

Q. Why was this information considered "contentious"?

A. Because there was a great fear that many of the smoke components would demonstrate a high level of biological activity if tested. Increased biological activity would indicate increased risk of disease to human smokers. The company was afraid that if such tests were conducted and demonstrated high levels of biological activity, and were then discovered in litigation, the company's argument regarding causation would be gutted.

Q. What was Brown & Williamson's response to this concern?

A. Don't do the tests.

Q. Was anything substituted for this information in the final set of minutes, J.D. Exhibit 011304?

A. Yes. On page 2 it simply states:

> JW should arrange a technical specialist meeting regarding bioassays (particularly as they relate to ingredients and other nontobacco materials) including experts from the group companies to identify possible new biological testing methods and applications.

Q. Who is JW?

A. That is me, Jeffrey Wigand.

Q. What was the significance of this revised language?

A. Now, instead of stating what the scientists had concluded – that we needed to implement a rigorous testing protocol based upon the NTP – the revised minutes state simply that we

will hold another meeting to think about testing issues. At a minimum this change was going to delay the testing that the scientists had decided was necessary and, at worst, the change was going to result in the complete abandonment of the testing that was deemed necessary by the scientists.

Q. Dr. Wigand, on page 5 of Dr. Thornton's draft minutes, J.D. Exhibit 011303, there is a section headed "Tobacco Biotechnology – Opportunities," and under that heading there is a mention of Y-1. You earlier indicated that Mr. Sandefur identified the discussion of Y-1 as "contentious." Are you familiar with Y-1?

A. Yes.

Q. Was this discussed at the Vancouver meeting?

A. Yes.

Q. Was information regarding Y-1 removed from the draft minutes by Mr. Wells?

A. Yes.

Q. What information regarding Y-1 was removed from the draft minutes by Mr. Wells?

A. If you look at page 5, all of the following was removed:

> Brown & Williamson's programme for introducing new varieties of nicotiana were described. Both genetic breeding and the use of molecular biology had been used: there were advantages and disadvantages with both techniques, although molecular biology, with the possibility for specific gene identification, showed the greater potential. So far the programme had produced Y-1, a high nicotine flue-cured tobacco, which was now being grown in commercial quantities. However, there were some problems in producing in the U.S.A. and it was necessary to grow off-shore to maintain proprietary control. Regulatory problems might occur with genetically altered material.

Q. What is the significance of the information that was removed here?

A. It demonstrated that Brown & Williamson was modifying tobacco plants to produce higher nicotine content.

Q. Why was this information considered "contentious"?

A. Because it made it clear that we understood that we were in the nicotine delivery business; that we were genetically altering tobacco to deliver higher quantities of nicotine.

Q. Dr. Wigand, earlier you mentioned the issue of safer cigarettes. Were safer cigarettes discussed at the Vancouver meeting?

A. Yes, in great detail.

Q. Was information regarding safer cigarettes removed from the draft minutes by Mr. Wells?

A. Yes.

Q. What information regarding safer cigarettes was removed from the draft minutes, J.D. Exhibit 011303, by Mr. Wells?

A. The following, which appears in the last three paragraphs on page 7 of the draft minutes, was removed:

> Based on lessons learned from the failure of Premier and Favor (both of which attempted to make a huge leap in product modifications) it was proposed that BAT pursue an evolutionary route to a Premier-like product by year 2000; our approach will be responsive to regulatory concern and will be founded upon delivery reduction, e.g. it will gradually reduce tar/nic, biological activity, "Other Noxa", CO and sidestream but avoiding overtly technological product designs. Paramount will be

the requirement of retaining consumer satisfaction in organoleptic terms.

Nicotine is seen as key to our evolving products and the meeting agreed to taking steps to establish proposed further nicotine-related projects (SRG projects will reflect this).

The broad aims of the Product Innovation Strategy were agreed and our current new product technology portfolio of (Greendot (I-III), Day, Coaxial and Nova) was considered appropriate to realizing the aims of this proposed strategy. JW asked that ignition propensity be included in the overall Innovation Strategy.

Q. All of this was removed from the draft minutes by Mr. Wells?

A. Yes.

Q. What is the significance of the information that was removed here?

A. You see that we discussed the reduction of noxae and reducing biological activity in cigarettes. This was a conversation regarding how we might reduce human risk. A discussion of reduced noxae and biological activity implied that there were noxae in the cigarettes and that the cigarettes had biological activity.

Q. What are noxae?

A. Toxic substances and poisons.

Q. Why was this information considered "contentious"?

A. Here it is very obvious, an admission that Brown & Williamson's cigarettes contained poison was certainly seen as potentially damaging to the company's position in product liability litigation and would be harmful to the company's public relations if it became public knowledge. The same was true for an admission of biological activity. Mr. Sandefur had expressed to me several times his concern that any discussion of safer cigarettes would imply that Brown & Williamson's cigarettes as sold at the time were not

safe, and that would expose the company to liability. Any discussion that suggested that carcinogens and reproductive toxicants could be removed from tobacco smoke suggested that the products as produced caused disease and could be made safer.

Q. Is there anything else of significance in the language that was removed here?

A. Dr. Thornton wrote "Nicotine is seen as key to our evolving products."

Q. Why was this information considered "contentious"?

A. With respect to nicotine, this language again made it clear that the key to our product was nicotine and that we understood that we were in the nicotine delivery business.

Q. Doctor, on page 6 of the original meeting minutes there's a discussion of "Low Nicotine Cigarettes." Was there a discussion of low nicotine cigarettes at the Vancouver meeting?

A. Yes.

Q. Does the discussion of low nicotine cigarettes appear in the minutes after they were edited by Mr. Wells?

A. No.

Q. Dr. Wigand, can you please turn to the final page of the minutes as originally drafted by Dr. Ray Thornton, the scientist, J.D. Exhibit 011303. It discusses future meetings that were to be scheduled and the topics that were to be discussed. Do you see that?

A. Yes, I do.

Q. According to this original set of minutes, how many different types of meetings were proposed at the Vancouver meeting?

A. Nine.

Q. In the original draft from Dr. Thornton, number three was "Biological Methodology," which was going to be scheduled in the United States in the first quarter of 1990, correct?

A. That's correct.

Q. According to the minutes as finally issued, how many different types of meetings were proposed at the Vancouver meeting?

A. Only eight.

Q. Which one was removed from the final version of the minutes?

A. Biological testing.

Q. Did the Vancouver meeting actually discuss scheduling a future meeting on biological testing?

A. Yes, biological testing was indeed included among the topics we proposed discussing at a future meeting.

Q. Did a meeting on biological testing ever occur?

A. No.

Q. Doctor, which version of the minutes was circulated as the official version of what actually happened at the Vancouver meeting?

A. I was ordered by Ray Pritchard who was Chairman and CEO to send the two and a half page lawyer edited version of the minutes to Alan Heard, with the request that it be distributed to the rest of the BAT Group companies as revised.

Q. Dr. Wigand, please explain J.D. Exhibit 010471 for the Court.

A. The first page of this exhibit is a fax cover sheet that was used by my secretary Martha Thomas to send the minutes as edited to Alan Heard.

Q. Is there anything noteworthy about this exhibit?

A. Yes. First, you will notice that it is signed by my secretary Martha Thomas and not by me. Normally I would have signed or initialed this since it was a note to Alan Heard. But, because I did not approve of the editing of the scientific minutes by a lawyer I refused to sign the note. Second, you will notice that it states that this version had been "approved" by Mr. Pritchard, another non-scientist. His approval was to provide the weight necessary to make sure that the revisions were accepted throughout BAT. Third, it indicates that it has been "reviewed by Legal Dept." Fourth, you will notice the unusually long time period for review and approval. The fax cover sheet is dated December 8, 1989. As you will recall, the meeting was held in September and the original draft of the minutes were sent to me in September, over two months before Brown & Williamson finally approved the minutes.

Q. Dr. Wigand would you also please explain U.S. Exhibit 30,923 for the Court?

A. Yes, this is a copy of the original set of minutes from Dr. Thornton, but it has numerous editing marks and marginalia.

Q. Have you seen this document before with these markings?

A. Yes. At or shortly after the meeting with Pritchard, Sandefur, McGraw and Wells, I gave Kendrick Wells a copy of the minutes with my technical corrections noted. This exhibit has those technical notes, as well as numerous other edits that I recognize as Kendrick Wells' handwriting.

Q. Did you see this version with Kendrick Wells' edits back in the fall of 1989?

A. Yes. He showed me the edits he proposed. Then in November he sent another draft of the minutes to me that were essentially if not exactly the two-and-a-half page version that was ultimately issued.

Q. Dr. Wigand I have shown to you what has been marked as U.S. Exhibit 89,369. What is this document?

A. This is the cover memorandum from November 1989 to me from Kendrick Wells where he attaches his revised version of the minutes.

Q. Have you ever heard that Kendrick Wells claims that you edited the minutes?

A. I have read his prior testimony, which includes claims to that effect.

Q. Is that true?

A. Well, it is certainly a gross exaggeration. As I previously stated, I did make several notes on the original longer minutes and gave those to Kendrick Wells at or shortly after the meeting in Mr. Pritchard's office. Beyond those technical corrections, I did not make any suggested edits.

Q. To finish up on this matter, could you list for the Court the issues that were removed from the first version of the minutes prepared by a scientist who attended the Vancouver meeting and excluded from the final version of the minutes prepared by a lawyer who did not attend the meeting?

A. Yes. As I indicated, it was anything that was considered sensitive in terms of smoking and health, especially in regards to the negative impact the information might have on products liability litigation. The issues included safer cigarettes, biological assays and biological testing methodologies, and selective reduction of noxae.

C. BAT'S COMPREHENSIVE CONTROL OF SCIENTIFIC ACTIVITIES: THE JANUARY 1990 NEW YORK CITY MEETING

Q. Can you describe the reaction within the BAT Group as a result of the Vancouver minutes?

A. There was an alarmed reaction. There was concern that the scientists would put the BAT Group in harm's way in litigation. There was concern that scientists' statements would contradict the public statements and legal positions being taken by the company.

Q. Dr. Wigand, let me show you U.S. Exhibit 22,032, entitled "Research Documents Agenda." Are you familiar with this document?

A. Yes, I am.

Q. What is this document?

A. It is the agenda for a meeting held in New York City in January 1990.

Q. Who attended this meeting?

A. Each of the number one scientists from the BAT Group companies who had attended the September 1989 RPG meeting in Vancouver, except for Wills from Australia, along with an attorney from each of those companies. Also the chief BAT Group lawyer from BAT Industries attended the meeting.

Q. Did you attend the meeting?

A. Yes.

Q. Did you receive a copy of U.S. Exhibit 22,032 at the meeting?

A. Yes.

Q. And did a lawyer from Brown & Williamson also attend the meeting?

A. Yes, Kendrick Wells attended.

Q. Were you told the purpose of this meeting?

A. Yes.

Q. What was the purpose of this meeting in New York in January 1990?

A. Earlier I testified about the September 1989 scientific meeting in Vancouver. I was told that the minutes from that meeting created significant consternation. This alarm went all the way to the Chairman and CEO of BAT Industries, Sir Patrick Sheehy. He ordered the number one attorney for BAT Industries to bring all the top scientists, along with company lawyers, together in New York and to solidify a method by which records related to scientific meetings and scientific research would be handled in the future.

Q. Who called the meeting?

A. The directive to attend came from Stuart Chalfen, through either Sandefur or Pritchard. Chalfen was the Solicitor at BAT Industries, the chief lawyer for the entire BAT Group of companies. But, it was understood within the entire BAT Group that Sir Patrick Sheehy, the Chairman of BAT Industries, had ordered that the meeting be held. In fact, I recall that Chalfen opened the meeting by saying that "our boss," meaning Sheehy, was upset about the minutes from the Vancouver meeting and about documents emanating from research and development. After Chalfen opened the meeting, Nick Cannar took over and led the rest of the meeting through each of the points on the agenda.

Q. What was Nick Cannar's position at that time?

A. He was the head of BATCo's legal department.

Q. At the end of the document just above the date is a set of letters "NBC/CEC." What do those letters mean?

A. "NBC" refers to the author of the agenda, Nicholas Cannar.

Q. I would like to discuss the parts of this agenda in sequence. The first section is titled "Introduction," and this section says:

- **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.**

What does the first item – "Concern about volume of research documentation spread around the Group" -- mean?

A. "The Group" means the entire group of BAT CAC companies, but particularly those with research centers which included BATCo, Brown & Williamson, Imperial, Souza Cruz and BAT Cigaretten Fabriken. The "concern" refers to the concern that scientific documents containing potentially damaging information were finding their way to the United States, and that might lead to the documents being produced in litigation.

Q. How did you become aware of this concern?

A. Clearly during the uproar over the Vancouver minutes I became very aware of the concern over documents in general, and then during the course of this meeting in New York the discussion led by Mr. Cannar included significant conversation regarding the dangers of allowing contentious research documents to be freely circulated among the various BAT Group companies.

Q. The next item in the "Introduction" section is simply the word "Discovery." To what does this refer?

A. That relates to the concern that documents with sensitive and damaging information, that was contradictory to the company's public statements, would become available to an adversary through the discovery process, particularly in the United States.

Q. Was the issue of documents becoming available through litigation discovery discussed at the meeting?

A. Yes.

Q. What was the substance of that conversation?

A. Basically, the scientists were told by Mr. Cannar that our research and development departments needed to take greater care when creating documents so that the content was not contentious, and that we needed to limit to the greatest extent possible the distribution of documentation to other BAT Group companies.

Q. Finally the "Introduction" finishes with a statement related to the "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." Can you explain this statement to the Court?

A. Yes. This statement relates to the concern that if documents from research facilities, particularly those outside the United States, were to end up in litigation in the United States that BAT scientists from the U.K. might also be forced to explain documents that were contradictory to the stated position of the company. Everyone knew that the United States was under a blanket of litigation.

Q. Next I would like to ask you to explain some of the statements under the heading "Issues/Proposals." This section of the document states as follows:

> **1. Restrict current flow of research related documents by:**
> **a) Ensuring that each company only receives research reports from other companies for which it has an identified need and from which it will receive a benefit in terms of its current research activity.**
> **b) Ensuring that all telexes, letters, facsimile, minutes and memoranda sent by scientists in one research centre to scientists in an overseas research centre go**

through and are approved by the Head of Research in the sending company.

c) Limiting each company's access to the computer database so that it can only see extracts of reports produced overseas which are relevant to its current research activities.

2. Improve quality of 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.

3. Develop a standard form of funding agreement which recognizes each company's claim to ownership/confidentiality of its research reports and which provides for return of all copies of these documents upon demand.

4. Tighten the document retention policy in each company to the extent permitted by current litigation/discovery requests.

5. Scientific Research Group – is this Group working satisfactorily, are the documents which it issues useful and acceptable, how important is its function considered to be from a legal standpoint?

6. Are the lawyers sufficiently educated about the problems that can arise in relation to research documentation? Is there a need to establish an agreed standard? How should this be done?

What was meant by the first point: "Restrict current flow of research related documents"?

A. We were told at the meeting that the entire purpose for the meeting and the policy that was being developed was to prevent – to the greatest extent possible – the exchange of information and scientific documents, particularly with respect to documents that might be sent to the United States.

Q. Was a policy implemented following the meeting regarding the exchange of scientific documents between companies in the Group?

A. Yes.

Q. What was that policy?

A. Each company was required to demonstrate specific research that would be aided by information from a sister company before it could receive information.

Q. What impact did the policy have on scientific operations?

A. It stymied the free flow of scientific information throughout the group. This made it much more difficult for those of us in research and development to do our work.

Q. Doctor Wigand, were each of these restrictions in item number 1 discussed at the meeting?

A. Yes, they were.

Q. Now turning to page 2, still under the heading "Issues/Proposals," there is an entry number 2, which discuses improvement in the "quality of documents." To what does this entry refer?

A. Again at the meeting, it was explained by Nick Cannar that sharing of some limited information between the research centers could continue if the scientific documents were better written to exclude references to sensitive smoking and health issues. So, for example, the reference to, "Educating scientists in each research centre about document writing/document creation," refers to training sessions that all scientists were required to attend after this meeting in New York. These sessions were called "caution in writing" seminars and at Brown & Williamson they were presented by lawyers, predominantly from Shook, Hardy & Bacon.

Q. Was the issue of document creation discussed at the meeting in New York?

A. Yes, quite extensively.

Q. What was decided?

A. We were told that each company would institute these "caution in writing" seminars where the lawyers would instruct scientists on how to sanitize the documents they created.

Q. Item 2 under "Issues/Proposals" goes on to state that we would "Improve the quality of documents by . . . b) Regular lawyer reviews and audits of scientific documents produced in each company." Explain to the Court the reference to "lawyer reviews."

A. This is referring to a policy that was discussed at the meeting and subsequently implemented. We were told that scientific documents that included any sensitive information must be reviewed and approved by a company lawyer before they could be sent to other Group companies.

Q. Finally point 2. c), states:

> **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.**

Dr. Wigand, is having lawyers "vet" research-related conference minutes what happened with those Vancouver minutes?

A. Yes.

Q. Was this issue discussed at the meeting?

A. Absolutely. Since the meeting was really driven in large part by the Vancouver minutes, this was a central area of discussion.

Q. Were you told at the meeting what was meant by "vetted?"

A. Yes. Again, 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.

Q. Continuing on, item 3 under "Issues/Proposals" states as follows:

> **Develop a standard form of funding agreement which recognizes each company's claim to ownership/confidentiality of its research reports and which provides for return of all copies of these documents upon demand.**

What does this mean?

A. At the time, the various BAT Group companies who had research centers shared the cost of that research through a cost-sharing agreement. As I testified earlier, it was announced at the meeting by Messrs. Cannar and Wells that the cost-sharing agreement should be re-written so that BATCo could call back all copies of its reports on demand.

Q. At this New York City meeting, did the lawyers explain the purpose for this revision to the cost-sharing agreement?

A. Yes. They said that if this provision was added, then if Brown & Williamson was facing production of scientific documents in litigation, each of the other companies could demand all copies of their documents back and thereby avoid production of the documents in litigation.

Q. How would you summarize the purpose of the New York City meeting?

A. Basically the meeting was to order that scientific documents be reviewed by lawyers, that creation of documents should be limited and done in a way so as to avoid including any damaging statements in documents, and to develop a distribution policy that would, to the greatest extent possible, keep documents that contain contentious language or that contradicted the public position of the company out of the United States.

D. POST JANUARY 1990 POLICIES AND PRACTICES

1. *Legal Reviewed Sensitive Documents Before Scientists Could See Them*

Q. Did the BAT Group of companies cooperate on research projects on an international basis?

A. Yes, they did.

Q. Did they share research results?

A. Generally they did.

Q. Did you regularly communicate with scientists involved with BATCo or other affiliated companies?

A. Yes, I did.

Q. Did you regularly get scientific reports from England?

A. Yes, as long as the report did not deal with anything contentious, I would routinely receive it.

Q. What happened if a report contained "contentious" information?

A. If it contained contentious information it was handled very differently. I became aware that Ray Thornton would travel to the United States and meet with Kendrick Wells. During those meetings Mr. Wells would review documents that Thornton had brought. Wells would either approve a document for delivery to the scientists, edit the document

and then allow it to be delivered to the scientists, or send the document back to the U.K. because it contained information that was too contentious.

Q. Did you participate in these review meetings with Mr. Wells?

A. No.

Q. Then how do you know what happened in these meetings?

A. After the meetings, Ray Thornton would either stop by my office or we would meet socially. He explained to me that he would sit down with Wells and go over documents before they were issued in final form. He explained to me how the documents were handled.

Q. Were the documents always passed on to you after Kendrick Wells reviewed them?

A. No. Sometimes the documents were determined to be too sensitive to be kept in the United States, so I was not allowed to see them and they were sent back to the original author entity.

Q. So the regular procedure that was set up was for Kendrick Wells to review scientific documents before you received them?

A. Not in all cases. As I stated, Kendrick Wells only reviewed documents that addressed contentious issues, such as biological research, nicotine addiction, safer cigarettes, ETS, and noxae.

Q. If you never received these documents, or only saw them after they were vetted, how do you know that documents were kept outside the United States or what subject matter was excised?

A. Because in several instances Alan Heard would fax documents to my home so that I could see them and comment on them. Often times the documents that were faxed to me for review would never come to me through normal channels.

Q. What did you do with the documents that were faxed to your home?

A. The understanding that I had with Alan Heard was that I would review and comment on the documents, and then destroy them.

Q. Did you destroy them?

A. Yes.

Q. Why did you destroy the documents?

A. Because both Alan and I knew that pursuant to the policies put in place at the New York meeting these documents were not to be sent to the United States without prior review and approval by Kendrick Wells.

2. Caution In Writing Seminars

Q. You mentioned that "caution in writing" seminars were discussed at the New York City meeting in January 1990. Please explain these "caution in writing" sessions for the Court.

A. The "caution in writing" seminars happened almost immediately after the January 1990 meeting. There were two sessions held in the Research and Development cafeteria, which were conducted by an attorney from Shook, Hardy & Bacon. During the sessions we were told how to avoid writing documents with contentious words and topics.

Q. What were some of the "contentious words" you were told to avoid?

A. "Safer," "addictive," "disease," and "cancer."

Q. What were the instructions that were given to you and your scientists in research and development?

A. My entire staff and I were instructed at the training sessions not to create documents that had controversial content or to use controversial words, such as "lung cancer" or "emphysema."

Q. Is this the same controversial content that you have testified about already in relation to the Vancouver minutes?

A. Yes. Basically we were told not to create anything that conflicted with the company's public positions and to be careful about anything we wrote in the area of smoking and health.

Q. Were you aware of why these special writing seminars were set up for you and your staff in Research and Development?

A. Yes.

Q. Why were you and your staff required to participate in the special writing seminars?

A. I was told at the New York City meeting by Nick Cannar, that the concern was that particular areas in the company were most susceptible of producing documents that would be detrimental to the company's position in litigation. The scientists in research and development understood the truth about smoking and health, so they found it difficult to write while turning off that knowledge. Thus, research and development was seen as the likely source of damaging documents. This fear was reinforced by the Vancouver minutes.

3. Company-wide document management sessions

Q. Dr. Wigand, I am showing you U.S. Exhibit 88,651. What is it?

A. This is a September 7, 1990, memo from Mr. Sandefur, who was the President and Chief Operating Officer of Brown & Williamson at the time, to all employees.

Q. Were you employed at Brown & Williamson on September 7, 1990?

A. Yes, I was Vice President of Research & Development.

Q. As an employee did you receive a copy of this memorandum?

A. Yes, I did.

Q. The title of the document is "Managing Information." The document states:

> **For years our corporate culture has encouraged a heavy flow of written communication. The time has come to change that way of thinking. Unnecessary paperwork drains resources and diverts energy from more productive uses of our time. If we are going to change for the better, we all have to take an active part.**
>
> **So each of us must look closely at how we communicate on a day-to-day basis. We have to challenge the routine. And we must be willing to make some basic changes in how we operate.**
>
> **Communication of the attached policy is an important first step. During the fourth quarter of 1990, employee meetings will be held to discuss records management in B&W and your role in the process.**

Doctor, do you remember meetings being held to discuss records management within the company following the release of this memorandum?

A. Yes.

Q. What was the message that was given concerning records management at these meetings?

A. The dominant message was don't write anything that could be considered contentious or controversial as it relates to smoking and health and that might make its way into the

public domain through litigation or otherwise. This is the message that had already been conveyed to the scientists at the "caution in writing" seminars. Now, this same message was being spread to the rest of the company.

Q. Were these sessions just for top management?

A. No. Ultimately, all company employees were expected to attend training sessions. In fact, a solid annual performance appraisal was predicated on attendance at these required meetings, as well as adherence to the policy.

Q. Dr. Wigand, what is U.S. Exhibit *29,646?

A. This is a BATCo document entitled "Records Management Program: Records Creation." These look like the training materials that were used throughout the BAT Group of companies to train people on document management issues, including document creation, or perhaps I should call it document non-creation.

Q. The document states on page 4:

> **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.**

Was that the policy that was imparted to you at Brown & Williamson?

A. Yes, it was. As I stated earlier, instead of putting things on paper we were told to pick up the telephone and talk to people.

Q. The document goes on to state:

> **In order to help your [sic] decide 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 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.

Doctor, was this "mental copy rule" in place at Brown & Williamson while you were at the company?

A. Yes, it was.

Q. So, you were aware of the mental copy rule?

A. Yes.

Q. What was the mental copy rule?

A. In the training we were instructed to consider whether we would want a document to be read by a person who was not aligned with the company's interests. You were then told to ask yourself whether you would want that person to see the document. If you would not want that person to see the document, you were told not to create the document.

Q. Were you given examples of people or places that you should use in this mental exercise?

A. Yes. We were told to consider publication of the document in the newspaper or being questioned about the document on the witness stand in a trial.

Q. As you understood it, was the policy on records retention uniform among the sister companies, in particular, BATCO and BROWN & WILLIAMSON?

A. Yes, it was standardized. This was particularly emphasized in the "caution in writing" seminars that were held for the Research and Development staff following the meeting in New York City in January 1990. The company-wide training sessions took place somewhat later.

Q. We have talked about sensitive information before, but you have also used the term "controversial." What do you mean by controversial documents?

A. The words were used interchangeably. Any document that said anything that was contrary to Brown & Williamson's stated public position or anything that suggested directly or by implication that the current product was not safe (including any suggestion that a less hazardous product could be created) was considered both sensitive and controversial.

4. Collect and Destroy

Q. I am showing you U.S. Exhibit 89,372. This is a memorandum dated March 16, 1990, from Kendrick Wells to Messrs. Sandefur and Pritchard. The document has a handwritten cover note to you dated three days later, on March 19, 1990, and that cover note refers in handwriting to "Tommie." To whom is that referring?

A. That refers to Tommie Sandefur, the President and Chief Operating Officer of Brown & Williamson at the time.

Q. The cover note appears to be signed "Kendrick." Who is that?

A. Kendrick Wells, the Assistant General Counsel for Product Litigation.

Q. Dr. Wigand, the cover note states, "Tommie asked me to collect this memo when read, so I would appreciate it if you returned it to me at your convenience. It should not be distributed. Earl has seen it." What's this note all about?

A. Well, this is one of the usual ways of circulating documents, retrieving them and sequestering them and/or destroying them, particularly if the attachment had anything about smoking and health in it. It was one way of managing documents so that internal

company documents would not contain any information that was contradictory to what the company was saying publicly.

Q. Dr. Wigand, was it a common practice within Brown & Williamson for you to be asked to return documents without copying them so that they could be destroyed?

A. Yes, particularly after the January 1990 meeting in New York.

5. TSRT Minutes Sequestered at BATUS

Q. Dr. Wigand, you have explained that certain scientific documents were kept from you and shipped back to the United Kingdom. Please remind the Court why those documents were returned to the United Kingdom.

A. This was to prevent the documents from becoming available in litigation in the United States.

Q. Were there other document management procedures designed to prevent the disclosure of scientific documents?

A. Yes. Documents related to the Tobacco Strategy Group (TSG) meetings were sent to and kept at BATUS rather than Brown & Williamson. If Brown & Williamson executives wanted to read the documents they had to go over to the BATUS offices. BATUS was the holding company that was the direct parent of Brown & Williamson.

Q. Remind us briefly what the TSG was?

A. The TSG was comprised of the top executives from the BAT Group Cigarette Affiliated Companies (CAC), and set the research priorities for the entire BAT Group of companies.

Q. As Vice President of Research & Development at Brown & Williamson, were you a member of the TSG?

A. No.

Q. And, did you attend TSG meetings?

A. No. But, I would prepare Y-1 status reports for Mr. Pritchard for his use at those meetings.

Q. You mentioned documents being kept at BATUS. Specifically, what documents related to the TSG were kept at BATUS?

A. Minutes that memorialized the TSG meetings were kept at BATUS. If anyone wanted to read them, including Ray Pritchard and Tommie Sandefur, they had to travel over to the BATUS offices, which were in a different building.

Q. Were you allowed to read the minutes of the TSG meetings?

A. Not in their entirety. If management wanted me to see a portion of the TSG minutes, they would excerpt that portion for my review.

Q. Dr. Wigand, please look at U.S. Exhibit 89,370. What is this document?

A. This is an example of the type of excerpt that I would sometimes receive after the TSG meetings. As you can see, only minute item number 25 was provided in this excerpt, not the entire set of minutes.

Q. What was the purpose of this document management procedure?

A. Again, like many of the other Brown & Williamson document management policies, it was designed to prevent the circulation of sensitive documents.

6. Lawyer Control of Scientists with Sensitive Skill Sets

Q. Where there other ways in which lawyers controlled science while you were at Brown & Williamson?

A. Yes. The law department closely monitored and managed one of my staff members, who worked in a particularly sensitive specialty.

Q. What staff member was that?

A. Scott Appleton.

Q. Can you explain how the close monitoring and management of Mr. Appleton began?

A. Yes. You see, when I arrived at Brown & Williamson I recommended that additional staff be hired to fill a number of different skill sets. In particular, Brown & Williamson had never had a toxicologist. As such, I did not feel that the way in which additives were reviewed within the company was state-of-the-art, nor did it meet what I considered technical due diligence.

Q. What are additives?

A. Additives refer to all intentional chemicals, glues, flavors and paper used in the manufacture of cigarettes. It was everything that was consumed by the burning process of smoking a cigarette and what a human would be exposed to in the process of inhaling cigarette smoke.

Q. How were additives reviewed when you arrived at Brown & Williamson?

A. When I arrived additives were not scientifically reviewed in the manner consistent with what I had experienced in the health care industry for substances that were consumed and used by humans, nor did the review meet what I thought was the appropriate scientific duty of care necessary to prevent further risk to the user.

Q. What exactly was the review process when you arrived at Brown & Williamson?

A. Any given additive or ingredient that was used in cigarette manufacturing was evaluated using only the published literature. Generally this involved researching whether the chemical substance additive was GRAS approved.

Q. What do you mean by GRAS approved?

A. The GRAS ingredient listing is an FDA designation for chemical substances that have been "grandfathered" as safe in humans after extensive use in the area of foods and cosmetics. With foods and cosmetics, however, the substance is bio-transformed or bio-detoxified in the normal organ systems of the human body, such as the stomach and liver, and is excreted without causing any direct toxic damage. Additives in cigarettes are not introduced into the body through this normal organ system. Rather, cigarette additives are used in a dramatically different manner; they are pyrolyzed (i.e. burned) and have direct access to vital organ systems, such as the heart, lungs and brain.

Q. Why did you feel that reliance on GRAS was insufficient?

A. The pyrolytic fate of an additive was never evaluated when GRAS was established. So, there was no certainty that the additive was safe for human inhalation either neat (that is, by itself) or in combination with the other additives or tobacco that was being pyrolyzed. I felt that this was grossly inadequate and was a potential area for reduction in cigarette toxicity.

Q. Did you propose changes to the additive approval process?

A. Yes. I wanted to create a tiered system of chemical and biological analysis which would demonstrate that the given additive was safe as used and that the science used to determine this was robust and met the standard of the state-of-the-art.

Q. Did you express your opinion regarding what you thought was the appropriate mechanism for approving additives?

A. Yes. I told Mr. Sandefur and others that we should be following the National Toxicology Program Protocol, which is also known as the NTP Protocol.

Q. What was Mr. Sandefur's response?

A. He told me that there would be no biological testing at Brown & Williamson either in house or via contract.

Q. Can you explain the NTP Protocol to the Court?

The NTP system of biological testing uses a tiered approach to asses the effect of a given substance on a living system, starting first at the most rudimentary level and progressing through the more complex living systems. It is divided into two parts; in vitro, which involves test tube testing, and in vivo, which involves tests in living animal systems. The principle applied is that you continue to test the agent until there is a dose response in the system tested. One never gets to human testing unless it has gone through all of the preceding stages without demonstrating a dose response.

Q. Did you do anything to rectify this shortcoming?

A. Yes. As early as my interviews I indicated that I would expect to hire an in-house toxicologist to help move the Research and Development Department toward an analytically based organization. Unfortunately my attempts in this regard were never fully implemented.

Q. In what way were your efforts not fully implemented?

A. First, I had to have my choice for a scientist approved by the products liability lawyers. Second, once hired, the toxicologist was closely monitored by Kendrick Wells, one of

Brown & Williamson's lawyers. Mr. Wells would generally not allow the toxicologist to conduct research that was biologically based. Third, on many issues, the toxicologist was asked to report directly to Mr. Sandefur rather than reporting to me. Fourth, even after I was finally permitted to hire a pre-approved toxicologist, I was told by Mr. Sandefur that it would be too dangerous to pursue the analytical and biological testing that I considered to be good scientific practice.

Q. What was the Law Department's reaction to your desire to hire a toxicologist?

A. They were not particularly supportive and demanded to be given the right to approve the candidate for the position before I offered the candidate the job.

Q. From whom were you required to obtain approval?

A. I was required to obtain the approval of the law department, particularly Kendrick Wells, before I could hire a toxicologist. Indeed, I had numerous battles with Mr. Wells leading up to and following Scott's arrival.

Q. Dr. Wigand what is U.S. Exhibit 79,219?

A. This is a file note regarding Scott Appleton prepared by Kendrick Wells just before Scott arrived at Brown & Williamson. It is copied to Kendrick's boss Mick McGraw. The file note appears to have been prepared to report on Kendrick's efforts to control the situation. For example, this demonstrates that Kendrick, rather than I, was orchestrating Scott's orientation.

Q. If you will look at the second paragraph of U.S. Exhibit 79,219 it states:

> **I told Jeff that hiring a certified toxicologist (Scott) had implications for our management of him. Because of his credentials, any unfortunate statements he makes on key issue have the potential to be particularly troublesome in the hands of an adversary. This means that Scott should work especially closely with me for some time and that Jeff should be wary in how**

he manages Scott in terms of areas and types of assignments and authority given to Scott.

Do you recall such a conversation with Kendrick Wells?

A. Yes. He was terribly concerned regarding the hiring of a toxicologist.

Q. Did he tell you why he was concerned?

A. Yes. In 1991, every toxicologist knew that nicotine was addictive and that smoking caused disease and death; so Kendrick had a great concern regarding what any toxicologist would say that might contradict the positions that the company was taking publicly and in litigation.

Q. Given this concern why were you interested in hiring a toxicologist?

A. As I stated, I was primarily concerned that our additives approval process was not state-of-the-art and did not meet required professional diligence.

Q. What role did you envision Dr. Appleton playing with respect to additives when you sought to hire him?

A. I wanted to give Scott full authority over the additives panel in its role of approving additives. I also wanted Scott to be Brown & Williamson's representative to the Scientific Research Group (SRG) so that he could argue for funding of studies that related to additives and the reduction of selective noxae in cigarette smoke.

Q. Was Dr. Appleton ultimately given full authority over the additives panel?

A. Not during my tenure with the company. At all times while I was at Brown & Williamson, Kendrick Wells was one of three people on the additives panel. And, like in many other areas of the scientific work at Brown & Williamson, Kendrick had the ability to vet and veto what was being done by the additives panel.

Q. Is there anything else significant regarding U.S. Exhibit 79,219?

A. Yes. It references the review of scientific documents that I testified about earlier. If you look at the heading on the second page of the file note entitled "BATCo. Documents Received," you will see that it states:

> Jeff 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.

Q. Why is this statement significant?

A. This statement is significant in two respects. First, it confirms the process that grew out of the January 1990 New York City meeting whereby legal would vet all scientific documents, even meeting minutes and scientific memoranda. Second, it demonstrates the concern over statements that could be interpreted as support for the notion that a safer cigarette could be made. Mr. Wells was concerned that BATCo's claim that it could selectively remove minute materials from cigarettes suggested the ability to manufacture a safer product.

E. REASONS FOR SUPPRESSION

1. Avoid production of documents in litigation

Q. I would like to discuss the reasons behind the policies that you have testified about. Did you become aware of the reasons why these policies were put in place?

A. Yes. In conversations with Tommie Sandefur, Kendrick Wells, and Earl Kohnhorst, as well as at the meeting in New York City, I became aware of the reasons why these policies were instituted.

Q. And, why were these policies instituted?

A. The vetting of scientific documents by lawyers was to prevent or remove any reference to smoking and health issues from documents that might be discovered by adversaries during litigation.

Q. When they vetted documents did the lawyers remove information?

A. Yes.

Q. What kinds of information did they remove?

A. Within the company the lawyers talked about eliminating any information that they considered "contentious," "sensitive," or difficult to explain in litigation.

Q. Did you come to understand what was meant by "contentious" and "sensitive?"

A. Yes. These were nice ways of referring to anything that could be discovered during any kind of liability action and then used against the company in that litigation. Broadly speaking these words were referring to causation and addiction.

Q. What were the "contentious" issues?

A. The contentious issues included anything related to smoking and health, addiction, fire safe cigarettes, ETS, biological activity, additives (particularly those that dealt with liberating free nicotine from tobacco), compensation, free nicotine, elasticity, smoker behavior, and certainly safer cigarettes. In short, anything that could arguably suggest

that nicotine or cigarettes were addictive, and anything related to the negative health consequences of smoking.

Q. Were you ever told why the issue of safer cigarettes was considered so "contentious?"

A. Yes. Tommie Sandefur, the President and Chief Operating Officer, as well as the in-house lawyers, made direct statements to me to the effect that anything that alluded to a safer cigarette clearly indicated that the current cigarettes were unsafe, and that such statements would be destructive to the company's position in smoking and health litigation.

Q. Looking at U.S. Exhibit 89,371, this is a memo from a Mr. Pittman, to all directors and department managers. Does this document pre-date your tenure at Brown & Williamson?

A. Yes, but it is consistent with what I experienced when I was at the company.

Q. The document begins:

> **Communications about the smoking and health controversy or other political subjects sent from B&W to the outside world involve special legal risks. Accordingly, we are establishing a procedure to deal with those risks.**
>
> **All external communications which mention the smoking and health controversy or other political subjects and which identify the author as an employee of B&W (e.g., on B&W letterhead) must be approved by the Law Department prior to dissemination. An external communication is any communication, correspondence or other, which goes outside B&W.**

Doctor, was it Brown & Williamson policy while you were at the company to have the lawyers review and vet external communications by scientists before they could be sent?

A. Yes.

Q. The document goes on to state, "[p]roposed external communications shall be submitted in final form to Kendrick Wells in the Law Department for review." Was Mr. Wells still in the law department when you were at Brown & Williamson?

A. Yes, he was.

Q. Was he a trained scientist?

A. No. He had no scientific training.

Q. I'm now going to show you U.S. Exhibit 78,246. This is a document dated January 29, 1985, entitled "Procedure for Clearing Scientific and Other Documents Intended for INFOTAB, TAC, other Members of the Industry, ISC or Other People Outside the Group." It begins by stating, "[t]he following procedure has been agreed by Mr. Bruell and Mr. Pritchard." Who were Messrs. Bruell and Pritchard?

A. Mr. Bruell was the senior executive of BATCo at the time. Mr. Pritchard was in the U.K. in 1985. I believe he was worldwide head of tobacco leaf at that time. Ultimately he became the Chairman and Chief Executive Officer of Brown & Williamson.

Q. Was this procedure for the clearance of documents by lawyers before being sent to other industry organizations in place while you were the head of research and development at Brown & Williamson?

A. Yes, but the enforcement of the policy became more robust after the meeting in New York City in January 1990.

2. Prevent Documentation that Was Contrary to Brown & Williamson's Publicly Stated Positions

Q. Aside from litigation, were there other reasons explained to you as to why Brown and Williamson wanted to avoid sensitive documents?

A. Yes.

Q. What was the reason?

A. The company wanted to avoid any documents from becoming public that were contrary to the company's stated public positions on smoking and health and the addictiveness of nicotine.

3. Avoid Impact on the Bottom Line

Q. Did you object to the actions by Mr. Wells to suppress and edit scientific information?

A. Yes.

Q. To whom did you object?

A. Messrs. Sandefur and Pritchard.

Q. How did Messrs. Sandefur and Pritchard receive your objections regarding Mr. Wells' suppression and editing of scientific information?

A. They fully supported the suppression and editing.

Q. Did Mr. Sandefur explain to you his basis for supporting these efforts to suppress and edit scientific information?

A. Yes.

Q. What was his basis?

A. First, it was protection from litigation. Second, his position was that if science affected sales, then science would take the back seat.

Q. Did he express that to you?

A. Yes, several times over the years that I worked there.

Q. Was that the policy of Brown & Williamson while you worked for the company?

A. Yes.

F. CONCLUSIONS ON SUPPRESSION

Q. In the course of your work at Brown & Williamson, did you become aware that scientific information related to smoking and health issues was being kept from the public?

A. Yes. Numerous times during my tenure at the company I became aware that information was being kept from the public and, indeed, was even being kept from myself and other company scientists.

Q. Through what different means did Brown & Williamson suppress scientific information on smoking and health?

A. There were several avenues through which Brown & Williamson suppressed science and scientific information. First, company lawyers edited scientific documents before they could be released outside the company and even edited minutes from meetings of company scientists before they could be distributed within the BAT Group of companies. Second, lawyers controlled the production and distribution of scientific information within and outside the company; at times blocking me and other company scientists from seeing documents related to scientific work being done within the BAT Group of companies and by external contract scientists.

Q. With respect to the first avenue of suppression – the editing of documents by company lawyers – did you as a scientist take exception to lawyers vetting your scientific work?

A. Yes, I did. Other scientists in the BAT organization also objected to the lawyer involvement in research and the vetting of scientific documents. For example, Richard

Binns, the head of BATCo's Fundamental Research Center in Southampton, England complained several times to me that he was frustrated by the lawyer interference with science.

Q. Dr. Wigand please turn your attention to U.S. Exhibit 21,767. These are Dr. Binns's handwritten notes. The last page of the document states:

> **I told you last week of my grave concern for the way in which problems remain unresolved in the interaction between research and legal functions. I see two basic issues. One is a general problem for BAT Group researchers. The other is a specific problem for individuals.**
>
> **The new strategy for research is a mjor shift in policy. Detailed consideration of how to carry out the new strategy has already uncovered difficulties which need to be resolved, including the key one of communication of information. If the confusion and restrictions to which we are subjected in GR&DC spread to other CAC labs., it will be impossible to co-ordinate group research in any sensible way.**
>
> **Agreement on a <u>modus</u> <u>operandi</u> for researchers and lawyers will have to be worked out. In particular we need to clarify legal aspects of programme development and the exchange of research findings and documents.**
>
> **I am being asked to make significant and sometimes swingeing changes in documents produced recently by R&D staff. It is suggested that this must be done by finding a "meaningful 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 extremely disturbing, particularly if extended beyond the present localized situation.**

Does this statement relate in any way to the frustrations that Dr. Binns expressed to you?

A. Yes. His written words here capture very well what he told me during several conversations that followed the implementation of the policies established at the New York City meeting.

IV. ADDICTION

A. BROWN & WILLIAMSON KNOWLEDGE REGARDING ADDICTION: COMPANY EXECUTIVES

1. "We Are in the Nicotine Delivery Business"

Q. Did you ever discuss with company executives whether nicotine is addictive?

A. Yes, I discussed the addictiveness of nicotine with numerous executives – such as Tommie Sandefur, Ray Pritchard, Earl Kohnhorst, Alan Heard, and Richard Binns – within the Cigarette Affiliated Companies (CAC), including Brown & Williamson and BATCo. It was most definitely understood, throughout the entire BAT organization, that nicotine was addictive.

Q. When did you first become involved in conversations with personnel at Brown & Williamson related to the addictiveness of nicotine?

A. Even before I was hired, during the interview process, I had discussions with Heard, Sandefur, Pritchard, Kohnhorst, and Bullis regarding the addictiveness of nicotine.

Q. Do you remember other specific discussions about addiction with top management after you started working at Brown & Williamson?

A. Yes, soon after I arrived I remember going skiing with Earl Kohnhorst and on the drive home from the Paoli ski resort in Indiana, we talked about his brother who had just been diagnosed with lung cancer. He said that he wished his brother had never become addicted and felt badly that he had fed that addiction by providing free cigarettes to his

brother for years. He said that his brother's illness brought it all home and that he was trying to quit himself.

Q. Some people have said that nicotine is primarily in cigarettes for taste. What was the belief within Brown & Williamson during your tenure as chief scientific officer regarding this issue?

A. I was not aware of anyone within Brown & Williamson who thought that nicotine was in cigarettes primarily for taste. Nicotine was in cigarettes because it kept people smoking.

Q. How did people at Brown & Williamson react when Philip Morris introduced nicotine-free cigarettes?

A. When Philip Morris released Next and Merit De-Nic, it was like a running joke around Brown & Williamson. People throughout the company were saying, "Who the hell is going to smoke cigarettes without nicotine?"

Q. How frequently did you have conversations with high level executives within Brown & Williamson about the addictiveness of nicotine?

A. I had regular conversations with officers of the company, including Ray Pritchard, the Chairman and CEO; Earl Kohnhorst, Executive Vice President of Research and Development, Engineering and Manufacturing; and particularly Tommie Sandefur, the President and Chief Operating Officer. They often stated at strategic planning meetings and product development review meetings that "we [Brown & Williamson] are in the nicotine delivery business and tar is the negative baggage." This statement was commonly used during my tenure with Brown & Williamson.

Q. What did you understand them to mean by: "we are in the nicotine delivery business and tar is the negative baggage?"

A. That statement means that nicotine is what keeps people smoking, and that the tar in cigarettes – the 4,000 to 8,000 chemicals that come from smoke – is what kills people.

Q. Were there any conversations while you were at Brown & Williamson about changing the tar to nicotine ratio?

A. Yes, there were many conversations regarding the belief that if the company could produce a high nicotine delivery cigarette, but reduce the other constituents, the tar, then it was believed that Brown & Williamson would be able to produce a safer cigarette while delivering an addictive level of nicotine. This subject was talked about at the Vancouver meeting, for example.

Q. What was the discussion at the Vancouver meeting?

A. We discussed using Y-1, the genetically enhanced tobacco that had a very high nicotine content, to manipulate the tar to nicotine ratio.

Q. Dr. Wigand, can you explain for the Court what Joint Exhibit 47,528 is?

A. Yes, these are minutes from what was then the annual research and development review of research throughout the BAT Group of companies. The review was intended as an opportunity for all of the chief scientists from the CAC companies to meet and discuss the status of scientific work throughout the BAT Group. This particular review took place from March 21 to 23, 1990.

Q. Did you attend this review?

A. Yes, I attended the review as the chief scientific officer at Brown & Williamson.

Q. Did you receive and review Joint Exhibit 47,528 shortly after the meeting in March 1990?

A. Yes.

Q. Please turn to page 4 of Joint Exhibit 47,528, under the heading "Concluding Comments on Future Work Programme." Would you please read the last sentence for the Court?

A. The general objective for future Group-funded research in Southampton will be: To carry out research for the CAC companies in order to provide the scientific information and technical avenues required for evolutionary products aimed at delivering adequate levels of nicotine with minimum accompanying levels of other components, so as to meet future consumer and regulatory authority needs.

Q. What is Joint Exhibit 47,528 referring to when it states a desire for "products aimed at delivering adequate levels of nicotine with minimum accompanying levels of other components"?

A. This is just another way of expressing the statement that we just discussed, that "we are in the nicotine delivery business, and that tar is the excess baggage." Here, you see that all of the BAT Group chief scientists knew that a specific level of nicotine – the author uses the term "adequate" – is needed to keep the smoker addicted, but that there is a desire to eliminate the other components of smoke, which are known as tar.

2. Project Rainbow: A Gateway Product

Q. Dr. Wigand, are you familiar with something called "Project Rainbow?"

A. Yes.

Q. What was "Project Rainbow"?

A. Project Rainbow was a Brown & Williamson project focused on developing a moist snuff that would serve as a "gateway" product for youth. The project had started before I joined B&W. When I arrived, the program had numerous technical problems. Mr. Sandefur made it clear to me that he was very interested in this product and that I should

attempt to make progress as quickly as possible. He told me to "make sure you take care of this, I want regular reports and I want to know immediately if you make any breakthroughs."

Q. What you do mean by "gateway" product?

A. A "gateway" product, which is also known as a "starter" product, was less harsh than cigarettes, but would lead to nicotine addiction and, ultimately, to cigarette smoking.

Q. How would the moist snuff operate as a "gateway" product?

A. Cigarette smoking is difficult for the initiator because of the harsh effects of smoking, such as headaches and nausea, during the initiation period. Brown & Williamson felt that a less harsh introductory product would help mitigate the undesirable effects of tobacco smoking during the initiation period, while still allowing the user to become addicted to nicotine without smoking. With Project Rainbow, Brown & Williamson hoped to make a moist snuff that was highly flavored, less harsh and more palatable to young users. It would provide for absorption of nicotine through the mouth, and that would lead to addiction. Ultimately the young snuff user would graduate from the gateway product to cigarettes to satisfy their newly acquired addiction to nicotine.

Q. Dr. Wigand, please tell the Court what U.S. Exhibit 89,372 is.

A. This is a March 16, 1990 memo to Ray Pritchard and Tommie Sandefur from Kendrick Wells, the Assistant General Counsel for product litigation, along with the cover note to me from Mr. Wells that we discussed earlier. The memorandum analyzes the potential liability exposure that might result from the sale of moist snuff emanating from Project Rainbow.

Q. Did you have any discussions with Mr. Sandefur related to Project Rainbow?

A. Yes. Mr. Sandefur was obsessed with Project Rainbow. So, at least once a week he would make inquiries about the status of the project.

Q. How would he make these inquiries?

A. Almost every week he would telephone me at least once about Project Rainbow. Then also, each Friday morning there was a series of executive meetings at Brown & Williamson. In between those meetings Mr. Sandefur would ask for a status report on Project Rainbow.

Q. Did he tell you why he was so interested in this project?

A. Yes. Because it was to provide a "gateway" product that would eventually help Brown & Williamson market and sell cigarettes. It was to get new users who would ultimately graduate to become smokers. As he said several times, "we need to hook 'em young and hook 'em for life."

Q. Did you ever ask Mr. Sandefur what he meant by "hook"?

A. Yes. He said that he meant "addict." Whenever he used the term "hooked," I understood that he meant "addicted."

Q. How often would he use the word "hooked"?

A. Frequently.

Q. Did you have any other conversations with Mr. Sandefur regarding the addictiveness of nicotine?

A. Absolutely.

Q. What were those conversations?

A. As I testified earlier, at product development and review meetings, Mr. Sandefur often said, "we are in the nicotine-delivery business and tar is the negative baggage." He

would say this in discussions about altering the standard tar-to-nicotine ratio in cigarettes from 10-to-1 to 1-to-1.

Q. How did his participation in these conversations demonstrate his understanding that nicotine was addictive?

A. In these conversations we discussed the desire to keep the nicotine level constant while lowering the tar level. We discussed the proposition that if Brown & Williamson could accomplish such a change in the tar to nicotine ratio, we could keep smokers addicted while reducing the tar, which was understood to pose the greatest health threat from smoking.

B. BROWN & WILLIAMSON KNOWLEDGE REGARDING ADDICTION: COMPANY SCIENTISTS

1. Early Brown & Williamson Addiction Studies

Q. Did you become aware while you were at Brown & Williamson that the company had done research on nicotine and nicotine addiction prior to your arrival?

A. Yes. In the course of meetings with my counterparts throughout the BAT Group of companies at the Research Policy Group (RPG) meetings or other technical reviews, I learned of a number of projects regarding the boundaries of nicotine pharmacology that had been completed before I arrived at the company; particularly from people like Elmer Litzinger, Bob Johnson, Lance Reynolds and Richard Binns.

Q. What were you told about these projects that were done before you arrived at Brown & Williamson?

A. I was told that in the 1960s there had been a series of studies regarding the boundaries of nicotine pharmacology and the effects of nicotine on animals and humans.

Q. What did you learn about these studies?

A. I was shown a graph that was either part of these studies or grew out of them, which demonstrated that smokers required between 0.4 and 1.2 mg. of nicotine per cigarette to maintain addiction. I was told that the earlier studies had shown that delivery below 0.4 mg. per cigarette did not sustain addiction, and that delivery above 1.2 mg. per cigarette caused the cigarette to become too harsh or irritating.

Q. Earlier you used the phrase "boundaries of nicotine pharmacology." What do you mean by that phrase?

A. These studies looked at the limits of the pharmacological effects of nicotine. That is, what was the minimum nicotine intake necessary to maintain addiction and what was the maximum nicotine intake that smokers could tolerate. The graph I just referenced indicated that .4 to 1.2 milligrams of nicotine were required to maintain smokers.

Q. What do you mean by "maintain smokers"?

A. Keep them addicted so that they would keep smoking and keep buying our prodcuts.

2. Scientific Retreats

Q. Did you have conversations with scientists on your staff about the addictiveness of nicotine?

A. Yes. In fact, while I was the head of Research & Development, I held several day-long planning retreats with key Research & Development staff. The issue of nicotine addiction was discussed in great detail at these planning sessions.

Q. Where were these retreats held?

A. They were held at Clifty Falls, Indiana and French Lick, Indiana.

Q. What specifically was discussed regarding nicotine addiction?

A. The fact that nicotine was addictive was an accepted predicate in these conversations. So, most often the conversations were focused on how we could meet the necessary addictive level of nicotine while reducing the risk of disease from tobacco use.

3. Brown & Williamson's Knowledge Regarding the Pharmacologic Effects of Nicotine

Q. What was the understanding within Brown & Williamson's Research & Development Department regarding whether nicotine was a drug?

A. The scientists at the company understood the physiological impact of nicotine and that it was, therefore, a drug. Certainly Alan Heard, Lance Reynolds, Scott Appleton, and Earl Kohnhorst all understood that nicotine was a drug.

Q. On what do you base that conclusion?

A. Personal conversations which demonstrated that they understood and accepted that nicotine was physiologically active and addictive. In fact, a number of studies had confirmed that nicotine was physiologically active.

Q. Studies by whom?

A. Studies had been conducted both by independent scientists and by BAT scientists.

Q. Did Brown & Williamson believe that cigarettes without nicotine would sell?

A. No.

Q. Why not?

A. Because at Brown & Williamson, we understood that nicotine is associated with impact, satisfaction, and arousal. Without impact, satisfaction, and arousal people would not smoke cigarettes.

Q. When did you learn about the pharmacological properties of nicotine?

A. Actually, I was already aware that nicotine is addictive when I arrived at Brown & Williamson. This was reinforced by my reading the 1988 Surgeon General's report on nicotine and addiction.

Q. And did you express that knowledge to the top executives in the company?

A. Yes, during the interview process, and also after being hired, for example, in technical review meetings. But it was clear that everyone at Brown & Williamson was already well aware that nicotine was addictive. So, I wasn't stating anything that wasn't already known.

C. ALTERNATIVE NICOTINE DELIVERY SYSTEMS

Q. Were there other indications, while you were head of research and development, that Brown & Williamson knew that nicotine was addictive?

A. Yes. The fact that Brown & Williamson was pursuing alternative nicotine delivery systems was clearly an indicator that Brown & Williamson knew that nicotine was addictive.

Q. What do you mean by alternative nicotine delivery system?

A. Methods of delivering nicotine that did not involve smoking a cigarette, items such as the nicotine patch.

Q. How does a nicotine patch demonstrate that the company knew that nicotine was addictive?

A. Because the conversations regarding the nicotine patch at Brown & Williamson were about whether we could use this as a means of feeding smokers' addictions when they couldn't light up. The idea was that we needed to keep people addicted as the smoking of

cigarettes became more de-normalized. It was all about keeping people hooked even when they couldn't smoke easily.

Q. What do you mean by "de-normalized?"

A. I mean that more and more cities and towns and states were taking up the issue of banning smoking in more and more locations, and airlines were banning smoking on airplanes.

Q. How did Brown & Williamson think that a nicotine patch would help deal with de-normalization?

A. As the de-normalization spread, Brown & Williamson was concerned that people would simply not have enough opportunities to smoke or chew tobacco as a means of maintaining their addiction. Thus, the company decided to pursue alternative nicotine delivery devices to keep addicts hooked. It was thought that if smokers could get their nicotine fix when smoking was not permitted, they would maintain their addiction and continue to smoke when the opportunity to smoke was available.

Q. In this context did the company have information on how often nicotine addicts needed to smoke?

A. Yes. When I was at the company I recall that the figure cited was that on average a smoker who was addicted to nicotine could only go about 28 minutes without a cigarette.

Q. Did Brown & Williamson pursue the development of an alternative nicotine delivery system while you were head of science?

A. Yes. After Scott Appleton was hired, Tommie Sandefur charged Appleton to look for alternative delivery systems that could be used in social settings where you could not smoke or spit.

Q. Were you involved in the decision to have Scott Appleton investigate alternative delivery systems?

A. No. I had no role either in the decision to have research done in this area, or in who was assigned to do it.

Q. Do you know why Mr. Sandefur appointed Scott Appleton without consulting with you?

A. Yes. Sandefur and I had already begun butting heads on the issue of pursuing a safer cigarette. Sandefur made it clear that he wanted Scott Appleton to pursue this as a "product expansion" opportunity and not as a "safer product" opportunity. I had made it clear that I wanted to pursue alternative delivery systems as a safer product opportunity.

Q. Was there a specific alternative nicotine delivery system that Brown & Williamson was pursuing?

A. Yes. The TSRT directed BAT Cigarette-Fabriken and Brown & Williamson to analyze the purchase of a company that produced a nicotine patch called the Stowic patch.

Q. Dr. Wigand, please look at U.S. Exhibit 49,150 and explain that document to the Court.

A. This is a note that was prepared for the Tobacco Strategy Review Team (TSRT) regarding some of the implications for the BAT companies of transdermal nicotine delivery devices like the Stowic patch. The notes were prepared for the TSRT in May 1992. From the initials "RS" at the end of the note, I know that it was prepared by Roy Salter.

Q. Who was Mr. Salter?

A. He was Patrick Sheehy's personal assistant, and was also the recorder of TSRT minutes.

Q. Did the BAT Group of companies consider an acquisition of the Stowic company?

A. Yes.

Q. Did the BAT Group ultimately pursue an acquisition of the Stowic company?

A. No. As set forth at the very end of U.S. Ex. 49,150, the TSRT determined that transdermal products were "not thought to be suitable for promotion by a tobacco company."

Q. Do you know why BAT determined that promoting the Stowic patch was not "suitable" for a tobacco company?

A. Yes. In the process of evaluating the purchase of the Stowic company, the TSRT asked Mick McGraw, who was the top lawyer at Brown & Williamson, to consider the regulatory and product liability implications that might arise as the result of purchasing Stowic. McGraw prepared a memo analyzing the implications of purchasing a company that manufactured alternative nicotine delivery systems.

Q. I am showing you U.S. Ex. 58,723. What is this document?

A. This is McGraw's memorandum on alternative nicotine delivery systems. It is dated April 24, 1992. McGraw wrote it so Ray Pritchard could give a presentation on the issue to the TSRT.

Q. Did you review the McGraw memorandum at the time it was prepared?

A. Yes. The memorandum was circulated to top management at Brown & Williamson for comment before it was presented by Mr. Pritchard at the TSRT meeting.

Q. As set forth in the memorandum, what were the arguments against Brown & Williamson purchasing Stowic?

A. If you look at the memorandum prepared by Mick McGraw, you will see why Brown & Williamson decided not to purchase Stowic. The company concern was two-fold. First, the company felt that acquisition of a pharmaceutical device would suggest that all nicotine delivery devices were pharmaceutical in nature, creating the implication that cigarettes should also be subject to FDA regulation and approval. As Mr. McGraw states beginning in the last sentence of the first page of U.S. Ex. 58,723:

> If we did anything which suggested we were simply in the nicotine delivery business, we would run a serious risk of facing FDA jurisdiction.
>
> While we would structure any entry into the nicotine delivery business to avoid any linkage to the tobacco business, we would still face strong arguments that by being associated with any such business, B&W or B.A.T. would be admitting that the real reason people smoke is for the nicotine. This new device would be characterized as being just an alternative to smoking as a vehicle for delivering nicotine.

Second, there was concern that purchase of an alternative delivery device would be tantamount to admitting nicotine is addictive. It was felt that such an implied admission would destroy the free choice defense that the company used in products liability litigation. As Mr. McGraw states beginning with the last paragraph on page 2 of U.S. Ex. 58,723:

> The addiction issue is still a critical one in product liability litigation. Plaintiffs who started smoking prior to warning notices claim they were addicted and, therefore, unable to quit smoking after warning notices began appearing on packs. The marketing of any nicotine delivery system undercuts our position on addiction, particularly the way the patch products are being marketed.
>
> To be involved even peripherally in a product whose purpose is to chemically help smokers quit runs square into our argument that 50 million people have quit

smoking without the assistance of smoking cessation programs or aids.

Q. What was Brown & Williamson's ultimate conclusion regarding whether to become involved in the sale of alternative nicotine delivery devices?

A. Ultimately the TSRT determined that the BAT Group companies should not get into the alternative nicotine delivery device business because the patches were perceived to be therapeutic rather than an alternative nicotine delivery device to sustain a person's nicotine addiction.

D. CONGRESSIONAL TESTIMONY

Q. Dr. Wigand, please look at U.S. Exhibit 21,990. This is the transcript of testimony given by Tommie Sandefur before the Congress of the United States in 1994. Are you familiar with this testimony?

A. Yes.

Q. What do you recall about this testimony?

A. Sandefur and the other CEOs all got up in front of Congress, swore under oath to tell the truth, and then stated that they believed that nicotine was not addictive. As I recall at least one of them – Johnston at RJR – suggested that cigarette smoking was no more addictive than eating Twinkies. Waxman responded something to the effect that: "I don't see people dying from Twinkies, I see lots of people dying from smoking." Of course, 400,000 people a year don't die from eating Twinkies.

Q. Turning to page 44 of U.S. Exhibit 21,990, you will see that the transcript of the testimony indicates that Mr. Sandefur stated: "I believe that nicotine is not addictive." Is that consistent with what he said in your presence prior to that testimony?

A. No. What he said to the Congress was not true. It was contrary to the statements that he made to me and others within the company. Based upon my conversations with him, in which he often said "hook 'em young, hook 'em for life" and in which he demonstrated a knowledge that it was the nicotine in cigarettes that kept people smoking, it was clear that he believed that nicotine was the addictive drug in cigarettes.

V. ***NICOTINE MANIPULATION***

A. MANUFACTURING FOR MAINTENANCE LEVELS

Q. While you were head of Research & Development at Brown & Williamson did the company have the capability to monitor and set the nicotine content of its cigarettes?

A. Yes, Brown & Williamson had the ability to very closely and accurately monitor the nicotine content in its cigarettes through sophisticated analytical testing.

Q. Please generally explain that sophisticated testing to the Court.

A. Complex chemical analysis was done to measure the nicotine content in all of the various potential tobacco ingredients in the cigarette. This included different types of tobacco (e.g., burley, flue-cured, and oriental), genetically enhanced tobacco (i.e., Y-1 tobacco), as well as any add-ons (e.g., expanded tobacco and reconstituted tobacco). The results of the chemical analyses were fed into complex computer programs that would determine the exact blend that was appropriate to reach the desired nicotine content in each type of cigarette.

Q. Did Brown & Williamson change nicotine levels in tobacco products?

A. Yes.

Q. Why?

A. Brown & Williamson manipulated nicotine levels to produce a cigarette that would consistently deliver the amount of nicotine necessary to keep smokers addicted.

Q. How did Brown & Williamson manipulate the amount of nicotine delivered by its cigarettes?

A. There are three main ways that Brown & Williamson manipulated the nicotine levels delivered by its cigarettes including: tobacco blending, cigarette design, and the use of additives.

Q. Several of the tobacco companies have said that they never added nicotine to their cigarettes, a practice sometimes referred to as "spiking." If that statement is accurate, does that mean that they did not manipulate the level of nicotine delivered by their cigarettes?

A. Absolutely not. We understood at Brown & Williamson that every cigarette we made was manipulated to make sure that it delivered enough nicotine to keep smokers addicted. No one thought, that just because we weren't adding pure nicotine to our cigarettes, that we were not manipulating the nicotine delivered by the cigarette.

B. METHODS OF MANIPULATION

1. Tobacco Blending

Q. Let's begin with the first method of manipulation that you mentioned, tobacco blending. How did Brown & Williamson manipulate nicotine content through tobacco blending?

A. Predominantly, Brown & Williamson manipulated the flue-cured-to-burley ratio to ensure a consistent and necessary nicotine level. Another way that Brown & Williamson used blending was, for a time, to use genetically-engineered tobacco called Y-1. They

also manipulated the amount of nicotine produced by conventional tobacco plants in the field by adding more nitrogenous fertilizers to the soil.

Q. What do you mean by "flue-cured to burley ratio"?

A. Brown & Williamson was aware that burley tobacco had a much higher nicotine content, in the range of 2% to 7% by weight, than flue-cured tobacco, which only had a nicotine content of 0% to 4.5% by weight. Thus, the nicotine level in the cigarette could be manipulated by the blending of the higher nicotine burley tobacco with the lower nicotine flue-cured tobacco.

Q. What is Y-1?

A. Y-1 is a tobacco plant variant that has high nicotine concentrations. It came out of work initially done by the USDA, in Oxford, North Carolina. The actual genetic manipulation to produce a stable Y-1 plant was done by a genetics company called DNAP (DNA Plant Technology), which was hired by Brown & Williamson. Using genetic engineering, DNAP produced a tobacco plant with a higher concentration of nicotine than the traditional tobacco plants used in manufacturing cigarettes.

Q. What was the purpose for Y-1?

A. There were several reasons why Brown & Williamson developed Y-1. First, the company thought that by producing tobacco with higher concentration of nicotine, it could manufacture cigarettes that required less tobacco and less tobacco would mean that the cigarette would be cheaper to manufacture. Second, Brown & Williamson created Y-1 to enhance its ability to blend tobacco to effectively manipulate the nicotine content in its cigarettes. Third, it was felt that with the higher nicotine tobacco that Brown & Williamson could manage the tar to nicotine ratio of its cigarettes and in the process

move toward a safer product. Finally, Brown & Williamson hoped to further refine the genetic make-up of Y-1 to put in genetic codes that would make the plants resistant to pests and therefore allow it to be grown pesticide free. This would have a dual benefit of lowering the cost of cultivation and removing some potentially harmful pesticides from the tobacco that was blended into its cigarettes.

Q. What do you mean by "manage the tar-to-nicotine ratio"?

A. If you could increase the burley component of nicotine from the customary level (3.5% to 4.0%) to a slightly higher level (7% to 8%), you would substantially change the tar-to-nicotine ratio from 12-to-1 to 5-to-1 and ultimately 1-to-1. This would mean that you could theoretically produce a cigarette with the necessary amount of nicotine to maintain addiction, but that would have substantially less tar.

Q. Did Brown & Williamson use Y-1 in the cigarettes it produced?

A. For a short period of time Brown & Williamson did use Y-1 in a number of its brands. It used Y-1 that was grown in Brazil.

Q. Why was it grown in Brazil?

A. In the United States, tobacco is grown pursuant to an allotment system that results in most tobacco ending up on an auction floor. Therefore if Brown & Williamson had arranged to have the Y-1 grown in the United States it would have been available to its competitors. So to protect the Y-1 from a proprietary standpoint, it was determined that it should be grown outside of the United States at Brown & Williamson's sister company Souza Cruz in Brazil.

Q. Did you learn how Souza Cruz obtained the seeds necessary to grow Y-1?

A. Yes. I was startled when I learned that Souza Cruz was producing Y-1 in substantial quantities because I was not aware that we had shipped seed to them. So, I asked Phil Fisher, who was manager of leaf blending, how the seed was shipped to Brazil.

Q. What did Mr. Fisher tell you?

A. He told me that he had "smuggled" the seeds to Brazil inside a cigarette pack and that a DNAP employee, Janet Bravo, had carried the pollen to Brazil.

Q. Did you ever ask any executives why the seeds had been "smuggled" to Brazil?

A. Yes.

Q. Who did you ask?

A. Mr. Sandefur.

Q. What did he tell you?

A. He said, "It's all right, it's a sister company, it has been cleared by legal, mind your own business, go back to doing R&D business."

Q. Did you later learn more information regarding the transport of Y-1 seeds to Brazil?

A. Yes. When I was consulting with the FDA, I learned that Brown & Williamson's shipment of seeds to Brazil was illegal.

Q. How were the Y-1 seeds used once they arrived in Brazil?

A. Ultimately Souza Cruz grew and exported over 5 million pounds back into the United States over several years.

Q. What did Brown & Williamson do with the imported Y-1 tobacco?

A. The Y-1 was then incorporated into Brown & Williamson cigarettes, including the Barclay, Richmond, GPC and Raleigh brands.

Q. Did Y-1 represent a potential opportunity to create a safer cigarette?

A. It was thought that a safer cigarette might be developed by using Y-1.

Q. Was the Y-1 ever used to create a safer cigarette?

A. No. Ultimately, Brown & Williamson abandoned the Y-1 without ever producing a high nicotine, low tar cigarette.

2. Cigarette Design

Q. Dr. Wigand, the second way in which you said Brown & Williamson manipulated nicotine deliveries was through cigarette design. Can you briefly explain how this was done?

A. Brown & Williamson used cigarette design to guarantee an addictive level of nicotine. The design components of nicotine manipulation included the use of reconstituted tobacco, various filtration and ventilation systems, and paper design.

Q. Can you briefly remind the Court what reconstituted tobacco is?

A. Yes, reconstituted tobacco (RECON) is made in the United States in two basic ways: band cast and paper.

Q. What are the ingredients in reconstituted tobacco?

A. Each type of RECON starts with the same basic tobacco components; offal (these are fine pieces of tobacco generated during the manufacturing process), reclaim (which comes from outdated cigarettes from the retail outlets), winnowers (these are small fragments separated prior to cigarette rod manufacture), unique tobacco cultivars, and tobacco leaf stem. Also, both types of RECON are manufactured with the extensive use of chemical additives.

Q. Can you briefly explain how these two different types of reconstituted tobacco are manufactured?

A. Yes. Band cast and paper RECON have distinctively different manufacturing processes. Band cast is manufactured by combining both the raw materials and the additives, such as DAP, sugars, ammonia based additives, and glycerol in a large reaction vat that pulverizes the tobacco materials into a uniform tobacco-additive slurry. The reacted slurry material is then dispersed uniformly onto a moving stainless steel belt and the slurry is dried to a moisture content of approximately 15-16% by passing through three separate heat controlled drying ovens. The dried product is then cut into fragments by cutters at the end of the drying process. It is a highly chemical energized material through the use additives added during the manufacturing/reaction process.

Q. Can you also explain the manufacturing process for paper RECON?

A. Yes. Paper RECON is manufactured by continuous extraction of the tobacco pulp using hot water. The extraction process leaves behind white cellulosic pulp derived from the starting material. This cellulosic pulp is then poured on a perforated moving stainless steel belt. A vacuum is applied beneath the stainless steel belt and the pulped slurry forms paper. The thickness of the paper can be controlled by the amount and rate of pulp slurry applied and is referred to as basis weight.

The water removed soluble material (mother liquor) is reacted with chemical additives, such as glycerol, sugars, DAP, and ammonia based compounds in a separate reaction vessel. This reacted solution is applied to the newly formed paper at a specified rate. The reacted solution is absorbed on the paper, dried and cut into irregular pieces and becomes paper RECON.

Q. What are the chemical additives in the manufacturing process?

A. In each manufacturing process one of the most critical of chemical additives is Diammonium hydrogen phosphate (DAP). DAP provides the "glue" to put the RECON sheet together but also serves as a critical source of ammonia chemistry.

Q. Can you explain how reconstituted tobacco was used to manipulate the level of nicotine delivered by Brown & Williamson's cigarettes?

A. The use of both RECON types becomes a critical component in cigarette delivery design. The ammonia from the DAP as well as other ammonia based chemical additives serves multiple purposes once incorporated into the tobacco column rod. First is "scavenges" nicotine from the blend components which equalizes the nicotine content in all blend components. Next it liberates free nicotine. Finally, it serves as the source of ammonia that affects smoke pH which facilitates keeping nicotine in the "free base form".

Q. While you were head of Research & Development, what was Brown & Williamson's and its sister companies' understanding about the effect of ammonia based chemical additives used in the RECON and as casing sauces?

A. It was thought that the ammonia additives equilibrated tobacco rod nicotine, scavenged nicotine from blend components, and changed the overall pH of the cigarette and smoke generated while burning the cigarette. This increased the free nicotine available when the cigarette was smoked. The ultimate result was thought to be more nicotine in the free state and higher yield of extractable nicotine from the tobacco contained in the cigarette rod.

Q. What did Brown & Williamson understand to be the effect of having more nicotine in the free state?

A. It was understood that nicotine in the free state was not measured by the FTC test method. Also, we believed that nicotine in the free state had greater impact, and a faster rate of uptake by the smoker.

Q. We will talk about ammonia and free nicotine in a moment. For now, can you explain how filtration and ventilation systems were used to manipulate the nicotine level in cigarettes?

A. Ventilation holes were generally placed in the filter of the cigarette and allowed more air to be mixed with the smoke that is measured by a smoking machine. This resulted in a lower level of nicotine as measured by the machine, but not necessarily as delivered to the smoker.

Q. What do you mean when you say "as measured by the machine, but not necessarily as consumed by the smoker"?

A. At Brown & Williamson we were aware that the ventilation holes were routinely blocked by smokers and that, as a result, the nicotine exposure of the smoker was much higher than was registered by the FTC testing method.

3. Additives

a. Ammonia Technology

Q. The third way that you said Brown & Williamson manipulated the amount of nicotine delivered by its cigarettes was through additives. Can you briefly explain what kind of additives Brown & Williamson used for this purpose?

A. Yes. A primary method of nicotine manipulation used at Brown & Williamson was through the use of additives. The additives used by Brown & Williamson were usually ammonia based.

Q. Why did Brown & Williamson use ammonia based additives in its cigarettes?

A. These additives trigger the chemical transformation necessary to convert bound nicotine to free nicotine. At Brown & Williamson we used ammonia-based additives or additives that converted to ammonia when burned. This process of using ammonia technology to convert bound nicotine to free nicotine was an obsession at Brown & Williamson while I was with the company.

Q. Why was the use of ammonia technology an obsession at Brown & Williamson?

A. Beginning before I arrived at Brown & Williamson, the company had begun exhaustively analyzing Marlboro cigarettes because of their popularity and increasing share of the market. In the process, Brown & Williamson scientists and scientists from the other BAT companies had come to the conclusion that ammonia additives played a central role in Philip Morris's Marlboro brand becoming the most popular cigarette in the world.

(i) Project Globe

Q. Can you explain for the Court the process through which Brown & Williamson reached the conclusion that ammonia technology contributed to Marlboro's popularity?

A. Around 1987 to 1988, just before I had arrived at the company, the research and development departments throughout the entire BAT Group had cooperated on a project called Project Globe. The purpose of Project Globe was to analyze product design of the leading cigarette brands of our competitors. As the leading cigarette brand in the world, Marlboro was the first of the competitive cigarettes to be analyzed. Project Globe concluded that Philip Morris was using ammonia technology, including ammonia based additives and reconstituted tobacco, as a key design characteristic of Marlboro.

Q. Did you receive copies of the Project Globe reports when you arrived at Brown & Williamson?

A. Yes. As part of a separate project, called Project Adverb, I received copies of the Project Globe reports.

Q. Dr. Wigand, can you identify U.S. Ex. 89,373?

A. Yes, this is a copy of the Project Globe report on Marlboro dated May 1987.

Q. Does that report discuss ammonia technology?

A. Yes. If you turn to page 7 of the report in the section on "Reconstituted Tobacco," the authors discuss "ammonia technology."

(ii) Project Adverb

Q. You mentioned Project Adverb. What was Project Adverb?

A. Following Project Globe, in 1989 Brown & Williamson completed a new project that exhaustively worked to reverse engineer a Marlboro Cigarette. That project was called Project Adverb.

Q. Can you explain "reverse engineering" for the Court?

A. Yes, reverse engineering is basically a process by which you take apart a competitor's product and you analyze it physically and chemically. Ultimately if your investigation is successful, you will be able to perfectly reproduce the competitor's product.

Q. Why did Brown & Williamson utilize "reverse engineering?"

A. Through the process of "reverse engineering" we hoped to obtain significant understanding into why the competitor's product was successful.

Q. Was Project Adverb conducted while you were the chief scientist at Brown & Williamson?

A. Yes.

Q. Dr. Wigand what is U.S. Exhibit 89,374?

A. This is the report on Project Adverb dated October 10, 1989.

Q. What was the purpose of Project Adverb?

A. As you see on page 3 of the report under the heading "Results and Discussions" the objective of Project Adverb was to "'Identify and understand those components of Marlboro tobaccos and smoke chemistry that are responsible for its preference.'"

Q. Did Project Adverb reach any conclusions relative to this objective?

A. Yes. The scientists at Brown & Williamson and the other BAT Group companies concluded that the use of ammonia technology was critical to Marlboro's success.

Q. Does the Project Adverb report chronicle that conclusion in any way?

A. Yes. As stated in the third paragraph on page 1 in the abstract of Project Adverb, the authors state:

> We stand on our prior conclusion that the soul of Marlboro is controlled ammonia processing of tobacco, with this processing being accomplished during reconstituted tobacco manufacture.

Then again in the first bulleted item on page 9 the report states:

> Ammonia processing is the soul of Marlboro. This is an old conclusion (R&D-B016-84), but one which ADVERB has reinforced by much new evidence and understanding.

Q. That is from U.S. Exhibit 89,374?

A. Correct.

Q. Did Brown & Williamson believe that Marlboro brand cigarettes had a greater nicotine impact than their own cigarettes?

A. Yes.

Q. Did Brown & Williamson believe that ammonia technology played a role in what was perceived to be greater nicotine impact of Marlboro brand cigarettes?

A. While we knew that there was a higher nicotine impact with Marlboro's, we were not yet able to demonstrate that it was the result of ammonia chemistry. As stated in the last sentence on page 1 of the Project Adverb report, "What we do not yet understand is how Marlboro achieves higher nicotine impact/taste sensory characteristics than we achieve in cigarette samples of similar design."

(iii) Ammonia Conferences

Q. What else did Brown & Williamson do in its efforts to understand ammonia technology?

A. As it was becoming increasingly clear that ammonia technology was key to Marlboro's success, I recommended that we convene an ammonia conference in the summer of 1989. We held a second ammonia conference a year later in the summer of 1990.

Q. Who attended these ammonia conferences?

A. Representatives of all the BAT Cigarette Affiliated Companies attended the ammonia conferences.

Q. Dr. Wigand I am showing you U.S. Exhibit *53,249 and Joint Exhibit 53,243. What are these documents?

A. These are the minutes from the two ammonia conferences.

Q. What key findings related to ammonia technology are contained in the minutes?

A. In the first set of minutes from 1989 there are several findings related to ammonia technology. The conference in 1990 was more forward looking and therefore focuses

less on findings and more on next steps in applying the knowledge that Brown & Williamson had developed relative to ammonia technology.

Q. Can you walk the Court through the significant findings regarding ammonia technology in the 1989 minutes (U.S. Exhibit *53,249)?

A. Throughout this document you will see references to how critical ammonia technology is to the superiority of the Marlboro brand. But you also begin to see reference to the impact that ammonia technology has on nicotine transfer. In fact this is stated in the very first paper presented at the conference by Dr. Baran Chakraborty. The specific reference is at page 3 of the minutes. Dr. Chakraborty reported that with the use of ammonia technology one will see "improved nicotine transfer."

Also, on page 5 of the minutes, there is a discussion of a paper presented by Dr. Werner Hass that discussed the "Effects of Ammonia on Nicotine Distribution in Cigarette Blends." Dr. Hass's work demonstrated that ammonia helped equalize the nicotine throughout the blended tobacco even when the components had different levels of nicotine before being treated with ammonia.

(iv) "Root Technology" Handbook

Q. Once Project Adverb had been completed and the two ammonia conferences had been held, what was Brown & Williamson's next step with respect to ammonia technology?

A. All of this work ultimately culminated in the preparation of a manual called "Root Technology: A Handbook for Leaf Blenders and Product Developers" in 1991. Generally this was known around Brown & Williamson as either the "Root Technology Handbook" or the "Leaf Blender's Manual."

Q. What is the Leaf Blender's Manual?

A. The Leaf Blender's Manual is a comprehensive Brown & Williamson document, which was created with the assistance of scientists at other BAT Group companies, particularly BATCo and BAT Cigaretten-Fabriken. It deals with the use of ammonia and ammonia compounds to effectively equilibrate nicotine in cigarettes and to convert nicotine from a salt into a free base.

Q. Can you put that in non-scientific terms?

A. Yes. In essence it tells leaf blenders how to use ammonia technology to make cigarettes that produce as great a nicotine impact as possible.

Q. Did you play any role in writing or preparing the Leaf Blender's Manual?

A. Yes. I helped edit it.

Q. Why is the title "ROOT TECHNOLOGY"?

A. Root technology was a code word for ammonia technology.

Q. How did ammonia technology get the code name ROOT technology?

A. As the work on Marlboro continued, the TSRT became concerned that we had not provided a code name for ammonia technology. Given that Brown & Williamson had the lead on ammonia technology issues, we were asked to provide a code word. I was asked to come up with a code name for ammonia technology. Since ammonia technology was critical to the success of Marlboro cigarettes, I came up with the word ROOT because it is critical to the health of a tree.

Q. I am showing you U.S. Exhibit 47,487. Could you tell the Court what it is?

A. This is a March 1st, 1991, note from Alan Heard that was distributed throughout the BAT Group indicating that the TSRT had directed that a code name be substituted for the phrase "ammonia technology" and that B&W would be providing the code name.

Q. What did you do following distribution of this memorandum?

A. I provided the new code word – Root Technology – to my counterparts at the other Cigarette Affiliated Companies.

Q. I am showing you U.S. Exhibit 86,908. What is it?

A. That is a copy of the Leaf Blender's Manual.

Q. Does the Leaf Blender's Manual (U.S. Exhibit 86,908) discuss the use of ammonia technology to manipulate nicotine impact as you have described to the Court?

A. Yes.

Q. Can you direct the Court to that portion of the Leaf Blender's Manual that discusses what happens when you use ammonia technology in cigarettes?

A. Yes. The first mention is on page 1, in the introduction. The manual states that cigarette smoke ammonia:

> can liberate free nicotine from the blend, which is associated with increases in impact and "satisfaction" reported by smokers.

Then again on page 18 of the Leaf Blender's Manual, on the first page of the "Sensory Attributes" section, there is a description of "Ammonia as Impact Booster." It states:

> 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 exactable nicotine. As we know, exactable nicotine contributes to impact in cigarette smoke and this is how ammonia can act as an impact booster.

Q. Dr. Wigand, was it believed within Brown & Williamson that ammonia based additives boosted the impact of the nicotine for smokers?

A. Yes.

Q. And, while you were the head of Research & Development at Brown & Williamson, did the company use ammonia based additives or ammonia technology in an attempt to boost the nicotine impact of its cigarettes?

A. Yes.

Q. When you were at the company, did Brown & Williamson ever make any statements to alert the public that it used ammonia technology in its cigarettes in an attempt to boost the nicotine impact?

A. No.

(v) Project BEST

Q. Did production of the Root Technology Handbook bring an end to what you called Brown & Williamson's "obsession with ammonia technology?"

A. No. Work on ammonia technology continued after production of the Root Technology Handbook. Beginning in 1991 and continuing into 1992, all of the BAT Cigarette Affiliated Companies participated in a project called Project BEST.

Q. What was Project BEST?

A. Project BEST, which was also known as World-Wide BEST, was an attempt to create a cigarette that was superior to Marlboro in terms of smoking quality. In effect we were now ready to attempt to actually produce a Marlboro cigarette under a different name. The result was hopefully to obtain superiority in the non-menthol market.

Q. Dr. Wigand, I am showing you U.S. Exhibit 88,083. What is it?

A. This is the October 26, 1992, report that emanated from Project BEST. It attempted to summarize everything we knew at Brown & Williamson regarding Marlboro cigarettes.

Q. How long did it take Brown & Williamson to acquire the knowledge summarized in this report, which is U.S. Exhibit 88,083?

A. We had gained this knowledge over several decades, but had exponentially increased our knowledge in the few years leading up to the drafting of this document through Project Adverb, the effort to reverse engineer Marlboro, and through the ammonia technology conferences. Project Adverb had definitively confirmed that, from a scientific standpoint, ammonia was a key part of Marlboro's success. It wasn't until Project Best, however, that we more fully understood the impact of ammonia technology on nicotine transfer.

Q. Can you direct the Court to the most informative statements from U.S. Exhibit 88,083 regarding Brown & Williamson's knowledge about Marlboro cigarettes?

A. Yes. The ultimate conclusion of Brown & Williamson's massive effort to understand Marlboro's success is set forth on page 45 of the document. First, we posed the question "[w]hat product technology, then, makes Marlboro a Marlboro?" The answer:

> Looking at all of the technology employed in Marlboro on a worldwide basis, ammonia technology remains the key factor.

The document states later, on the same page:

> Ammonia technology is critical to the Marlboro character, taste, and delivery. Key desirables are:
> - Ammonia in smoke
> - Reduction of gas phase carbonyls
> - Smoke pH increase
> - Free nicotine/nicotine transfer
> - Ammonia-sugar reaction products
> - Ammonia-tobacco component reaction products
> - Nicotine-pectin reactions

Q. Can you describe for the Court the level of knowledge that had been developed at Brown & Williamson regarding Marlboro?

A. It was comprehensive and exhaustive.

Q. What was Brown & Williamson's ultimate conclusion regarding Marlboro's success?

A. That is in the statement from the Project BEST report that I just read to you. You will see that the fourth bulleted item refers to "Free nicotine/nicotine transfer." It was believed at Brown & Williamson that by using ammonia you changed the pH of the smoke (as indicated in the third bulleted item). The change in pH was understood to create more free nicotine in the smoke phase. This made more of the nicotine in the cigarette available to the smoker more rapidly. This more rapid transfer of nicotine was thought to increase the pharmacological impact of the cigarette and thus made the smoking sensation more enjoyable for the smoker. It was believed that this chain of events led to Marlboro's huge international success.

Q. What happened once you reached this conclusion at Brown & Williamson?

A. Once we learned this at Brown & Williamson, we became obsessed with how to actually use ammonia technology in our products. We had also learned that by transferring nicotine from the bound to the free state the nicotine as measured by the FTC would be reduced because the FTC method did not detect free nicotine.

Q. Did Brown & Williamson use ammonia based additives in its cigarette production?

A. Yes.

Q. Tell the Court why Brown & Williamson used ammonia based additives in its cigarette manufacturing.

A. Ammonia based additives were used in Brown & Williamson's products to develop flavor compounds, but predominantly, and more importantly, ammonia based additives were used to manipulate the amount of free nicotine.

Q. How did Brown & Williamson design its cigarettes to convert bound nicotine to free nicotine?

A. There are a number of ways of managing conversion of bound nicotine to free nicotine. The first method is through the use of ammonia treated reconstituted tobacco. But, that is not the only way. As I indicated previously, any compound that forms a base when it is burned can change the pH of the cigarette smoke and will work to convert bound nicotine to free nicotine. When the cigarette is combusted, urea and other nitrogenous compounds, protein-containing compounds, also form bases. Those bases change pH of smoke. pH of smoke directly affects the continued conversion and impact associated with nicotine delivery.

Q. In layman's terms what did Brown & Williamson understand to be the impact on the smoker of adding ammonia or a nitrogenous base to a cigarette?

A. Impact is what we associate with what's called a nicotine rush. The more free nicotine available to the smoker, the more nicotine you deliver to the body. The more nicotine delivered to the body, the more nicotine that can be absorbed. The more nicotine absorbed and the faster it is absorbed, the greater the impact and satisfaction for the smoker in terms of nicotine rush.

Q. Does the use of ammonia based additives change the level of nicotine in a cigarette?

A. They don't change the total nicotine. But, the nicotine that is present is more effectively and more quickly converted from bound nicotine to free nicotine.

Q. And the free nicotine, is that what you previously described has a pharmacologic effect?

A. All nicotine has a pharmacologic effect, but free nicotine could be said to be more potent.

Q. In other words, it acts as a drug on the body?

A. Yes.

b. <u>Acetaldehyde</u>

Q. What is Acetaldehyde?

A. Acetaldehyde is an impact booster that augments the effect of nicotine.

Q. Did Brown & Williamson use acetaldehyde in cigarettes to enhance the effects of nicotine on the smoker?

A. It used acetaldehyde in the smoking process, but it did not directly add acetaldehyde to its cigarettes.

Q. Can you more fully explain that to the Court?

A. You see acetaldehyde is a gas and therefore could not be added to a cigarette. However, Brown & Williamson was aware of additives that were derived from simple sugars that when burned produced acetaldehyde. Brown & Williamson purposely added these simple sugar derivatives to cigarette casings, knowing that when burned the additives would result in the production of acetaldehyde which would be inhaled by the smoker.

Q. Was Brown & Williamson aware that acetaldehyde boosted the effect of nicotine?

A. Yes. Brown & Williamson knew that acetaldehyde enhances the synergistic effect of nicotine and the physiological effect. It is also well documented outside of the tobacco industry.

Q. Did Brown & Williamson consciously apply additives to the casings knowing that they would produce acetaldehyde?

A. Yes.

VI. LIGHT / LOW TAR CIGARETTES AND COMPENSATION

Q. What was the state of knowledge at Brown & Williamson during your tenure regarding compensation?

A. Certainly everyone in my research and development department was well aware of compensation. Indeed, it was a design consideration that played a central role in all of the cigarettes manufactured at Brown & Williamson as well as the other BAT Cigarette Affiliated Companies.

Q. What was meant by the term "compensation" as it was used at Brown & Williamson?

A. It is the phenomenon of smokers manipulating their smoking behavior to achieve their optimum nicotine reward. The term was most commonly used when discussing smokers who switched to a cigarette with a lower nicotine yield as measured by machine testing. In this situation, Brown & Williamson was aware that smokers would typically modify their smoking behavior in order to obtain their desired level of nicotine.

Q. Showing you what has been marked as U.S. Exhibit 30,763, can you identify this document for the Court?

A. Yes. This document is a report by a scientist by the name of Rob Ferris who worked at the BAT Fundamental Research Center at Southampton.

Q. Did you receive a copy of this report when it was issued?

A. Yes, you can see on the front page that I received copies numbered 3 and 4.

Q. What does this study demonstrate with respect to the knowledge within Brown & Williamson regarding compensation in 1989?

A. As it states in the first full paragraph of page III of the summary:

> Manipulation of both effort and reward variables influenced smoking behavior, subjects compensating for both effort (mechanics) and reward (delivery).

Q. What does that mean in layman's terms?

A. To those of us receiving the report, it meant that Dr. Ferris had demonstrated that smokers compensate (that is, modify their smoking behavior) to receive the necessary "delivery" of nicotine to sustain their addiction.

Q. Does the report have any other information related to Brown & Williamson's knowledge regarding compensation?

A. The report goes on to state on page 1 that "compensation can be conceptualized of as acting within an effort-reward relationship. Subjects compensate to gain the optimal reward by varying the effort they expend in terms of intensiveness of smoking behavior." This demonstrates the understanding within Brown & Williamson and BATCo that smokers modified their behavior to obtain the necessary maintenance level of nicotine regardless of whether they were smoking a full-flavor or a light cigarette.

Q. Earlier you stated that compensation was "a design consideration" at Brown & Williamson. What do you mean by that?

A. I mean that Brown & Williamson designed their cigarettes purposefully to deliver varying amounts of nicotine, dependent upon the different ways in which individuals smoked cigarettes. This design feature allowed each individual smoker to satisfy their maintenance level of nicotine despite variations in the amount of nicotine each smoker

required to maintain addiction. In short, Brown & Williamson consciously designed its cigarettes with elasticity of nicotine delivery in mind.

Q. What do you mean by "elasticity of nicotine?"

A. Under the FTC and ISSO testing methods, light cigarettes ostensibly deliver less tar and nicotine than their full-flavor counterparts. But we knew at Brown & Williamson that smokers had varied nicotine burdens, which means the amount of nicotine required to sustain addiction varied from smoker to smoker. Thus, we knew that if light cigarettes were capable of only delivering the machine measured amount of nicotine that most smokers of light cigarettes would not get the required amount of nicotine necessary to maintain addiction. Thus, it was necessary to design the cigarette to be elastic in terms of the amount of nicotine delivered. Essentially allowing each smoker to obtain from the cigarette – regardless of whether it was a light or a full-flavor cigarette – the dose of nicotine that was necessary to meet their individual nicotine burden. In technical jargon, we talked about smokers titrating to meet their addiction burden.

Q. You mentioned the FTC and ISSO testing methods. Did Brown & Williamson believe that smokers actually obtained the amount of tar and nicotine as measured by these tests?

A. No. It was well known throughout all of the BAT Cigarette Affiliated Companies that the overwhelming number of smokers were obtaining significantly more tar and nicotine from cigarettes than was measured by the FTC and ISSO methods.

Q. Is that statement true for cigarettes that Brown & Williamson labeled as light and low tar cigarettes?

A. Yes.

Q. Is that statement true for full flavor cigarettes?

A. Actually it was true for all of Brown & Williamson's cigarettes. Even for full flavored cigarettes the machine testing understated the amount of tar and nicotine obtained by most smokers. But, the degree of understatement substantially increased as you moved from full flavor to light cigarettes and on to ultra-lights.

Q. Why did the degree of understatement increase as you moved along that continuum of cigarette types from full-flavor to light to ultra-light?

A. Because of compensation and cigarette design. Since most smokers have nicotine maintenance levels in a fairly tight band, as you moved to cigarettes of lower yield as tested by the machines, the smokers' compensation increased to obtain the nicotine dose they required.

Q. Did Brown & Williamson understand the ways in which individuals compensated?

A. Yes. We knew that if the smoker switched from one cigarette to a lower yield cigarette, as measured by machine testing, smokers would take longer, more frequent, and deeper puffs, and would smoke more cigarettes.

Q. How are compensation and elasticity related, if at all?

A. Compensation is basically a change in human behavior to get more nicotine out of a cigarette by smoking more intensely. Elasticity is the cigarette design feature that allows the human to be successful in getting the amount of nicotine they need out of a cigarette, even though that amount will differ from one smoker to another.

Q. When you were the head of research and development at Brown & Williamson, were all brand styles of cigarettes – full-flavor, lights and ultra lights – designed to be elastic?

A. Yes.

Q. Given the understanding of compensation and the design of cigarettes to be elastic, did Brown & Williamson believe that the "light" and "mild" monikers were accurate?

A. No. First, everyone at Brown & Williamson, indeed throughout all of BAT, understood that the machine method for measuring nicotine and tar yield grossly understated the tar and nicotine actually ingested by the smoker. Second, again through out the BAT organization, we knew that smokers compensated to obtain more nicotine than was reported on the label and that compensation increased as a smoker moved from a full flavor to a light cigarette.

Q. By "we" you mean Brown & Williamson?

A. Absolutely. I also mean the scientists at all of the other BAT Cigarette Affiliated Companies.

Q. Did Brown & Williamson understand why the machine testing understated the amount of nicotine obtained by smokers?

A. Yes. First, the machine did not replicate the manner in which human beings smoke cigarettes. Second, since the testing only picked up particulate nicotine, any increase in free nicotine in the gas phase of smoke would lead to higher nicotine yields to the smoker than what was recorded by the machine testing.

Q. Did Brown & Williamson share this information with the public while you were employed by Brown & Williamson?

A. No.

Q. Did Brown & Williamson discuss this with the FTC or the FDA while you were at

the company?

A. No.

Q. Did they do anything to conceal this information?

A. I would say that they did because compensation was one of the controversial topics that we were instructed to treat very carefully when drafting documents.

VII. LESS HAZARDOUS (SAFER) CIGARETTES

Q. Having come from the pharmaceutical and medical products industry, why did you agree to go to work for a cigarette manufacturer?

A. I was led to believe, during the six month interview process, that I would be able to use the science I had learned in the health care industry and apply it to cigarettes in an effort to develop a safer product. Plus, as I indicated earlier it provided an opportunity to provide well for my family.

Q. But you knew when you took the job that cigarettes were unsafe and addictive?

A. Yes, I knew that when used as intended cigarettes not only addicted people, but killed them as well. Knowing that they were a harmful product, but also knowing that many people were already addicted, I thought that designing a safer cigarette was a step in the right direction.

Q. Why did you believe that developing a safer cigarette was part of your charge when you were hired at Brown & Williamson?

A. There were numerous conversations during the recruitment process. I was told part of my portfolio would be to develop a technical organization which was capable of addressing the development of a safer cigarette.

Q. Did you pursue research regarding a safer cigarette while you were at Brown & Williamson?

A. When I first arrived at Brown & Williamson we were involved in research regarding the development of an engineered product similar to Premier in which the tobacco was heated rather than burned. This project was known at Project Airbus.

Q. Did you continue to pursue Project Airbus throughout your tenure at Brown & Williamson?

A. No. This research was shipped to Southampton.

Q. Why was it shipped to Southampton?

A. Ostensibly Project Airbus was being transferred to Southampton to be merged into a project there called Project Nova, which was focused less on design of an engineered product and more on basic science related to the heating rather than the burning of tobacco. Once Project Nova showed some progress with respect to fundamental science it was to be sent back to Brown & Williamson for further work on design of an engineered product.

Q. Did Project Nova or Project Airbus ever come back to Brown & Williamson?

A. No.

Q. In addition to engineered products, were there other potential safer cigarette designs that you hoped to pursue while you were at Brown & Williamson?

A. Yes. There were at least a dozen other safer cigarette approaches of which I became aware either before or shortly after I arrived at Brown & Williamson.

Q. Can you identify one of the more prominent proposals for safer cigarettes for the Court?

A. Yes, one of the more frequently discussed proposals was the selective reduction of noxae.

Q. Please remind the Court of what you mean by noxae?

A. Noxae is a poisonous substance. It is the different components that make up the tar in a cigarette.

Q. At the time that you arrived at Brown & Williamson was there actually ongoing research within the BAT Group on the reduction of noxae?

A. Yes there was research being conducted in both Canada and in the U.K. focused on selectively removing noxae from cigarette smoke.

Q. Dr. Wigand what is U.S. Exhibit 46,613?

A. This is a letter from Sir Patrick Sheehy, Chairman of big BAT, to Purdy Crawford, the President of Imasco Limited.

Q. What was Imasco Limited?

A. Imasco was the company that owned Imperial Tobacco in Canada.

Q. What was the relationship, if any, between Imasco and BAT Industries?

A. Imasco was a BAT affiliate, but BAT only owned a minority share in Imasco.

Q. Did BAT Industries exert the same influence over Imasco and Imperial as you have explained was exerted over Brown & Williamson and BATCo?

A. No. Since BAT Industries was only a minority shareholder, it did not exert as much control over Imasco and Imperial as it did over its other subsidiaries. However, as the single largest shareholder, BAT did exert substantial influence over Imasco.

Q. When you arrived at Brown & Williamson, did you become aware of the relationship between Mr. Crawford and Mr. Sheehy?

A. Yes. At the various scientific meetings I was told that Mr. Sheehy felt that Mr. Crawford and Mr. Mercier, the Chairman and Chief Executive Officer of Imasco, were loose cannons and that Imperial would get BAT into trouble because it was reckless with respect to the research it pursued. In fact, I was told by Dr. Dunn from Imperial that Mr. Sheehy had attempted to squelch the safer cigarette research at Imperial in which they were looking at the possibility of selectively removing noxae.

Q. How does U.S. Exhibit 46,613 relate to this issue?

A. It is a letter in which Mr. Sheehy argues his position for shutting down the Imperial research related to a safer cigarette.

Q. Were you informed regarding the ultimate outcome of this dispute?

A. Yes. I was told that ultimately Messrs. Mercier and Crawford acquiesced and ratcheted back Project Day, Imperial's research toward a safer cigarette.

Q. Did you hope to add Brown & Williamson's scientific expertise to the effort to develop a safer cigarette?

A. Yes. But after the New York City meeting in January of 1990, there were more and more indications that scientists at Brown & Williamson would not be allowed to pursue research related to a safer cigarette in the United States.

Q. What sorts of indications?

A. The shipment of the safer cigarette research to Southampton and direct statements by Mr. Sandefur that we could not pursue a safer cigarette.

Q. Tell the Court about those statements.

A. Not long after the Vancouver meeting, Tommie Sandefur called me into his office and told me that there would be no further discussion or efforts on any issues related to a safer cigarette.

Q. Did Mr. Sandefur tell you why he was curtailing research regarding a safer cigarette?

A. He said that any activity or elusion to a safer cigarette would be deathly contrary to the company's position relative to liability issues associated with smoking and health and that I was not to discuss it anymore.

Q. Can you identify another safer cigarette proposal of which you were aware while you worked at Brown & Williamson?

A. Yes, the attempt to change the tar to nicotine ratio in cigarettes from the standard 10 to 1 ratio to a ratio of 1 to 1. I explained earlier how this would reduce the toxicity of the cigarette while maintaining the nicotine necessary to meet smokers' nicotine burden.

Q. Did Brown & Williamson pursue research while you were at the company relating to the modification of the tar to nicotine ratio?

A. In some limited respects we did. The Y-1 tobacco that we discussed earlier demonstrated some potential for modifying the tar to nicotine ratio.

Q. Did Brown & Williamson ever use Y-1 to produce a cigarette with a reduced tar to nicotine ratio?

A. No.

Q. Ultimately, given the promises made to you during the interview process regarding leading an effort to develop a safer cigarette, how much time did you spend working on safer cigarettes while you were at Brown & Williamson?

A. Almost none. Certainly nothing meaningful enough to make any real advancements.