Glenn T. Seaborg Oral History Interview—JFK #1, 06/11/1964-07/01/1964
Administrative Information

Creator: Glenn T. Seaborg
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Biographical Note
Dr. Glenn T. Seaborg (1912 - 1999) was a nuclear chemist who was best known for his work on the Manhattan Project and for his role as Chairman of the Atomic Energy Commission between 1961 and 1971. This interview focuses on the debate over nuclear weapons testing during John F. Kennedy's term in office, international conflict during the Cold War, and the relationship between the Kennedy administration and scientists, among other topics.

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Gift of Personal Statement

By Dr. Glenn T. Seaborg

to the

John Fitzgerald Kennedy Library

In accordance with the provisions of the Federal Property and Administrative Services Act of 1949, as amended (63 Stat. 377), and regulations issued thereunder, I, Glenn T. Seaborg, hereinafter referred to as the donor, hereby give, donate and convey to the United States of America for deposit in the proposed John Fitzgerald Kennedy Library, and for administration therein by the authorities of said Library, a tape recording and two copies of a transcript of a personal statement approved by me on November 13, 1964, and prepared for the purpose of deposit in the John Fitzgerald Kennedy Library. The gift of this material is made subject to the following terms and conditions:

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Glenn T. Seaborg—JFK #1

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SECRET

Oral History Interview

with

GLENN T. SEABORG

June 11, 18, 25, 27 & July 1, 1964
Germantown, MD & Washington, D.C.

By Richard G. Hewlett and Howard C. Brown, Jr.

For the John F. Kennedy Library

FOREWORD

On March 3, 1964, the Attorney General invited Dr. Seaborg to participate in a project to record on tape the recollections of key members of the Kennedy Administration for preservation in the John F. Kennedy Library.

Dr. Seaborg accepted this invitation and requested Dr. Richard G. Hewlett, Chief Historian of the Atomic Energy Commission, and Mr. Howard C. Brown, Jr., Executive Assistant to the Chairman, to conduct the interviews. At the suggestion of Dr. Hewlett, the interviews were not scheduled until research already underway to assemble the principal records of the Kennedy Administration in the Commission's files had been completed. By assembling the written records first, it was possible to direct the interviews to the most significant events, to discuss events in roughly chronological order, and to clarify certain points which were obscure in the written record.

General outlines were prepared for each session and in some cases factual summaries and chronologies were drafted in outline form to facilitate the development of the discussion. The interviews themselves, however, were essentially extemporaneous; the transcript contains a great deal of information which Dr. Seaborg had never before committed to paper.

The transcript has been edited only to the extent necessary to make it legible and accurate. In no case has any substantive information been deleted. Copies of the original sound transcription will be deposited in the Kennedy Library and in the Commission's files.

The first interview was conducted in the Chairman's office in the AEC Headquarters Building at Germantown, Maryland. The following four interviews took place in the Chairman's office at 1717 H Street, N.W. in Washington, D.C.

A number of deletions have been made to eliminate Restricted Data and to permit wider distribution as Defense Information. Copies of the complete transcript will be deposited in the Kennedy Library.

I. FIRST INTERVIEW, JUNE 11, 1964

HEWLETT: Mr. Chairman, Howard Brown and I are here this morning to begin a series of interviews with you for the Kennedy Library. In a sense, we are sitting here as the historians of the future to ask you those questions which we feel would be of help to people in the future in studying the Kennedy Administration and the history of our country and the world in the 1960's. I think that we can assume in these interviews that the people who make these studies in the future will have available the materials which are going into the Kennedy Library; therefore, we will not attempt in these interviews to fill in all the background which might be necessary to a person who has no deep understanding of the program. We can assume that they can find these materials in the microfilm documents which we have prepared for the library.

SEABORG: Well, Dick and Howard, I am pleased to participate in this manner and I will do my best to recall the interesting aspects of my connections with President Kennedy.

1960 Campaign

HEWLETT: I would like to start this morning by going back to the beginning, so to speak, and to talk for a few minutes about how you first became associated with the Administration. But I thought first we might like to record here your comments on the 1960 campaign and any of your personal attitudes toward the election. Were you particularly associated with one party or the other before the election?

SEABORG: I did not meet President Kennedy until after he had offered me the appointment as Chairman of the Atomic Energy Commission, and, hence, not until I arrived in Washington to take over the position in January of 1961. However, I did have a great interest in the election. I was a supporter of Mr. Kennedy, you might say, from the beginning, and certainly after his nomination in Los Angeles. As a matter of fact, I happened to be in Los Angeles at the time of the Democratic Convention. My family and I were vacationing at Balboa Beach at that time, and we were given passes to the convention. I and some of my children attended the convention, and watched the developments there as President Kennedy was nominated and as Lyndon Johnson was

nominated for the Vice Presidency. As a matter of fact, I had a good friend in Democratic political circles in California -- Edwin W. Pauley -- who made it possible for me to be on the floor of the convention during the proceedings. I was happy when John Kennedy won the nomination for President. He seemed to me to be the most forward looking of the candidates. My assessment, of course, was on the basis of some speeches and general impressions rather than on the basis of any personal relationship that I had with him.

HEWLETT: Did you hear Senator Kennedy's acceptance speech?

SEABORG: Yes, I was present at his acceptance speech in the Los Angeles Coliseum. This was a very exciting experience, indeed. Again, I had several of my children with me that evening and they were quite excited. My oldest son, Peter, in fact, went up to Senator Kennedy's car, and touched him on the arm as the car was moving through

the mass of people after his speech. It is difficult to describe how excited he was to be able to come back and say, "I actually touched him." We were close at that time. This did not seem to me to be any more than a sort of impersonal contact with a man we hoped would be President. I had no inkling of the further rather intimate connections that I would have with him in the months to follow.

BROWN: Mr. Chairman, did you watch the TV debates between Mr. Kennedy and Mr. Nixon?

SEABORG: Yes. I watched all of the TV debates, including the famous first one in which Kennedy made such a very favorable impression relative to Mr. Nixon. In order to watch them all, I recall that on at least one occasion I had to view the debate on a TV set in an airport when I was in Dallas between airplanes, but I managed to watch them all. I had the impression that Senator Kennedy had very much the better of it. This made a great difference; perhaps it was decisive in the outcome of the campaign.

First Contacts with the President-Elect

HEWLETT: Could you tell us of your first contact with the President-elect after the election and something of the circumstances?

SEABORG: The first contact was by telephone early in the afternoon of January 9, 1961, when I happened to be visiting the Radiation Laboratory at the University of California at Berkeley where I was Chancellor - that is, the chief administrative officer for the campus, at that time. I made it a practice, in spite of the many administrative

responsibilities that I had, to visit the Lawrence Radiation Laboratory regularly. In fact, this was one of the conditions under which I accepted the Chancellorship that I should be allowed the opportunity to keep in touch with the scientific work, especially the work on the transuranium elements, that interested me so much. I was told as I was talking to my colleagues up in the Heavy Ion Linear Accelerator building that I was wanted on the telephone. When I went to the phone, the first voice I heard was that of McGeorge Bundy, who said that they were in an informal meeting in Boston with the President-elect and the matter of the Chairmanship of the Atomic Energy Commission had been under discussion. There was the unanimous feeling they should try to convince me to take the position, and the President would like to talk with me about it. I was rather nonplussed, surprised and amazed. They then put the President-elect on the telephone. He said that they were very anxious to have what he called a strong candidate; that it was very important to have such a candidate; that he felt that I was such a candidate; and that he hoped I would accept. He told me, frankly, that some political factions were trying to convince him to select another man for the Chairmanship, a person that he thought to be quite unacceptable. He was hoping that I would give him the go-ahead and that with my nomination they would be able to assure themselves of the type of leadership that they would like to have in the Atomic Energy Commission. In particular, they wanted to change the leadership to that of a scientist as a departure from the past.

HEWLETT: What was your immediate reaction to the President's call? Did you give him any answer at the time?

SEABORG: No, I did not. I said I would like to have some time to think it over, and he said that he expected that and that he would call me back the next day for my answer. Now, actually, he did not call me back the next day.

HEWLETT: He did not?

SEABORG: No. By the next day I had talked to my colleagues, the Regents of the University, the President, and my family. Everyone, except my family, was unanimously of the opinion that I should accept the position. In fact, most of them were very enthusiastic, so enthusiastic that I had the impression it would have been very difficult to decline. I would then find myself in the posture of remaining there after I had had this opportunity, and everyone, including the Regents, knowing I had had this opportunity.

I said that everyone approved except my family. The evening of January 9, at dinner, I broke the news to my family and they called for a vote on the subject. We have six children, including at that time a one-year-old daughter. My children's version of the vote is that they voted seven to one against me; that is, Mrs. Seaborg and the six children, including the

one-year-old daughter. I am not sure as to the ethics of the situation, but it is true that the preponderance of sentiment in my own family was against our move to Washington. They felt they had a situation that they liked very much in Lafayette, where

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we lived, the schools, the general open areas for recreation, and so forth. As it turned out I over-ruled the seven-to-one vote and accepted.

However, as I indicated, the President did not call back the next day, and I learned a day or two later that in checking with some members of Congress, the question had been raised whether I might not have some Republican leanings in view of my known friendship with Richard Nixon. It happens that I have known Richard Nixon since early in 1948 when both of us were members of the group of ten outstanding young men of the year chosen by the U.S. Chamber of Commerce. As members of the group we had been together for several days at the ceremonies attendant on the choice of these people, held that year in Chattanooga, Tennessee. Actually we had been in touch with each other frequently, but, of course, sporadically since that time. Mr. Nixon was a Congressman at that time. He ran for the Senate in 1950, I believe, and I was not one of his supporters, actually, at that time. In fact, I can recall his visiting the Radiation Laboratory at that time and his press people asking that a picture be taken of myself with Mr. Nixon, and my refusing under rather embarrassing conditions, with Mr. Nixon present. However, I must say that Dick immediately understood the situation, and actually rather berated his press man for even suggesting the thing. He considered it most inappropriate; he did not think the subject should have even been brought up.

However, the people in Washington did some checking and it was rather easy to prove that I had been a supporter of President Kennedy,

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and, for that matter, a life-long Democrat. I was also a supporter of Stevenson in both of his campaigns and of Truman in the 1948 campaign as well as of Franklin Delano Roosevelt -- for each of his campaigns when I was eligible to vote. Once this fact had been ascertained I was contacted again and given a definite offer.

HEWLETT: Well, I am glad to have your comments on that because I must confess I had heard that the question had come up. I am very glad to have it straightened out and I am sure people will find that story interesting in the future.

SEABORG: Oh, you had heard that story?

HEWLETT: I had heard that, not in the proper version, however.

SEABORG: Yes. On the following Monday, January 16, Ralph Dungan phoned me while I was attending a meeting of the President's Science Advisory Committee at the

Rockefeller Institute in New York. I was a member of the President's Science Advisory Committee at that time. He phoned to say that the President-elect had been trying to reach me for several days, unsuccessfully. That was quite possible because I was traveling. He was calling on behalf of the President-elect to urge me to accept the Chairmanship, and during that phone call I told him that I positively would. So that was the point at which the die was cast.

Previous AEC Experience

BROWN: You anticipated one question I had, Mr. Chairman, but I wonder, in weighing your decision to accept the offer made by Mr. Kennedy, whether you had other previous contacts with the Commission that aided you in this decision.

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SEABORG: Oh, yes, I had known all of the Commissioners since the Commission took over the operations of the atomic energy enterprise on January 1 of 1947. As a matter of fact, I was a member of that first General Advisory Committee which included such people as Enrico Fermi, Isidor Rabi, Robert Oppenheimer, Lee DuBridge, and James Conant, to mention a few. I attended the first meeting of the General Advisory Committee with the new Commission -- Chairman Lilienthal, Mr. Strauss, Mr. Pike, Mr. Waymack and Dr. Bacher on January 2, 1947. That first General Advisory Committee was a very influential one and worked very closely with the Commission, I would say more so that any of the subsequent General Advisory Committees, for rather obvious reasons: they were a knowledgeable group and it was a new Commission, starting a new enterprise. It was almost, therefore, a matter of teamwork between the General Advisory Committee and the new Commission in those first months and years. And, then I have been in rather close contact with the other Commissions through the years, with Commissioner Pike when he was Acting Chairman; with Chairman Gordon Dean, with Chairman Lewis Strauss, and with Chairman John McCone and the Commissioners who worked with them. I would say that I knew them all, and some of them quite well.

HEWLETT: Well, then when did you first come to Washington as designated Chairman? Were you here at the time of the Inauguration?

SEABORG: Yes, actually, the meeting of the President's Science Advisory Committee in New York was a two-day affair on January

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16th and 17th, and I came into Washington the night of the 17th in order, interestingly enough, to attend -- at least I had planned before this appointment took place -- to attend a meeting of the National Science Board, of which I was also a member, and which was meeting at about that time, I would judge about January 18th or 19th or 20th. But

actually I never got to the meeting of the Board. I intended to, but the recent events took over and I came over to the Commission headquarters. I believe I went to Germantown, and met with John McCone and Commissioners Graham, Olson and Wilson and began to get briefed on the responsibilities that were going to face me.

The Inauguration

HEWLETT: Did you see any members of the White House staff or the President before the Inauguration?

SEABORG: I did not. I put my time in with members of the Commission. However, I attended the Inauguration and attended the ball the night before the Inauguration -- the night of the famous snow storm -- which made it impossible for me to get to the ball until very late, but I eventually made it.

HEWLETT: Most of us were not able to get to the Inauguration that day, but you were able to get up through all the snow?

SEABORG: Yes, on Friday, January 20, I managed to get to the Inauguration. I was there on time and in the stands when President Kennedy delivered his famous, thrilling inaugural address.

HEWLETT: Do you have any comments or reflections on the inaugural address, anything about it that was particularly striking at the time?

SEABORG: Well, I thought that it was one of the great inaugural addresses of all time. I was thrilled with it -- not only with its content, but with the manner in which it was delivered, with the obviously impressive style of the man who delivered it. And, I must say in all the succeeding times that I heard President Kennedy speak, and that was dozens and dozens of times, I never ceased to get that thrill; each speech seemed to recapture some portion of that initial thrill.

First Impressions of the Commission

HEWLETT: You mentioned a few moments ago your first meeting here with Chairman McCone and the other Commissioners. I wonder if you could give us some of your impressions of the Atomic Energy Commission at the time you became Chairman, some of the things you thought the Commission should be doing in the future, or your general reaction to the Commission as an organization in the Government.

SEABORG: Well, my impression was pretty vague so far as the actual operation of the Commission was concerned -- the relationship of the Commissioners to the

staff, for example. My contacts were in two ways -- one was as a scientist in an operating laboratory, the Radiation Laboratory where, of course, we had contacts with the staff, and then a rather direct contact with the Commissioners themselves in which we usually talked either very broad policy or, you might almost say, we indulged in essentially social conversation.

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First Meeting with President Kennedy

BROWN: Mr. Chairman, in point of time, now we are somewhat after the inauguration in January, 1961. When was your first meeting with the President; did it occur before that or shortly after?

SEABORG: My first meeting with the President was in the reviewing stand, later in the afternoon of January 20th, on Pennsylvania Avenue in front of the White House. Actually, I met Robert Kennedy first. I introduced myself to Robert Kennedy. He immediately called the President and brought the President up to me -- I was several rows up -- and then we shook hands. He was very pleasant, smiling. He expressed his pleasure that I had accepted the position, and then, interestingly enough, he gave me an assignment immediately. He said that he knew there was another vacancy on the Commission and that he would like to fill that with another scientist. At that time, he indicated that he would prefer a young scientist who could perhaps attain experience in the Commission and then go on to other positions in Government. Actually, his objective was met. We did not wind up recommending a young scientist to him. I eventually, a month or so later, recommended Leland Haworth to him and fill the vacant Commissionership, and interestingly enough Leland did go on to accept, in the summer of 1963, another important position in the Government, the Directorship of the National Science Foundation. President Kennedy's foresight in this case paid off.

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BROWN: Mr. Chairman, on the occasion of your first meeting with the President, in the reviewing stands, did you have the opportunity at that time to meet Mrs. Kennedy also?

SEABORG: No, I did not have the opportunity at that time, as I recall it. President Kennedy came up several rows in the reviewing stands and stood by my seat where we carried on our conversation.

Role of Scientists in the Commission

HEWLETT: Coming back to the question I asked before, just to elaborate a bit I believe, during all the Commissions prior to the Kennedy Administration, there had

been one scientific member representing the sciences on the Commission and there was also a feeling that perhaps this was not a strong enough representation of scientists. Did you have any feeling on this point before you became a Commissioner? Did you think that the representation was at times not adequate or that you would want to strengthen this representation?

SEABORG: Yes, I think so. I must confess that I do not recall any great dissatisfaction with it, any feeling that this was a crying need, that I should, therefore, take it on as a mission in order to try to rectify it. I would just say in a general way that I believe I felt more scientific strength would be helpful.

First Conference with the President

HEWLETT: In the records I have seen, perhaps your first conference with the President was on February 10.

SEABORG: Yes, that was.

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HEWLETT: It seemed to be a very interesting meeting.

SEABORG: Yes, it was an interesting meeting and perhaps you would like me to mention some of the things we took up.

HEWLETT: Yes, I know that this is recorded in some of your personal notes, and perhaps you might highlight some of the interesting things here that did come up in this meeting.

SEABORG: Yes, well, we discussed a number of things. Actually, one of the main things we discussed was a rather confidential weapons matter, but the President brought out a number of other points that certainly gave me an early insight into his philosophy. For example, he referred to his statement regarding the exchange of scientists in his State of the Union message and expressed concern that we not forget this, and that this be implemented. This was interesting in view of the later implementation in many ways, including the agreement that we signed with the Soviet Union in May of 1963. He also referred in this first meeting to his intense interest in the preparations going on at that time for the negotiations in Geneva regarding the nuclear test ban which were to start, I believe, on March 21, 1961. He indicated that he wanted a strong group working on disarmament. He had McCloy on the job already, but he indicated that more help would be needed for McCloy. Even at that early time the name of Bill Foster was mentioned in this connection. We also discussed the vacant Commissionerhsip again and several names were explored; for the first time the name of Leland Hawroth came up. Actually, I suggested him along with a couple of other names. Also,

the President told me with, you might say, a smile in his voice, that he thought I ought to go around and talk with Congressman Holifield and Senator Anderson. Obviously, he had reference to some of the earlier concern about my possible Republican leanings, and also he had in mind the fact that Senator Anderson had had another candidate in mind. I assured him that I had already done this and I might add, as a matter of fact, rather successfully. In the case of Senator Anderson, it did not take long to find in him a friend and supporter, and this has been our relationship from the very beginning. I might say in this connection, that in our first meeting, it developed that his father and my mother were both from the same part of Sweden -- Dalarna. He has indicated many times since that as soon as he knew that, there was not much chance of our having any serious disagreements. But I do believe that our understanding has been on a more solid ground than that.

BROWN: Mr. Chairman, perhaps the relevance of the President's question at that time had to do with the possible fact that your confirmation hearing had not been held as yet. Is this correct?

SEABORG: Yes, that is right. Actually, the confirmation hearings had not been held at that time because the Congress had not organized yet. The President wanted to be sure there were no difficulties; but, as I indicated, I was able to assure him on this point.

In addition, the President indicated at this first meeting on February 10, that he would like a briefing on the Atomic Energy

Commission. This was characteristic of his interest in science, and we should notice this was very early in his tenure of office. Not only did he want a briefing, but he indicated that he would like to come out to Germantown for the briefing and I, of course, was delighted with this idea. It was indicated that perhaps the best way to do so would be by helicopter and the implication was that he would want to do it right away with his characteristic impatience to get on with the job. As a matter of fact, the visit did take place the following week.

BROWN: Mr. Chairman, I think we would like to explore this visit because it was a very great event in the AEC. But before we leave your first formal meeting with the President on February 10, could you recall who else was present in this meeting.

SEABORG: Yes, McGeorge Bundy and Jerry Wiesner were present and the meeting took place, of course, in President Kennedy's office in the West Wing of the White House.

President's Visit to Germantown

HEWLETT: Then the meeting on February 16 was here at Germantown. I remember the President came here by helicopter and I believe there was a meeting here in your office first and then you went into the conference room. Do you recall any specific matters discussed during that meeting that would be of interest to record her? I know there were a wide range of subjects discussed at that time.

SEABORG: Well, I might say a little bit about that day because there are interesting aspects in addition to the policy

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discussions that took place later in the conference room here at Germantown. The President arrived, as I indicated, by helicopter. McGeorge Bundy, Jerry Wiesner, and I accompanied him. We took off from the White House lawn and it was a wintry day. The weather, however, was not too bad and we landed on the helicopter pad behind the AEC headquarters here at Germantown and then we were driven around to the front of the building, a distance of only a few hundred yards. I remember the way the President entered the building. You may recall a number of pictures were shown of him at that time taking off his coat as he was walking up to the front door in a very characteristic action photo. The caption might have been: "Let's get on with the business." Then he entered the front door, greeted and shook hands with the receptionists, came up the elevator, and greeted the various people he met on the way. Secretaries and other people were doing their best to act like they were tending to business, but they were peeking out the various office doors.

BROWN: By the way, I had the privilege of meeting you at the elevator when you and the President got off on the fourth floor of this building. I recall this very vividly.

SEABORG: And, that is when you met the President.

BROWN: Yes sir.

SEABORG: Then we came into my office here and sat down at our conference table. Coffee and doughnuts were served, and we had a very interesting twenty minutes or so, during which I briefed the

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President on the fundamentals of nuclear energy. I explained the fission reaction and the role fo U-235, U-238, and thorium as nuclear fuels or sources of nuclear fuels. The other Commissioners were present: Commissioners Graham, Olson, and Wilson. We had our pictures taken with the PResident. These pictures, by the way, still hang on the wall here in

my office at Germantown. Then we went down the hall to the Commission meeting room and there we had a program for briefing the President which was supposed to run forty-five minutes. People were instructed to stay on schedule, but actually the President was so interested and interrupted with so many questions that the briefing ran much longer than that -- an hour and a half or something of that order. The whole visit to Germantown which was supposed to take place within an hour's time took two or three hours. So, all in all, it was a very interesting and very exciting day, and of course, very useful, certainly from our point of view and, I believe from the President's point of view in getting an early understanding of the scope and basis of the atomic energy program of the United States.

BROWN: Mr. Chairman, you mentioned leaving this office where we are meeting now and walking down to the conference room. You may recall that the President's aide had asked the most direct route, but the President took the indirect route through the inner offices in order to meet all of your staff and secretaries.

SEABORG: I do recall that. It was, of course, something they have never forgotten.

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HEWLETT: No, I know there was one secretary from our office who really was up there on legitimate business at the time and happened to be in the office when the President came through. She still talks about that to this day.

As I recall the notes of this briefing, it covered a wide range of subjects and seemed to indicate that the President already had knowledge of a number of subjects which were later very important. For instance, he had many questions on the weapons program, indicating I suppose, his interest in the test ban and in international control. He also asked a good bit about the Aircraft Nuclear Propulsion program. Certainly anyone who is interested in the Kennedy Administration will want to see the notes of that meeting.

SEABORG: Yes, good minutes of the meeting were kept by one of our staff members. But, as you have indicated, the briefing was rather through. After my introductory remarks we did cover the matter of military applications, weapons, military reactors, propulsion and stationary military reactors, and the peaceful uses program, including the civilian power program and space applications -- both ROVER and SNAP. There was a short presentation on isotopes and more on research, including high energy physics, biology and medicine, and our cooperation with other nations. Then we covered the regulatory and adjudicatory program, and concluded with some basic financial and budget data.

BROWN: Did the President have many questions, Mr. Chairman?

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SEABORG: Yes, he was interested in the weapons area in some detail. I recall that he

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asked about the use of a [redacted] bomb. He said that at first we had developed a 20-kiloton bomb and now we were talking about [redacted] He asked why we needed one that large. There are just indicative of some of the questions he asked. He asked questions of this sort of all through the briefing. He was interested already in the Aircraft Nuclear Propulsion program, and it was only a little later he made his historic decision to close out this very expensive program of doubtful value.

BROWN: This was a decision that took a lot of courage, both on your part and the President's, in view of all the pressures to continue it.

SEABORG: Yes, it did. It was an unpopular decision in many parts of Congress and in many parts of the American industrial complex.

BROWN: Mr. Chairman, going back to the meeting in the conference room, could you detect from the President's questions whether he may even then have had in the back of his mind doing something more about a test ban?

SEABORG: Oh yes. I could not go so far as to say in any detail what he had in mind, but this meeting in Germantown on February 16 and my first meeting with him on February 10, certainly impressed

upon me the fact that he was very interested and had as an objective to explore completely the possibilities of a test ban.

HEWLETT: I was very much impressed in reading the notes of this meeting that the President seemed to be asking questions not just for information. There seemed to be a sense of direction in his questions. This fact seems quite extraordinary when you consider that the meeting occurred within a few weeks after his inauguration.

SEABORG: Oh yes. I would say his question had a sense of direction in all the areas that we explored: the ROVER nuclear rocket, and PLUTO, the RAMJET project. In the areas of research he was interested in the ranges of power of the Soviet accelerators and in the significance of our various accelerators. He asked how the Argonne ZGS might compare with the projected Soviet accelerators. He asked whether these accelerators had any military significance. We told him not really in a predictable sense, only in the very broadest way of increasing knowledge.

BROWN: The President seemed to get more interested as time went on, but the meeting finally ended. Did you fly back to Washington with the President in his helicopter?

SEABORG: Yes, as a matter of fact, I did, in order to have a little more time to be with him and to discuss these matters with him. Then I went over to the H Street office for the rest of the day.

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HEWLETT: Bundy and Wiesner attended both of these sessions on the 10th and the 16th. Did they take any active part in the discussion?

SEABORG: Yes, I would say they did. I do not recall in detail. I believe Wiesner more than Bundy on the occasion of the President's visit to Germantown.

HEWLETT: I was just feeling out the idea of how much Wiesner and Bundy, in these early days, may have influenced the President's thinking. He may have arrived at these tentative positions simply in his own reading and study of the situation, but he probably had talked with them some length before this.

SEABORG: I do not think, however, in the case of most of these points that I have identified here, the questions that he raised in the course of his visit at the AEC headquarters, that Wiesner and Bundy, at that time, could have had much influence. They are questions of the sort that one could not have been briefed on in the normal sense. There was every indication of spontaneity, and the questions were keyed to the briefing and to the points that rose at the time which no one could have known in advance.

Commissioners in 1961

BROWN: Mr. Chairman, I should imagine that from the historical point of view, Dr. Hewlett would like to have recorded here who were the other Commissioners with you at that time when the President visited the Germantown headquarters?

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SEABORG: Yes, the other Commissioners at that time were Commissioners John Graham, Loren Olson, and Robert Wilson. There were just the four Commissioners at that time, three besides myself as Chairman. And it was a little after that, I believe the following month, that Leland Haworth joined the Commission to fill its full complement of five.

HEWLETT: And I believe, as a matter of fact, you were technically a Consultant to the Commission at this time. You were not as yet Chairman.

SEABORG: That is true, although I operated in every respect as Chairman. But I was not sworn in as Chairman until March 1.

HEWLETT: I have seen no record of the swearing-in ceremony. Was this at the White House?

SEABORG: No, this was an informal ceremony at the H Street headquarters with Mr. McCool, Secretary of the Commission, doing the honors.

BROWN: You mentioned earlier, but it might be worth repeating again, that the reason for the long delay between your appointment by the President and the swearing-in was due to the fact that this new Congress was not yet organized and the Joint Committee, itself, which held these hearings, had not been organized.

SEABORG: That is right. Actually my confirmation hearing could not be held until the Congress was organized. The confirmation hearing was held sometime in the last six or seven days of February, as I recall it.

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HEWLETT: Yes, but I do not believe this had any effect on your functioning in the Commission.

SEABORG: No, actually, it did not. John Graham was officially the Acting Chairman. John presided at Commission Meetings during February of 1961, but with great deference to me and in a manner that made it possible for me to carry on effectively as if I were Chairman.

BROWN: As a member of the Chairman's staff, I can tell you that the distinction between before March 1 and after March 1 was not noticeable. You worked as hard before as after.

Cancellation of the ANP Project

HEWLETT: One of the first important decisions made by the new Administration in this area was in the cancellation of the ANP project. I know that much of this has been recorded in the documents, and I do not think we need to try to repeat here the whole history of that decision. But I did wonder whether you had any comments on the various factors or groups of interests involved here. We know that Congressmen Price and Holifield of the Joint Committee were very much in support of the ANP project. I do not know the opinions of Mr. McNamara or Mr. Zuckert.

SEABORG: Oh, they felt that the value was not commensurate with the cost at all, that too much had been spent and that to carry it on would involve the expenditure of

much too much money in relation to the value of the project. So I would say that Mr. McNamara and Mr. Zuckert were in favor of the cancellation. And Harold Brown, who came on the job about March, 1961, as Director of Defense Research and

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Engineering, also took a forthright, straightforward, courageous position and indicated that he thought that it should be canceled.

HEWLETT: How did you evaluate the Joint Committee's position at that time?

SEABORG: Oh, I would say they were generally in favor of continuing. So this was a rather difficult decision on my part, but I took the position with the President from the beginning that I thought it should be canceled.

HEWLETT: I think the Joint Committee took the position on the basis of national security that it was wise to continue the project.

SEABORG: Yes, they felt it had value. They also felt with some justification that it had been sort of an "on again, off again" project, and that part of the reason for what they felt was its disrepute had to do more with the manner in which it had been handled administratively, and that if people would give the scientists and engineers a chance, the project would be successful. They had some justification for their position.

HEWLETT: Did the President ever comment to you about the question before he made the decision?

SEABORG: Oh yes, we had several conferences, and he was not difficult to convince. In fact, one can raise the question as to who convinced whom. I do not recall ever having any real problem of arguing with other members of the Administration with respect to this decision.

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BROWN: This was the President's first budget and it must have been very interesting to witness his actions. He was really under the gun in terms of the time available to get this budget before the Congress and to get it approved. The last few hours of the formulation of that budget must have been interesting, Mr. Chairman, and I suspect you probably had occasions to see the President personally on other items of interest to the AEC.

SEABORG: Yes, as a matter of fact, these were really more than that, as I recall it. Weren't they supplemental items for the budget?

HEWLETT: This was a re-examination of the whole budget that was prepared by the previous Administration.

SEABORG: By the previous Administration, that is right.

HEWLETT: And as I recall it even at the February 10 meeting there was some discussion of some of these areas.

SEABORG: Yes, I think some of these areas may have been raised at that time but it was a little later that we began to come to grips with things like ANP, the space program, ROVER, and SNAP. It is interesting that in connection with the cancellation of the ANP, I was able to convince the President to keep a rather substantial amount of money in the budget -- I believe it was $25 million -- which was really the basis for the SNAP program in the following years. I think this was a very important point.

HEWLETT: I had surmised from the record that this might have been done, but I am glad to have it confirmed.

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SEABORG: Yes, I argued before the President in the presence of other advisors who were not particularly convinced that we should retain $25 million of the ANP budget which, of course, was much larger than that (in the range of hundreds of millions of dollars) for use in the SNAP program. I can recall quite vividly that the President decided in my favor. I do not recall quite vividly that the President decided in my favor. I do not recall just how he said it, but it was something like: “Let’s let Glenn have that money; it seems reasonable to me.”

HEWLETT: Well, we are nearing the end of our first tape, so I think we can stop at this point. Thank you.

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II. SECOND INTERVIEW, JUNE 18, 1964

Commission’s Washington Office

HEWLETT: Mr. Chairman, you will recall that our last interview was in your office at Germantown, Maryland, and today we are meeting at your office at H Street in the City of Washington. It might perhaps be of interest to some future historians to know why you have two offices and to know where these are.

SEABORG: Well, the decision was made to move from the AEC office at 19th and Constitution Avenue out into the country. This decision was made at the time

it was the policy of the Government to disperse significant Government activities to regions outside of the City of Washington, and this move was made in 1958 while Chairman Strauss headed the Commission. In fact the whole idea of the move took place during his tenure. However, since that date the Commission has found it more and more necessary to conduct a large part of its business in town because of relationships with the many Governmental agencies. The Commissioners have to be available for Congressional hearings, consultations with Congressmen, consultations with other members of the Executive Branch, and of course, consultations with the President and the White House staff. They must be available to attend National Security Council and Cabinet meetings, and available for appointments with visitors from out of town who find it impossible or inconvenient, to come way out to Germantown headquarters. These meetings have become more and more

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important, and have increased in number with the growing interest and activity in civilian nuclear power. Also, an increasing number of meetings must be held in connection with the regulatory aspects of the Commission's work. The net result has been that since 1958 there has been an increasing need for the Commissioners, particularly, and the key staff to conduct a good deal of their business back in Washington. This has resulted in the move back to Washington, and the Headquarters here at 117 "H" Street on the eleventh floor. The alternate Headquarters are being used more and more as time goes on. We have now reached the point, rather unfortunately, where the Commissioners are spending perhaps four out of five days here at the alternate Headquarters. This results in a rather inefficient and awkward situation which makes it very difficult to run the business of the Atomic Energy Commission.

BROWN: Mr. Chairman, I wonder if you could describe the physical location of your downtown Headquarters and the Germantown Headquarters in relation to the White House.

SEABORG: Yes, the Headquarters here at "H" Street are about 28 miles from our Germantown Headquarters by automobile, depending on the time of the day and the amount of traffic. Within the last year, however, the possibility of traveling on the new highway in Virginia has lowered the time to perhaps on the order of 40 minutes. On rare occasions, the trip has been made by helicopter, as I indicated in our last interview.

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But a helicopter is not feasible as a routine thing, because the distance is not quite long enough, and the weather is not uniformly good enough. We also have a third Headquarters now. The Regulatory staff is located in Bethesda, about half way between the German town and the "H" Street Headquarters. The "H" Street Headquarters is very well located with respect to the White House, because all we have to do is walk down to the corner and down

17th Street a block from "H" Street to Pennsylvania Avenue and then cut across the street to the Executive Office Building where we have many of our conferences.

HEWLETT: Did you, during the Kennedy Administration, often walk to the White House?

SEABORG: Oh yes, that was a method of locomotion that I used although the entrance to the West Wing is a little farther. It often pays, particularly during inclement weather, to be driven even though it is a matter of some blocks.

Control of Nuclear Weapons

HEWLETT: You will recall that during our last interview, we talked a bit about the first days of the Kennedy Administration, and we talked about the first days of the Kennedy Administration, and we talked about the cancellation of the Aircraft Nuclear Propulsion project. One of the first issues which came before the Administration in the atomic energy field was the question of control of nuclear weapons. One aspect of this arose in Chairman Holifield's letter of February 15, 1961, to the Commission, in which he transmitted a report prepared by members of the Joint Committee following a trip to Europe in 1960. This is

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important background for the situation in 1961, and perhaps you could tell us a bit about it.

SEABORG: Yes, this problem of the civilian control of atomic energy of course is an old one and one that has been with the Commission since its very beginnings. Perhaps we will get to that in a few moments, but to respond directly to your question. The Joint Committee sponsored this trip to the NATO countries to inspect the conditions for the custody, actual control, safety, and other considerations concerned with the dispersal of weapons to the NATO forces.

The group included representatives of the Joint Committee and the Atomic Energy Commission, the Department of Defense, and others. The head of the group was Representative Chet Holifield, who was the Chairman of the Subcommittee on Legislation of the Joint Committee on Atomic Energy at that time. Other members of the Joint Committee with Congressman Holifield were Representatives Wayne N. Aspinall. Craig Hosmer, and Jack Westland, Senator Wallace F. Bennett, and James T. Ramey, who at that time was the Executive Director of the Joint Committee, and now of course is a Commissioner of the Atomic Energy COmmission. Also in the group were John T. Conway, the Assistant Staff Director of the Join Committee, as well as Lt. Col. Richard C. Lunger, who was the Staff Consultant to the Joint Committee, and Herbert Loback, Staff Administrator of the Military Operations Subcommittee of the House Committee on Government Operations.

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From the Atomic Energy Commission, the group included for part of the trip, Chairman John McCone, and for the entire trip, Commissioner John Graham, who had a special interest in this problem of civilian control, custody, and safety of nuclear weapons. Representing the Atomic Energy Commission staff were Dwight Ink, the Assistant General Manager, and Cecil King who was an Assistant to the Chairman of the Atomic Energy Commission at that time. Others in the group were Dr. Harold Agnew of the Los Alamos Scientific Laboratory and from the Department of Defense, Col. Robert Partridge, Col. Carlos D. Bonall, Lt. Col. Emory D. Taylor of the Air Force, and Lt. Col. Joseph Boland of the Air Force. Partridge was from the Army and the other three were members of the Air Force.

This group toured the NATO sites in the summer of 1960. Upon their return a very comprehensive report was written and transmitted to President Kennedy as one of the first important documents that he received. In a letter under the dateline of February 15, 1961, the Atomic Energy Commission received a copy of this report, which made a number of interesting recommendations.

Joint Committee Report on NATO

HEWLETT: Could you tell us some of the more important recommendations of the report, as they affected the Kennedy Administration?

SEABORG: Yes. They involved such questions as how important to the United States and NATO security is the US-NATO nuclear weapons

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capability. Perhaps more specifically from the standpoint of our particular concern, the report posed and tried to answer such questions as: What are the risks of accidental and unauthorized use or detonation of nuclear weapons under present circumstances? What reasonable measures can be taken to prevent accidental or unauthorized use? In other words, how can effective United States control over these weapons be improved? And they asked: In utilizing these more advanced weapons systems in NATO, should we not be alert to the fact that we have increased the problem of maintaining the security of Restricted Data in the event of access to such weapons by the host or other national? How can we prevent unauthorized seizure of the weapons, or if they were seized, how could we prevent even at that stage the loss of Restricted Data, if this were possible?

HEWLETT: Such questions involved the security of the weapons themselves, the security of the information, and the matter of accidental use.

SEABORG: Yes. Accidental use might trigger a World War -- the holocaust that everyone fears. These, then, were the questions that were raised and dealt with in this

rather comprehensive, thoughtful report that Chairman Holifield sent to President Kennedy on February 15, 1961, less than a month after President Kennedy took office.

HEWLETT: I can imagine that this was a matter of concern to the President and I believe he had, during the campaign, expressed some interest in this subject.

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SEABORG: Yes, it was indeed, and in the course of the next two years, he took a number of actions to deal specifically with the points in this report. Perhaps not only because they were in this report, but because they were actions that logically needed to be taken and because this was a matter that was very much on his mind. Actually President Kennedy welcomed the report because it demonstrated the full support of the powerful Joint Committee on Atomic Energy in just the area in which he had a deep concern of his own.

Commissioner Graham's Letter of February 7, 1961

HEWLETT: Well, I am sure another source of information on this subject was Commissioner Graham's letter of February 7, 1961. It just occurs to me that perhaps some of the historians in the future would be as confused as some people are today about the weapons situation. We often hear about the 1946 Atomic Energy Act as providing for civilian control of atomic energy, and some people assume that the Act settled the problem once and for all. Of course, this is not true, and I think that Commissioner Graham's letter and some of the background explains why this was a matter of particular concern at this time.

SEABORG: Yes, this was a matter of continuing concern and this involved one of the first policy questions that I faced when I arrived in Washington to take over my duties as Chairman of Atomic Energy Commission. As I indicated last time, I arrived on the last day of January in 1961, and spent the month of February very much involved in Commission business. One of the first things that I was thoroughly

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briefed on and on which my counsel was sought was this matter of civilian control of these weapons. Mr. McCone as one of his last acts had met with Secretary Gates and General Lemnitzer on January 13, 1961, to discuss these problems with President Eisenhower. At that time Mr. McCone indicated that the Commission wanted to express its concern over the very large number of weapons which had been dispersed or which were planned for dispersal to foreign soil. Then he went on to say that one member of the Commission, Mr. Graham, had gone further than this in a minority position. Mr. Graham thought that the civilian control of atomic weapons as originally contemplated in the Atomic Energy Act had eroded away. At

that time, he pointed out, the AEC had custodial responsibility for only a small part of the stockpile. This was Mr. Graham's position; the other Commissioners were not as concerned about this.

HEWLETT: That means that from 1946 up to that time, a large part of the stockpile had been transferred outside the direct control of the Commission?

SEABORG: Yes, and I think we could get into that in a little more detail. As a result of this discussion, Mr. Graham consulted with me and obtained my blessing, because I was very much in agreement with his concern over this question. He wrote President Kennedy on February 7, 1961, in his capacity as Acting Chairman, pointing out the problems here and expressing his concern.

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Actually, Mr. Graham was motivated further by a letter that President Eisenhower had sent on January 16, 1961, just four days before the end of his Administration, which directed the Atomic Energy Commission to transfer additional weapons to the Department of Defense. In this letter of February 7, 1961, Mr. Graham informed the President that the Commission would plan to defer implementation of this January 16 directive pending an opportunity for President Kennedy to review this directive in light of the current situation. As I have indicated, Mr. Graham discussed this with me, and I thoroughly agreed with him so that he was able to send over on February 7 a letter which really represented the consensus of the Atomic Energy Commission as of that date. This included my own position although I was not yet technically a Commissioner.

In this letter, Mr. Graham said that the Commission wished to call the President's attention, to the need for guidance concerning the long-range requirements for special nuclear materials for weapons in order to formulate plans for the most efficient operation of AEC plants in the future. The letter also said that the Commission was concerned because the long-range requirements appeared to be based largely on the production potential of AEC plants. That is, the requirements over the years had seemed to be based on the answer to the question of how much can you produce, and the requirements had come back apparently from the Department of Defense tailored exactly to what our answer way, to how much we could produce.

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Weapon Requirements

BROWN: That letter really raised two fundamental points, did it not, Mr. Chairman. The first had to do with the number of weapons in possession of the Department of Defense vis-a-vis the Commission and the dispersal of those weapons, and secondly, the question of whether or not the requirements placed by the Department of

Defense on the AEC, which of course had the production responsibility, were really based on military weapons requirements or on the ability to produce, or maximum ability to produce.

SEABORG: Those were the two questions and actually we went ahead during February before we received an answer to this letter by informing the White House of our intention to begin a reduction in the production of fissionable materials. At that time the amount of power being delivered to our three gaseous diffusion plants for the production of enriched uranium-235 amounted to a total of about 5800 megawatts. We decided in February, 1961 – and this is an action, curiously enough, that has not elicited a great deal of attention – to serve notice to the utilities furnishing the electric power that we would cut the power by about 1000 megawatts over a period of years pursuant to the contracts that we had with these utilities. That is, we would cut the power from about 5800 megawatts to about 4800 megawatts over a period of time. Actually that period of time runs until July 1, 1964, so that the last of that power cut will come in just a week or two. This action, of course, preceded the cuts that were directed by President Johnson when he took

office. The new reduction will cut the power down further to 2800 megawatts by about the summer of 1968. But the interesting point is that the Commission at that early date, and pretty much on its own, but with the White House approval, decided to take this rather large step in the reduction of power and hence in the reduction of the production of nuclear materials. And I should say that we also informed the Department of Defense and they concurred.

Erosion of Civilian Control

BROWN: Mr. Chairman, going back to Mr. Graham's letter for a moment here, he uses the expression "erosion of civilian control." I wonder what he meant by erosion. What prompted him to feel that an erosion had taken place.

SEABORG: Well, he knew that as the size of the stockpile had increased, and the weapons system had become more sophisticated, an ever increasing number of weapons had been transferred to the Department of Defense.

Let's review the historical situation here very briefly. Of course, at the beginning, all of the nuclear weapons in the stockpile were under the control of the Atomic Energy Commission, and they could be transferred to the military only by Presidential order. Actually there was no need to transfer nuclear weapons to the military services in these first years, and I recall that while I was on the General Advisory Committee form the start of the first Commission's tenure in January, 1947 until the summer of 1950, no weapons were transferred to the military.

However, the first transfers were made beginning about August, 1950 and continual transfers were made after that date, so that by 1953 an appreciable part of the total US stockpile of weapons had been transferred to the Department of Defense. This, of course, was a considerable fraction of the total. In 1954 Chairman Lewis Strauss wrote President Eisenhower expressing concern about the trend in the transfer of weapons to the Department of Defense. That was the issue of civilian control so you can see it is an issue that has been with us continually.

Nevertheless, it was the view of the President and the Joint Chiefs of Staff that such transfers were needed in the interest of the national security. However, a number of policy procedures were developed in order to attempt to provide some continuing degree of control by the Atomic Energy Commission. However, nothing really satisfactory was developed that gave the Atomic Energy Commission the type of control that a number of people wanted, and these suggested procedures were either not adopted or were gradually abandoned.

I might mention some of the possibilities that were explored. For example, as early as 1954, the concept of designating military personnel as Atomic Energy Commission custodians of weapons in the custody of the Department of Defense was adopted, but this system was soon determined to be impracticable. Another device was to transfer to the Department of Defense all weapons except the thermonuclear weapons. That is, just the fission weapons would be transferred to the Department of Defense, and the thermonuclear weapons would be retained in the AEC custody. This

didn't turn out to be practical for very long, so that still later, the idea was conceived of transferring to the Department of Defense only weapons below a yield of 600 KT, but this procedure too was soon abandoned. Another procedure which has remained in effect to the present day was to retain a substantial stockpile in what was known as the "JCS Reserve" – the Joint Chiefs of Staff Reserve. Actually, this was the reserve that included weapons in the Department of Defense and weapons still under the custody of the Atomic Energy Commission, but in each instance in reserve status. Initially, this reserve was established as a moderate part of the total stockpile. However, in 1958, the Department of Defense concluded that it was impractical to maintain a fixed percentage of reserve and the Department advocated instead a fixed number in the general reserve which would be sufficiently large to provide flexibility to meet unforeseen contingencies. In 1961, this number was down considerably and only a small part of the stockpile was still in the custody of the Atomic Energy Commission.

Therefore, to go back to President Eisenhower's directive of January 16, 1961, by that time a large part of the total stockpile had been transferred to the Department of Defense. Under the proposed directive of President Eisenhower, not only would there be additional transfers but additional dispersal to non-U.S. forces abroad, and this then was the situation when President Kennedy took office. Mr. Graham had witnessed these developments during his tenure as Commissioner in the preceding years and he felt a growing concern and belief that the new

President should have an opportunity to review this situation. It was in this context that he, as Acting Chairman, wrote his letter of February 7, 1961 to President Kennedy, a letter in which I concurred at that time.

Further Dispersals of Nuclear Weapons

HEWLETT: What was President Kennedy's response to Mr. Graham's letter?

SEABORG: Well, I would say that there was no single response to Mr. Graham's letter, but there were a series of actions flowing from the President and the National Security Council which represented the intent to recognize the importance of civilian control while at the same time providing maximum military effectiveness to US and non-US allied forces. There must be an attempt always to keep a balance between these two matters. For example, President Kennedy, on May 20, 1961, in a letter to Deputy Secretary of Defense Roswell Gilpatric gave partial approval to the January 16, 1961, dispersal order of President Eisenhower. He did not, however, approve further dispersal of nuclear weapons to non-US forces, pending further study; and he authorized the AEC and the DOD to proceed with the dispersal plans, "subject to the desirability of retaining a substantial reserve in the national stockpile." By that time, however, sufficient number of weapons had already been transferred to the DOD, so that as a practical matter the reserved in weapons in AEC custody amounted only to a small part of the total stockpile.

HEWLETT: Well, then, did President Kennedy subsequently authorize further dispersals to the non-US forces?

SEABORG: Yes, but essentially on a case-by-case basis and under circumstances which recognized AEC responsibilities for the health and safety of the public and for the protection of the Restricted Data after nuclear weapons had been transferred to the DOD by Presidential order. For example, one of the first acts to be taken by the new Administration in this area was to amend Executive Order 10841 to abridge the then existing delegation of authority of the Secretary of Defense and the Atomic Energy Commission to exercise jointly the authority vested in the President, without referral to the President, to transmit Restricted Data under Agreements for Cooperation under Section 123 of the Atomic Energy Act. The amendment to this Executive Order provided for Presidential review of proposed communications under cooperative programs with other nations. That is, the President himself indicated to this amendment to Executive Order 10841 that he wanted to review these proposed communications in the White House.

Another action was a National Security Action Memorandum Number 51, dated May 8, 1961, which followed a meeting of the National Security Council in which I had participated. The memorandum informed the Secretary of Defense and the Chairman of the

Atomic Energy Commission that the President had specified that the Atomic Energy Commission would participate in identifying and resolving health and safety problems connected with the custody and storage of nuclear weapons as a matter of

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continuing responsibility. In fact, that's a quotation from the National Security Action Memorandum Number 51: "matter of continuing responsibility." This also goes back to the concern of the Joint Committee on Atomic Energy that I referred to a little earlier in this interview. This action was taken in lieu of a proposed amendment to the Atomic Energy Act, which was also discussed at that time as a possibility – an amendment which might have clarified the responsibilities of the Atomic Energy Commission and the Department of Defense for establishing health and safety standards concerning dispersed atomic weapons. This was a matter of some debate at that time whether it would be better to clarify by legislation the Atomic Energy Commission's role in this area of health and safety connected with the custody and storage of nuclear weapons, or whether it would be handled by a National Security Action Memorandum of this type, and the latter course was chosen.

Health and Safety Responsibilities

BROWN: Excuse me, Mr. Chairman, all of this concern about the Commission's responsibility for health and safety was in the context, as I recall, of dispersal of weapons to non-US forces, for example, NATO. Is there a provision in the Atomic Energy Act which identifies any health and safety responsibility when we permit our weapons to be used by others – say, by NATO nations?

SEABORG: Yes, very early in Chapter I, Section 2(b) there is stated the following: "In permitting the property of the United States to be used by others, such use must be regulated in the national interest,

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and in order to provide for the common defense and security and to protect the health and safety of the public, –" And, of course, this has meant historically that the Atomic Energy Commission has felt that it had the responsibility to be involved in these matters, even when the weapons were dispersed to non-US forces, as we have been discussing here. Now, another National Security Action Memorandum, Number 143, dated April 19, 1962, placed limitations on the yields of certain weapons dispersed to non-US forces on quick reaction alert. I remember vividly the National Security Council meeting in which we struggled with this problem. What should we do with weapons on quick reaction alert – that is, where the airplane is ready to takeoff in a matter of minutes, at any time, day or night? How could we draw the proper balance between the prevention of unauthorized use, the protection of the public from the health and safety point of view and the need to have the weapons ready in the case of a dire emergency? President Kennedy himself resolved this question by suggesting

that certain weapons, above a certain yield, could not be placed on quick reaction alert. This, of course, was presented to the President as one of the alternatives, and there is an interesting – perhaps I should say curious – bit of legal thinking behind this limitation. It derives from a construction of AEC responsibilities under the Atomic Energy Act, not only for Restricted Data authorized to be communicated to other nations directly about weapons, but also the presence of Restricted data in weapons.

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Safeguarding Nuclear Weapons

BROWN: Now, this must have been the point of concern of the Joint Committee in their report, when you mentioned earlier their third recommendation. There was a concern about seizure – the fact that these weapons might fall in the hands of others.

SEABORG: That is right. There was also the possibility of the seizure of the weapons and then, of course, theoretically, that someone might take the weapon apart with a screw driver, and see how it was put together.

There was also the problem of compromising Restricted Data in the weapons just by exposure and proximity of others to US military personnel, so that there might be a possibility of gradual dissemination of this Restricted Data by a process of what we might call osmosis. This particular point regarding the Restricted Data in the weapons was raised by Acting Chairman Leland Haworth, in a letter dated September 2, 1962, and addressed to McGeorge Bundy. This letter resulted in National Security Action Memorandum 197, dated October 23, 1962, which established a procedure providing for dispersal actions in two steps: first, a Presidential approval in principal of a proposed future dispersal plan, and then, secondly, the actual dispersal. In each case, the President would first make the determination that in principle there might be at some time in the future the dispersal of a certain weapon, or weapons to certain non-US NATO forces. And, then secondly, there would be a latter detailed look at the actual dispersal plan before the final approval was given.

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This latter was also the subject of a separate memorandum from Carl Kaysen, who was Bundy's deputy, which by the way also was dated October 23, 1962. Mr. Kaysen wrote to assure me that the Commission would not only participate in the approval-in-principle procedure – that is, in the first step that I have indicated – but also in the formulation of specific recommendations to the President for the actual detailed dispersal of specific weapons to specific countries for use by non-US forces.

Well, these are some examples. In fact, I would say that it represents really a summary of all the important actions which ensued in the first two years following PResident Kennedy's assumption of office. That is, important actions in this field of control and dispersal of nuclear weapons. They are indicative of President Kennedy's, and the

Commission's recognition of the civilian control issue, on the one hand, and on the other hand, the President's pragmatic recognition of the facts of life insofar as our military requirements are concerned.

One must recall that on at least two occasions during President Kennedy's Administration, the possible need for nuclear weapons may have come very close to reality. I refer to the Berlin situation in the summer and fall of 1961, and the Cuban crisis in the fall of 1962. Our review of this whole question of civilian control which commenced in the early days of President Kennedy's Administration has of course continued.

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As a result of those early steps, there is before the Commission right now a paper which would help us to re-examine the whole question of the relevance and the meaning of civilian control as it relates to AEC participation in determining the numbers of weapons in DOD custody and their location and inventory. We were quite concerned that, with the large number of weapons dispersed, a weapon could be lost track of, and therefore, be subject to unauthorized use. The AEC, as I have indicated, is preparing a study on this, including a study of the dispersal of weapons which have been transferred to the DOD under Presidential directive. We would expect that in this review we would re-examine the basis in law, and the meaningfulness of endeavoring to exercise civilian control through the concepts of health and safety and Restricted Data which are the two areas of responsibility in which we are still participating.

BROWN: Mr. Chairman, you mentioned that Mr. Graham in his letter of February 7 also referred to the relationship between the weapons requirements imposed by DOD on AEC's production responsibilities. Then you went on to point out that the AEC, quite on its own, early in 1961, took steps to cut back on the electrical power used for production. Were there other steps in that area which evolved during the Kennedy Administration?

Production Requirements

SEABORG: Yes, I should say so! There was a continual discussion of this problem -- i.e., whether the Department of Defense's

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requirements were exactly equal to the Commission's ability to produce special nuclear materials for weapons. I would say that this pin-pointing of the question in Mr. Graham's letter of February 7, 1961, together with the Commission's decision at that time to take the first substantial steps in cutting the production of fissionable materials were part of the background for Secretary McNamara's letter to the President dated August 15, 1963, which for the first time established military requirements for nuclear weapons which were smaller than the production capability of the Atomic Energy Commission. This decision

led to a further cut in the production of fissionable materials, further cuts in the power to the three diffusion plants, and cuts in the production of plutonium by shutting down of one reactor at the Savannah River Plant and three at Hanford.

HEWLETT: Well, as one who has read over all of the directives over the years since 1947-47 down to the present, this is certainly a historic document from Secretary McNamara. We usually think of civilian control largely in terms of custody of weapons, but I think it is also true that it involves the control of fissionable materials and utilization facilities. I wonder if, in this period, President Kennedy took any action in the control of these non-weapon uses of atomic energy. It seems to me that this was a question that did come up in the summer of '61.

SEABORG: Oh, yes, this was a question that also was under discussion. President Kennedy, for example, wrote a letter to Chairman

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Holifield of the Joint Committee on Atomic Energy, dated September 23, 1961, in which he indicated that he had issued a directive which covered the responsibility for protection of public health and safety in connection with activities involving utilization facilities and special nuclear materials used therein held by the Department of Defense. In this directive, the President asked the Atomic Energy Commission and the Department of Defense to take the action necessary to implement this matter.

BROWN: This must have essentially referred to the military reactors program, did it not?

SEABORG: Yes, this had to do with the military reactors program. An entirely different field, of course, is the whole area of safeguards concerning the use of special nuclear materials -- plutonium -- generated in civilian power reactors. The International Atomic Energy Agency is playing an increasing role in this area. We now are operating under bilateral safeguards in our many agreements with countries throughout the world, but we would like to shift the responsibility for the safeguards to the International Atomic Energy Agency. President Kennedy had a great deal of interest in this objective and backed us 100%

BROWN: Well, I assume Mr. Chairman, that this directive also encompassed military reactors in the naval program.

SEABORG: Yes, and this was a matter of concern and one of the reasons for President Kennedy's directive in September of 1961.

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First Consideration of a Nuclear Test Ban

HEWLETT: Mr. Chairman, I know that one of the greatest concerns of the Kennedy Administration in these years was the hope of achieving a nuclear test ban. Do you recall that this was discussed early in the Kennedy Administration?

SEABORG: Yes, it was. It was discussed in February, 1961. I remember particularly a very serious I remember particularly a very serious discussion of it at a meeting involving quite a number of people early in March, I believe on March 4. Present at this meeting were President Kennedy, Mr. McCloy, Mr. Arthur Dean, Mr. Rusk, Mr. Bundy, General Lemnitzer, Mr. Nitze, Mr. Allen Dulles, Dr. Weisner, and others. We were exploring the position that the United States would take at the Geneva Test Ban Conference, which would involve the Soviet Union and the United Kingdom. You will recall that we were supporting a test ban treaty, whereby tests would be banned in the atmosphere, the upper atmosphere, and also underground, provided they were at a detectable seismic magnitude greeted than 4.75. Another important feature of the proposal was that we would requisition a sufficient number of inspections to ascertain whether testing of any kind had taken place, and the number that we were advocating at that time was 20 inspections per year.

HEWLETT: Do you recall whether there was a feeling at this time that there was a good possibility for a test ban?

SEABORG: Well, the optimism varied among the people. I think President Kennedy had some optimism. He certainly felt very

strongly that it was worth trying, and Mr. McCloy and Mr. Dean were certainly arch advocates of this course of action to try to negotiate such a test ban. I should also add that Adrian Fisher was also already on board at that time and present at this meeting.

We prepared a position. There was some debate as to just what that position should be. I remember that I argued for the position that the number of inspections should not be fixed at 20 but should be proportional to the number of seismic events per year that needed to be inspected. It could be that in some years if there were 100 earthquakes of magnitude greater than 4.75, and we had a ratio of one inspection for five seismic events, there would be 20 inspections. But some years there might be fewer, if there were less than 100 seismic events. In some years, there might be more. My position was that this approach would be more logical and, therefore, something that the Congress and the American public would be more apt to accept than some particular number, like 20. Then we talked about 17 as a fall-back position, and even smaller numbers. As you recall, the net result, however, was that the Soviets, after first saying they would not permit any inspections, finally came up with the proposal of three inspections per year. So a stalemate was reached rather quickly in the meetings that began later in the month of March and continued during the spring of 1961.

HEWLETT: Well, at the same time that there was hope for a test ban, there was also, I suppose, concern about the US position during the period of unpoliced moratorium.

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SEABORG: There was a great concern that this unpoliced moratorium, started back in October of 1958, would go on indefinitely. Certainly it was of great concern in our weapons laboratories, because there was a feeling that the laboratories were deteriorating rapidly. It was certainly a concern in the Congress. The Joint Committee on Atomic Energy particularly, voiced grave concern, and it voiced this with increasing intensity as the time went by. There was a concern among a certain sizeable segment of the American public and the public news media. The feeling was that these negotiations could not go on indefinitely, but that it was worth this last serious try before any consideration might be given to the resumption of tests in the United States.

Resumption of Nuclear Testing

HEWLETT: Well, as I recall along in April and May, however, as the hope for a test ban faded, there was more and more consideration of the possibility of having to resume nuclear testing. I wonder if you could recall any of your discussions with the President during this period.

SEABORG: Yes, I certainly can. I recall a meeting of the National Security Council on the 22nd of April, 1961, which was attended by Secretary McNamara, Deputy Secretary Gilpatric, Vice President Johnson, Mr. Bundy, Secretary Rusk, Dr. Weisner, and many of the others. The question was how long we should continue to negotiate. I recall vividly that President Kennedy turned to Secretary McNamara at that

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meeting. This was perhaps one of the first times that he had posed the question so directly, and he asked the Secretary how important it was to resume testing. Secretary McNamara responded that from his perspective it was important, and he identified especially three areas in which tests were required to increase our strength. One was to increase the yield-to-weight ratio of a number of our nuclear warheads. And the second was to increase our capabilities in the anti-weapons area, and the third was to develop specialized weapons. By that time, McCloy also was taking the position that we could not very well go on much longer just talking about the test ban treaty without some progress.

HEWLETT: Tests would be necessary to develop these new types of weapons?

SEABORG: Yes, and, of course the question always came up as to whether the Soviets were indeed testing.

HEWLETT: Yes.

SEABORG: I can recall that at several of these meetings when Allen Dulles was present, the President turned to him and asked for a recapitulation of the evidence that we might have as to the possibility of Soviet testing. Mr. Dulles invariably was forced to reply that it was possible that they were, but he had no real evidence. It was my opinion at that time -- and it remains my opinion in retrospect -- that the Russians were probably not testing during the moratorium.

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BROWN: Of course this question of whether or not they were cheating -- I think that was the word that was used.

SEABORG: Yes…

BROWN: In those days, Mr. Chairman, was also related to this level of 4.75 seismic magnitude, was it not?

SEABORG: Yes, and the possibility that they could continue to cheat, or begin to cheat, depending on what your view was, by conducting underground tests under this level of 4.75. Of course there was the question of what size of an explosion that would mean, and that varied form a few kilotons to maybe ten kilotons or more, depending on the medium in which the testing might occur. Then, of course, there was always the possibility of decoupling: the possibility of testing in a big hole sot that the effect of the large explosion would be made equivalent to the effect of a very small explosion.

BROWN: In other words, the seismographs really would not show the difference.

SEABORG: The seismographs would show a small explosion, or **no** explosion, even though a rather sizeable explosion in the multi-kiloton range had occurred.

HEWLETT: And, I believe there were also intelligence estimates at this time of the Soviet weapon capability.

SEABORG: Yes, there were such estimates, and this was one of the considerations in those meetings.

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BROWN: Well, Mr. Chairman, then as time went on, was further consideration given to the possibility of resumption of testing?

SEABORG: Yes, as the month of May wore on, I remember meetings in which the possibility of resuming weapons testing was discussed more and more seriously. For example, I remember a meeting of the National Security Council on May 19, 1961. Those present, in addition to President Kennedy, were Secretary McNamara and Deputy Secretary Gilpatric, General Lemnitzer, Mr. Allen Dulles, Harold Brown, Mac Bundy, and Dr. Weisner, and Mr. McCloy. Arthur Dean, our negotiator at Geneva, was at the negotiating table in Geneva. Adrian Fisher and a number of military people were present. I recall General LeMay and others. The purpose of this meeting was to discuss the questions bearing on the resumption of weapons testing and what we would learn from weapons testing. Harold Brown, the Director of Defense Research & Engineering, gave a briefing in which he described the advances that one would make in increasing the yield-to-weight ratio, the same considerations that he had been discussed before concerning the development of the anti-ballistic missile and the development of the specialized weapons.

This was followed by a general discussion. I remember that the President asked what the Russians needed most from testing, because we were feeling more and more that they were about ready to test. The answer we gave the President was that they probably did not need bigger strategic warheads, but most likely they needed lighter and

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more maneuverable ones. We thought that their warheads were probably large and rather unwieldy, built in a hurry, but built with a knowledge that they had large boosters that could probably deliver rather heavy warheads. The President asked a number of questions as to the degree of reliability of our warheads -- Polaris, Atlas, etc. -- because one of the reasons that we might test would be to determine the reliability of our own warheads. I recall that the President then posed the question as to what our embassies around the world thought the world reaction would be if the United States broke the test moratorium and began to test. The answer from those who felt that they could hazard a guess was that if it were done very suddenly, the reaction would be very adverse. The President went on to say that all the factors must be weighed and it looked like the decision would be a very close one. Even if we did decide to resume testing, perhaps it would be better to wait a while. In the meantime, he thought perhaps we should begin to prepare public opinion somewhat for this step. So you see that as early as May 19th these were very important considerations.

President's Attitude on Resumption of Testing

HEWLETT: I can see that it would be a very difficult decision because there were very persuasive arguments on both sides of the question. Did you have any feelings during this period about what the President's personal attitude was? Had he as yet come to any decision on the matter?

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SEABORG: I had the impression that the President was not convinced that it was

necessary for national security to resume testing. Interestingly enough, I had a chance to check this impression in a telephone conversation with Mr. McCloy the day following the meeting of May 19th, and he and I both agreed that the President seemed to have the impression that there was no deep military need for further nuclear testing at that time. Mr. McCloy had confirmed this impression also in a conversation with Mr. Bundy, who had seen the President since the meeting. Then I had a chance to confirm this impression first-hand, more or less by chance, about a week later when I attended the President's birthday dinner. The President engaged me in conversation about the problem of resuming testing, and gave me the impression at that time -- in fact I believe he stated it in so many words -- that he doubted that there was any need for testing nuclear weapons at that time. So if one were trying to assess President Kennedy's posture at that moment, -- let us say at the end of May, 1961 -- I would say that he was unconvinced but willing to hear the arguments and to continue to sift the evidence and assess data.

BROWN: By the way, was this dinner at the White House, do you recall, Mr. Chairman?

SEABORG: No, this birthday dinner was over at the Armory.

BROWN: I see.

SEABORG: Yes, it was his huge birthday dinner there, where I had the opportunity somehow to sit just a few places removed from him at the head table.

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BROWN: Getting back to the matter of testing again, Mr. Chairman, I gather in retrospect now, that this question of whether or not to resume testing was probably one of the first major foreign policy decisions which this new President was to have to make, was it not?

SEABORG: Yes, I suppose so. This was so, at least on the time-scale we are talking about here. Of course the Berlin question came up a little later, and overlapped with it; but during April and May and June, I would say that this was the initial foreign policy question of any magnitude that he had to face.

HEWLETT: Of course, a few days after this, on the 31st of May, the President left for his European trip, and as you recall he met with Chairman Khrushchev in Vienna. Then he came back to Paris and he had a meeting with some members of the Joint Committee. Some of the records I have seen suggested that perhaps the President's views on the resumption of testing may have changed during his European trip.

SEABORG: I would say that his meeting with Khrushchev on June 6 seemed to be somewhat of a turning point. I think he found Chairman Khrushchev so

immoveable in his attitude and general demeanor, that it seemed to have an effect on the President's attitude toward testing. I think we must interpret a matter of this kind with some caution. I do no believe it was ever a matter of a couple right angle change of direction in one fell swoop, but I do retain the impression that after his meeting he was more inclined to think that

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the resumption of testing was inevitable. It was something that he did not like to do, but it was one of the matters that had to be faced up to, and perhaps was only a matter of time.

HEWLETT: And I can assume from your answers that the President never mentioned this attitude specifically?

SEABORG: No, he did not mention it in specific terms. I do know that he met with some members of the Congressional committee in Paris, following this meeting with Khrushchev. Chairman Holifield of the Joint Committee on Atomic Energy was involved in that meeting, and he also got the impression that the President felt that there was little to be gained by continuance of the moratorium.

Seaborg Proposal

HEWLETT: Of course, later on, in June, the question of resumption of testing received greater consideration. I believe, if I remember the records correctly, that around about June 27, you discussed with members of the Administration a proposal for a way to announce the resumption of testing. As you said earlier, the problem was not only a matter of resuming testing but of trying to prepare the way for this in the best possible manner.

SEABORG: I did not have any great enthusiasm for the idea of resuming testing, but I was thinking about various ways of doing it that would lessen the adverse public reaction. I suggested a plan that I thought would work to President Kennedy, after I had tried it out on Mr. McCloy and Mr. Bundy. You have to look at this in the context of

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June or July of 1961. This plan was that the United States would announce that it considered itself free to resume testing, that it was making preparations to resume testing, and that it would test only such devices as the national security demanded, on the basis of normal weapons secrecy. I did not feel that it would actually be possible to keep all the tests secret, but secrecy would lessen the noise level considerably, and a number of the underground tests would not become known at all. This approach would give us a method of slipping into a testing situation with a minimum of public reaction. I know that the President considered this

very seriously. Had we been the first to resume testing, it might have been that we would have done it under a program such as I had suggested.

HEWLETT: Do you think it would be fair to say that the Administration was moving in the direction of resumption of tests before the Soviet announcement on August 31 of their intention? I suppose there was no definite decision made…

SEABORG: No, but at our meetings there was more and more discussion of the conditions under which the announcement of the United States' resumption of testing would be made -- this was during June, July, and August of 1961.

U.S. Preparations

HEWLETT: During this period, Mr. Chairman, were there any preparations for the beginning of resumption of tests in the United States?

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SEABORG: Perhaps indirectly. By the end of June the President was thinking in terms of starting preparations within three or four or five weeks, directed toward some important shots that might be scheduled -- oh, perhaps six months in the future, that sort of a gradual process. However, during this period and even earlier, work was going on in the tunnels in Nevada preparing them for the VELA UNIFORM detection program. This, of course, meant that they would also be available for the testing of weapons if that should be our country's decision. I recall that at this time newspapers became aware of the activity in Nevada and wrote articles accusing the Atomic Energy Commision of jumping the gun and preparing for testing. I think this was in July 1961. As a matter of fact, I remember I was on a trip visiting the SAC headquarters at Omaha when I believe you called me, Mr. Brown.

BROWN: I think it was on that trip.

SEABORG: And you indicated that there was some flurry of publicity in the newspapers, and I can remember Senator Humphrey getting quite concerned about this. I remember going up to his office shortly after that and explaining to him that we were not making any preparations for resumption of weapons testing -- but that we had had a program going for some time on the preparation for VELA UNIFORM to improve the detection of tests. So in that sense plans were being made, and some physical work was being done that would be indirectly applicable to testing at the Nevada Test Site.

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HEWLETT: Well, then, in a sense the problem of how to go about the resumption of tests resolved itself in that the Soviet Union announced on the 31st of August its

intention to resume tests.

SEABORG: Yes.

The Panofsky Report

HEWLETT: And I suppose that it was a matter of some concern to the Administration in terms of how to respond to this announcement.

SEABORG: Yes, it was. Perhaps I should have mentioned in connection with your previous question, Dick, that a panel of the President's Science Advisory Committee also made a study of the pros and cons of testing. The panel was under the chairmanship of Professor Panofsky of Stanford University, and I can remember sitting in with this panel. In fact, they had one of their meetings at about this time at Camp David, where they were putting the finishing touches on their report. This report was presented at a meeting of the National Security Council on August 8, 1961, which had all the key people present: President Kennedy, Vice President Johnson, Secretary McNamara, Gilpatric, Lemnitzer, Mr. Bundy, Dr. Wiesner and representatives of the State Department. I remember Alexis Johnson was there, and both Mr. McCloy and Mr. Dean were present at this meeting. But most importantly the directors of our weapons laboratories were present: Mr. Foster, the Director of the Livermore Laboratory and Mr. Bradbury, the Director of the Los Alamos Laboratory, indicating that we were moving -- oh, perhaps -- just a step closer to testing.

It is interesting to note the course of the discussion at that time. The Panofsky Panel, as I indicated, gave a summary of the arguments pro and con that ran along the following lines. Although limitations had been introduced by the lack of testing, these could be compensated for in large part by other methods. But in the long run we could not go on indefinitely without testing without impairing the U.S. military position if the Russians were testing. Now this was an interesting meeting because there appeared open pleas for the immediate resumption of testing. I can remember that General Lemnitzer made a strong plea for the immediate resumption of testing. General Taylor felt that we should resume testing even though we knew that the Russians were not testing -- even, you might say, independently of the question of whether the Russians were testing or not. At this meeting, President Kennedy turned to Panofsky and John Foster and Norris Bradbury and asked them whether they would recommend the resumption of testing if we knew that the Soviet Union was not testing. This was an interesting way to put the question. Panofsky's answer was somewhat equivocal, but I would interpret it that he probably would not so recommend. Johnny Foster's answer was rather definite, saying that he would recommend the resumption of testing. Norris Bradbury's answer was somewhat more vague but it seemed to lean toward not testing if the Russians were not. So, by this time, we had approached the point where it

was not quite a matter for argument but certainly an open discussion of the merits of resuming testing.

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Meetings with the President

BROWN: Mr. Chairman, the meeting that you just described was one of a number of such meetings that were held during the early days of President Kennedy's Administration and one of a number that would come along later. I wonder if you pause here and tell us a little bit about the atmosphere of these meetings: whether they were very formal or informal, what the President's attitude was, and generally how he conducted these meetings?

SEABORG: Well, I would say that he conducted them in a somewhat informal manner, but that he was very much in charge. He was very pleasant to deal with. You had the feeling that you could say what you wanted to. You did not have the feeling that because you were in the presence of the President of the United States you had to be completely on edge and on your very best behavior. You could interpret. I can remember interrupting many times. I tried not to interrupt the President but I am not so sure that I did not do so on occasion, but on those occasions it could be done with complete impunity. There was not even a look of disapproval, just a give and take discussion. Many of us volunteered our views. The President obviously used the information as it developed to formulate his next question and usually they were very perceptive questions, questions that in my mind made the most of the information that had developed.

Resumption of Testing

As I have indicated there was a gradual acceptance on the part of the President of the inevitability of the need for the resumption of

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testing. These meetings usually ran for an hour or an hour and a half or two hours sometimes, and as I have indicated there were a number of them during this period. I mentioned the meeting of August 8. I might have mentioned also that at this meeting the Laboratory Directors were asked to explain just what they would do if they resumed testing, what kind of tests they would make, and why these tests and the particular weapon devices that would be developed as a result of the tests were important. I recall a meeting, some ten days later, I believe it was on August 17, 1961, where the question was further explored. Present besides President Kennedy were Secretaries McNamara and Rusk and Gilpatric, General Lemnitzer, Mr. Bundy, Mr. McCloy, Mr. Dean, and Mr. Fisher, and I believe that by this time Bill Foster was aboard and others. At this meeting the whole question was further discussed and at one stage at this meeting -- just to illustrate the trend that was occurring -- the President

suggested that perhaps the decision should be made that the AEC make an announcement in about a month that the United States was beginning to make preparations to test. So this was awfully close. This was on August 17, when the decision was almost made to have a time scale for an announcement.

BROWN: Mr. Chairman, I wanted to ask you, what was the international situation about this time, on August 17th?

SEABORG: Well, actually the beginning of the Berlin Wall was just the next day, August 18. Then, as Dr. Hewlett indicated just a few moments ago, the Russians announced on August 31 their decision to

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resume testing. And, of course, this resulted in an immediate meeting of the National Security Council. As a matter of fact, we met on August 31 when the whole group was present: President Kennedy, Vice President Johnson, and representatives of the State Department and Department of Defense: Secretary McNamara, Secretary Rusk, General Lemnitzer, and Dr. Harold Brown. Interestingly enough, Ed Murrow was present at this time because the public relations aspects were important. Mr. Bundy, General Taylor, Allen Dulles, Adrian Fisher, Dr. Wiesner, and General Betts, Director of the AEC Division of Military Application were also present at this meeting. I recall that at this meeting, Mr. Dulles opened the discussion by describing what was known about the Russian plan from intelligence sources, and also what the United States policy should be with respect to announcing Soviet tests. The question was raised whether the Soviets would announce the tests themselves as a result of this recent decision of theirs to resume testing. We pointed out that the Soviets did not have the policy of announcing tests. The plan that evolved as a result of this discussion was that the United States, through the Atomic Energy Commission, would announce these tests. I might say I also recall some information that McCloy got before the announced decision by the Russians to resume testing. Someone had said that Mr. Khrushchev had indicated that he was under pressure from his scientists to test a 100 megaton bomb and this was information we already had before the announcement of August 31. Another question that was discussed at the

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August 31 meeting of the National Security Council was whether the United States should announce at that time that the President had met with the National Security Council and Congressional leaders, which he was going to do later that morning, and that the President had concluded reluctantly that it was necessary for the United States to resume testing. There was some discussion at that meeting, and even some initial drafting of such a statement. But it was decided in the end that we would not issue a statement at that time saying that we would resume testing.

HEWLETT: I suppose the purpose was to let the Russian test sink in a little bit in world opinion?

SEABORG: That was exactly the point, and, I believe, the point of view that Mr. Murrow supported also. Actually as the discussion went on, this point of view evolved during a meeting that ran nearly an hour in the Cabinet Room of the White House.

Then immediately following this meeting of the National Security Council, there was a meeting of the key members from that group: President Kennedy, Vice President Johnson, Secretaries McNamara and Rusk, General Lemnitzer, Mr. Bundy, and myself with the key members of the Congress. I recall Senators Mansfield, Jackson, Fulbright, Gore, Kuchel, Symington, Dirksen, Russell, Saltonstall, Pastore and Humphrey, as well as Congressmen Holifield, Halleck and a number of other Congressional leaders whose names I do not recall. The President opened the meeting by saying that he was directing the Atomic Energy Commission to make preparations for the resumption of testing so that they could conduct

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tests before the end of September and possibly sooner. But the President went on to say that he wanted to explore with the Congressional leaders the possibility of deriving the maximum propaganda benefits from the recent Russian announcement to resume testing by having the United States refrain from making an announcement so soon after the Russian announcement. And as I recall it, most of the Congressional leaders, if not all of them, went along with that idea. They thought that this was the best way of handling it.

First Russian Test

HEWLETT: The Russian announcement came on the 31st, and I believe the first Russian test came the following day on the 1st of September.

SEABORG: Yes, the first Russian test came on September 1st, 1961, which, of course, indicated to us that they had been preparing quite a while, even while they were negotiating. There are different estimates as to how long this was but it was certainly a matter of many weeks, perhaps months, during the summer of 1961. However, we still did not make any announcement of our intention to resume testing. The next day, on September 2nd, I recall a meeting in the Secretary of State's Conference Room. Those present were Secretary Rusk, Mr. McCloy, Mr. Dean, Mr. Bundy, Deputy Secretary Gilpatric, Mr. Murrow, Mr. Harlan Cleveland of the State Department, Dr. Harold Brown, General Wheeler, Mr. Scoville and myself. Secretary Rusk said that the President had called him to suggest that the United States, together with Great Britain,

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should propose to the Soviet Union an agreement that there be no further testing in the atmosphere. This was a final attempt to stop testing in the atmosphere, with some recognition of the fact that perhaps it would have to go on underground. Of course, this involved the question of the possibility of cheating again, at what level could we detect tests in the atmosphere, but I assured them that we could detect tests down to very low levels. There was, of course, some difference of opinion, but it was finally agreed that such an offer should be made and that it was also thought desirable to place a time limit on the offer. I do not recall just what the time limit was. This is a matter of record, five days or something of that order. And as I recall it, such a proposal was made to Chairman Khrushchev and we received our answer on September 5, just three days later, in the form of the second Soviet test. Well, I recall vividly the President's reaction to this. He took this as the answer and was quite angry at that method of response. He decided immediately to announce on September 5th, the same day, the United States' decision to resume testing.

U.S. Decision to Resume Testing

HEWLETT: On the 5th, when the President announced the decision to resume underground testing, was there a schedule already established, or did he have to set a date for the resumption of testing?

SEABORG: Well actually we had not yet, as you recall, taken the decision to resume testing, so that the laboratories had not been free to actually go out to Nevada and begin to implant devices. That

of course would create attention and make it visible to the outside world that we have adopted this course. Therefore, by September 5th, we did not have devices on the shelf, you might say, in Nevada ready for testing. However, it did not take long to make a plan and we had several possible devices that we could test. We told the President the approximate time scale that we could meet and what the alternatives were as to the type of device we would want to test first, that is, a small one or a medium-sized device. Certainly it was concluded that it would be underground. This was very important. The decision was made that we would not test in the atmosphere but that we would confine our testing to the underground.

BROWN: Mr. Chairman, considering that this is a very critical decision both for the Commission and for the President, did the President consult you personally on these matters in this critical period?

SEABORG: Oh yes. We were in telephonic communication and, of course, I was present at all the meetings. I remember one time he called me at home. I recall this because my young son, Stephen, who at that time would have been about ten years old, came downstairs rather belatedly and said, "Oh, by the way, Dad, you're wanted on the telephone." I do not know how much time had elapsed, he was very casual about it. I

went up to the telephone and was told that the President of the United States was waiting to speak to me. He wanted to know how soon a test could be ready and I gave him that information.

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By September 12, the decision had been made to make the first test on September 15, and the decision had been made as to which particular device would be used. The test would be in a tunnel at Nevada, and we had a time schedule laid out of this which was quite interesting. We were going to conduct the test, as I recall it, at about 1:00 p.m. our time, which would be 10:00 a.m. Nevada time. The people at Nevada were to call me and then I was to call the President, who was standing by the phone. It happened just that way. They called me shortly after 1:00, perhaps two or three minutes after 1:00 and then I called President Kennedy at perhaps four or five minutes after 1:00 to say that the shot had gone off successfully. The President put out a statement immediately saying that we had resumed testing by conducting a test at 1:00 p.m. EST in Nevada.

However, this was not without excitement. I learned that one of my friends at Berkeley, Professor Byerly of the Seismology Department at the University of California, had detected the shot and made an announcement. I called him to confirm what he had said. Also, the shot unfortunately vented. This did not happen until after I had called the President and told him everything had gone well, which, of course, I was compelled to do on a short time schedule because the President did not want to be scooped on the announcement. Within two hours it was clear that some of the radioactivity, not an amount that was serious, had vented and this could be interpreted as being inconsistent with the President's announcement that our tests were to be completely contained underground.

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I immediately, along with Dr. Wiesner, went over to see the President. I recall that we rushed up to the Lincoln bedroom where I believe he was resting. We told him breathlessly that something rather bad had happened, that the shot had vented to some extent and this raised the question of whether this was consistent with the announcement that it had been a completely contained underground shot. I recall clearly how calmly the President took this. He more or less took the attitude, "Well, hold your horses, it can't be that bad, we'll see how it comes out," or words to that effect. This of course did a great deal to allay the fears of Dr. Wiesner and myself. This incident was revealed in due course. The amount of radioactivity that came out was recorded, but it did not cause any immediate problem at the time.

BROWN: Mr. Chairman, from what you have described, it seems to me that all this was done on a rather short time schedule in a fairly crowded period.

SEABORG: Yes, this all happened between the first of September and the 15th of September. We had to make the decision, decide how to announce it, decide

what type of test to make, and have the laboratories get ready to make a meaningful test. President Kennedy insisted that it had to be a meaningful test, not just a gesture. Then we had to conduct it successfully and contain it completely. We had to do all this within 15 days, starting not from scratch exactly because the tunnels had been made ready in view of

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the VELA program, but certainly starting nearly from scratch so far as getting the device together, shipping it out to Nevada, and conducting the experiment was concerned.

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III. THIRD INTERVIEW, JUNE 25, 1964

Policy on Underground Tests

HEWLETT: Mr. Chairman, you mentioned at our last interview the efforts made by the President after the first Soviet detonation on September 1 to limit this test program to non-atmospheric tests and you noted that the first U.S. test was conducted underground at the Nevada Test Site. Was it an established policy of the Administration at that time to limit the United States program to underground tests?

SEABORG: It certainly was. The President directed us to conduct tests underground and in the announcement that was made at that time it was stated that the United States was resuming underground tests under conditions that would produce no radioactive fallout, or words to that effect. The President hoped very much that the testing of atomic weapons could be performed with a minimum amount of radioactive fallout dispersed in the atmosphere, of course either by the Russians or by the United States tests.

HEWLETT: I suppose one concern at this time was the amount of fallout being placed in the atmosphere by the Soviet tests?

SEABORG: Yes, it was. As you recall, the Soviets were well underway in their testing in October and I recall that President Kennedy phoned me in the afternoon of October 17th, 1961. We were considering at that time a possible statement in connection with the 50-megaton explosion which Chairman Khruschev had announced at about

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that time, an explosion that was to be forthcoming. The President asked me at the time of that phone call how much fallout we would get from the 50-megaton explosion of the Russians and whether it would be striking enough to give us a basis for real criticism of the Russians.

That is, would it be a hazard to humanity as a whole? I told the President that realistically one could not say that and that it would be difficult to criticize the Soviet Chairman on that basis. The President replied that in that case it would probably not be feasible to make such a statement but he felt he was searching for some way of expressing alarm. He regretted that the Russians were indulging in this kind of an effort to intimidate and endanger the peoples of the world. I told the President that whether or not he decided to issue such a statement, (and I again indicated to him that I tended to think that at this time he should not do it) I would like to give him a list of the U.S. tests, which would show how big they had been and something of the effects. I said I would like to send him some material on the effects of the 50-megaton test, depending on the altitude at which such a device were detonated and something about the fallout from such a device and how it varied with altitude. In the end, on the basis of this conversation, the President decided not to make such a critical statement concerning the fallout effects of the forthcoming Russian 50-megaton test.

Question of Atmospheric Testing

HEWLETT: Well then, were there pressures within the Administration and perhaps from the public at large in the fall of 1961 to resume atmospheric testing?

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SEABORG: Oh yes. There was a large segment of the American public and Congress and members of the Joint Committee on Atomic Energy, that was not satisfied with the program confined to underground testing. There also were questions on the other side, questions that originated at the United Nations and elsewhere, regarding the status of the Eniwetok site and our possible intentions to use it. There were indications that it would meet with great disfavor in the United Nations if we decided to reactivate the Eniwetok test site. As a matter of fact, the decision was made rather early, motivated partly by these potential criticisms from the United Nations, not to use the Eniwetok site.

We, of course, discussed the possibility of resuming atmospheric testing quite a lot during the month of October. The President, however, was not prepared yet to ask us to begin to make preparations for atmospheric tests. However, Secretary of Defense McNamara thought that he perhaps had effective reassurance from the President to get ready. On October 9th, Secretary McNamara issued a directive to begin planning for atmospheric testing -- a directive which applied, of course, to the Department of Defense. But, as I recall it, the directive was a little premature. Actually, there was some consternation in the White House at this action. Secretary McNamara drew back somewhat on it, and the preparations in the Department of Defense were really not very active in October. But this indicates that the question of the United States' resuming atmospheric testing was paramount during the month of October of 1961.

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HEWLETT: You mentioned that there was some feeling in the United Nations that testing

should not be resumed. Isn't it true that the British also were opposed to the resumption of atmospheric testing?

SEABORG: Yes, they were at this time. This was an interesting development as it occurred during these months. Late in October the President received a paper from Prime Minister Macmillan proposing that the United States and the United Kingdom announce publicly a six-month moratorium on atmospheric testing. I recall discussing this with Mr. Bundy late in October. Bundy said that the President wanted no tests merely for political or psychological reasons. He wanted from the Commission a clear indication of the kinds of tests that would have some developmental or technical justification, and the schedule for them so that he could talk with Prime Minister Macmillan about them on the following day. I believe these were actually trans-Atlantic phone conversations, if I recall correctly. My reaction at that time in view of the rather urgent situation that seemed to prevail was that the President should not announce a six-month moratorium on atmospheric testing. I thought that would tie his hands in a manner that would not be very helpful to him. In fact I thought it would perhaps interfere with his later actions. There was, of course, the large test that the Soviets had promised us, and I had the feeling that the psychological reaction to that in the United States would be very severe. So I indicated to Mr. Bundy that I did not think that the President should commit himself to a six-month moratorium in the context of the situation as it existed near the end of October, 1961.

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I said that if the President felt it necessary to make some kind of an announcement, perhaps he might announce a two-month moratorium. I thought that would be more tenable. Mr. Bundy indicated that he had been asked to get my opinion on this. He said that he tended to agree with me, and of course, as you know, the President did not make such an announcement suggesting a moratorium in October.

HEWLETT: Well, most of these discussions we have been talking about were in the Administration, at least within Governmental channels, and were not public knowledge. You have mentioned the press interest in this subject, and I suppose there were attempts, during this period, to get you to make a statement on the question.

"Meet the Press" Interview

SEABORG: Yes, I was contacted by the press rather regularly during this period, and I did make some statements. But they were rather the minimum because it was difficult, when we were not sure ourselves, to make any meaningful statement. However, I particularly remember that I appeared on the television program, "Meet the Press," on October 29th. I anticipated at that time that some question would be asked of me about atmospheric testing. I discussed a possible answer with Secretary of State Rusk. I anticipated the blunt and straight-forward question: "Has the United States made the decision

to resume atmospheric testing?" Secretary Rusk and I discussed possible answers, and then Secretary Rusk talked to President Kennedy about it. President Kennedy, himself, dictated a possible reply to this anticipated

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question, and Secretary Rusk and I adapted it for use on the program. As you can imagine, the answer was very carefully worded, and sure enough, just about the first question that Lawrence Spivak asked me was exactly that question. I should say that on the program was a very high powered panel: Lawrence Spivak, Marquis Childs, John Finney, and Peter Hackas. It was a very interesting half-hour.

HEWLETT: I can just hear Spivak asking that question.

SEABORG: Yes, well he began it in that little opening period when he alone questions the guest, as they call him, and he asked me whether a decision had been made by the US to test in the atmosphere, and I said it had not. He asked whether I could tell the American public when it would be made, and I said I could not. He said then, "Can you tell us what the final decision will be based on?" And, here I was ready with the outline of the answer that President Kennedy himself had dictated, which went as follows: I said that the final decision would be made by the President, of course, and I suppose that he would want to base his decision in a large part on the results of the analysis of the Soviet tests. I would also suppose that he would never make this decision to test in the atmosphere on the basis of political or terroristic considerations, such as has been at least part of the reasons for the Russians testing, but would base his decision entirely on the technical needs for the information in the interest of our national security. The program, of course, went on from there to explore other aspects of the situation at that time.

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Preparations for Atmospheric Testing

As you know, the President announced just a few days later, on November 2, 1961, that we were making preparations to test in the atmosphere. In this announcement, the President indicated that no nuclear test in the atmosphere would be undertaken for psychological or political reasons, but only in order to maintain our responsibilities for the security of the free world in the light of our evaluation of the Russian tests. We would undertake an orderly and essential scientific development of weapons; if that required testing in the atmosphere, then we would feel that we had to do it, but only within limits which minimized fallout. Then the President went on to say that in the meantime, as a matter of prudence, we would make necessary preparation for such tests, so as to be ready in case it became necessary to conduct them. That was the famous statement of November 2, 1961, which publicly announced that we were making preparations for atmospheric testing.

HEWLETT: Well, this statement of November 2 must have fun counter to the British request for a moratorium. What effect did this have upon our relations with the United Kingdom?

SEABORG: Well, it did not have any particular adverse effect. I recall that as early as September during my visit to England, I had discussed with Sir Roger Makins, who was then the Chairman of the United Kingdom Atomic Energy Authority, [redacted]

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[redacted] It was just that Prime Minister Macmillan, like President Kennedy, was grasping for every possible way of delaying the resumption of testing, under the hope that there could be an agreement in the meantime. I recall that on "Meet the Press" I was asked that if the Russians would sign the agreement for ending testing, which we had tabled at Geneva, would I at that time, even though the Russinas had a number of tests under their belt, recommend the signing of that agreement. I said I would. I felt that way at that time. I felt that that would have been in the balance an advantage to us and the world.

Bermuda Conference

HEWLETT: Well, was there any discussion of this subject at the Bermuda Conference which came a little bit later in the year?

SEABORG: Yes, this was the place where the difference was resolved, at the Bermuda Conference, when President Kenneyd and Prime Minister Macmillan met on December 21 and 22, 1961.

HEWLETT: If you could tell us something about that conference, I think it would be very good to have it in the record.

SEABORG: Well, this was a very interesting experience for me. Actually, I had been invited to go along, and we were to go down on the 21st of December. But, as you recall, President Kennedy's father suffered a stroke a few days before that on the golf course in Palm Beach. So President Kennedy went down ahead of time, and he asked us

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to come down to Palm Beach on December 20, the day before the Conference. I remember this very well because Mrs. Seaborg and I had scheduled a Christmas party for all of the Commissioners' office staff -- oh some fifty people -- at our home. Then this came up. I just got on the airplane that afternoon and flew away and let her handle the guests, most of whom she had not even met yet, because she had arrived in Washington with the family only a few months before.

BROWN: This was just a couple of days before Christmas. This was your first Christmas party…

SEABORG: That was the sort of Christmas party we have had every year since here in Washington, for the staff, and so she was left with quite an assignment that night. We flew down on the Presidential plane. Secretary Rusk, Mr. Bowles, Mr. Tyler of the State Department, Dr. Harold Brown of the Department of Defense, McGeorge Bundy, and David Bruce were on the plane. We had dinner that night at the Paul residence where the Kennedys were staying in Palm Beach. President and Mrs. Kennedy were host and hostess to this dinner attended by Secretary Rusk and others. I remember Mr. Bowles, Mr. Bruce, Mr. Salinger, Mr. Tyler, Mac Bundy, Harold Brown, and I attended this dinner. I recall sitting next to Mrs. Kennedy for the evening. As might have been inevitable under those circumstances, I recall our discussing our children at that time, among other interesting topics. After the dinner, we briefed President Kennedy on the Russian tests, on the relative position of the United States and the Soviet Union in nuclear weapons, and on our

need for atmospheric tests, in preparation for the meeting with the Prime Minister in Bermuda the following day.

We flew to Bermuda on the Presidential plane along with the President the following morning, December 21, 1961. I recall that a number of us had lunch at the Bermudiana, including Earl Home, Sir Norman Brook, Sir William Penney and Secretary Rusk. I found that a very interesting luncheon because this was used as the occasion to discuss a number of world problems. The Berlin problem which was acute at that time, the Congo problem, the Indian invasion of Goa, the Dutch-Indonesian problem were all discussed at that time. Then after lunch we had a late afternoon meeting at Government House with President Kennedy, Prime Minister Macmillan, Rusk, Home, Penney, Brown, and myself. That was the composition of the group.

This was the occasion on which the possible use of Christmas Island, which was under British control, was discussed in some depth. The discussion, of course, revolved around the question of whether we should resume atmospheric testing. This was followed by dinner at Government House, and I remember I sat close to President Kennedy at that time -- I believe one removed. He had a trip lined up for Berkeley for the following March, and I recall that at that time he invited Mrs. Seaborg and me to go along and I in turn invited him to visit the Livermore Weapons Laboratory, which he did in a sense. He visited the

Livermore Laboratory scientists, but on the Berkeley campus since that was more convenient for that very historic visit.

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I also recall the Prime Minister was close by at the dinner also. I engaged them both in conversation and I recall each of them saying that they thought that the US had overemphasized the value to the Russians of cheating by underground testing. They also deplored the great to-do that had been made over the big hole theory -- that is the decoupling theory. They thought that it was not nearly as valuable a device as people had said it to be, and they said that they thought if we had been a little less worried about some of these things and had signed the Test Ban Treaty earlier, it probably would have been to our advantage, especially if we had signed before the Russians had resumed their testing.

The discussion continued at Government House the following morning, December 22, and at that time, Prime Minister Macmillan decided to back the United States on the preparations for atmospheric testing. I remember this very clearly. He reluctantly came around to that conclusion. I remember that the Joint communique that Prime Minister Macmillan and President Kennedy issued after these meetings decried the arms race, expressed the hope for progress toward disarmament, and called upon the USSR to sign the Test Ban Treaty that had been tabled at Geneva. I also recall that the Prime Minister said that so far as the use of Christmas Island was concerned, he tended to favor this but that he would like to return and talk with members of the British Cabinet. President Kennedy and Prime Minister directed Sir William Penney and me to compose a simple statement of principles governing the use of Christmas Island

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for atmospheric testing by the United States. We sat down at a table in another room and drew up the basic document, which really served finally as the agreement, although we decided that we would have to have our lawyers study it to see whether there were any loopholes that had been overlooked.

HEWLETT: In the one memorandum I have read on the Bermuda Conference, I believe it was McGeorge Bundy's memorandum, I got the impression that at this Conference, Prime Minister Macmillan was still urging that we consider every possibility to avoid the resumption of tests. But, as I gathered from the memorandum, the President's reaction was not particularly optimistic. He thought that the Russians had done a lot of testing in the previous period, and they really did not want an agreement. I just wondered what your reaction was to that.

SEABORG: Well, I recall that at this stage, the President was not particularly optimistic about reaching an agreement at that time with the Russians. He noted what the Russians had done in the previous nine months. He thought they really did not want an agreement, and this is the position that he retained in the sessions -- on December 21

and December 22. He felt that another approach to the Soviets at that time could possibly delay the United States' atmospheric tests for another year without any assurance of success in negotiation with the Russians. The President said -- and this I believe is the first time I heard him say it so clearly -- that he had concluded that the United States must decide to test in the atmosphere. However, he did add, that we should

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say in the communique that we were still very much interested in disarmament. The communique actually still indicated that we were making preparations for testing. It did not indicate that the decision to resume testing had been made. So it was just a matter of the United Kingdom going along with the announcement that the United States had made on November 2, 1961.

Preparations for Testing

HEWLETT: Well, the plans did go ahead for the resumption of testing?

SEABORG: Yes, as a result of the President's directive, plans proceed on the basis of resuming atmospheric tests. The date of about April 1, 1962, became our target, but he made it clear at every meeting during January, February and March, that he had not yet made the definite decision to resume tests.

HEWLETT: Well, then the real problem was how and when to announce the resumption of testing.

SEABORG: Yes, that was a major consideration at that time.

HEWLETT: At the same time, I think early in 1962, there were a number of public appeals and demonstrations against the resumption of atmospheric testing -- including, as you recall, one outside the New York Operations Office, on Hudson Street, New York. Did you receive personal letters and other communications from people about this at that time?

SEABORG: Yes, I received personal letters from people opposing the resumption of atmospheric testing, and also letters from people definitely favoring and demanding that no more time be lost in resuming atmospheric testing.

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HEWLETT: We all know that on March 2, 1962, President Kennedy in a nationwide television broadcast announced that in the absence of a firm agreement to halt

nuclear tests by the latter part of April, the United States would resume testing of nuclear weapons in the atmosphere. I wonder if you could tell us something of the background of this decision.

SEABORG: Yes, we were making preparations during the early part of 1962 on the basis that atmospheric testing would be resumed in April of 1962, but, as I have indicated, the President was still hoping that some way could be found to negotiate a test ban before the United States was forced to resume testing in the atmosphere. Perhaps one of the first developments to say the President further in the direction of resumption occurred early in February when he heard a briefing on the recent results of the Soviet testing, along with a parallel report on the status of US weapons. Mr. McCone had briefed the Joint Committee on Atomic Energy and they were so impressed with the progress of the Russians that they suggested that Mr. McCone brief the President. Mr. McCone telephoned me and I agreed with him that this would be a very good thing to do.

The briefing was conducted in the Cabinet Room on February 2, 1962. This was an impressive briefing by representatives of the Atomic Energy Commission, the Department of Defense, and the Central Intelligence Agency. The President even then expressed some doubt that the arguments for developmental tests were sufficient to justify carrying them on, and

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he wondered whether it would not be best to conclude an atmospheric test ban agreement with the USSR even at that time. I pointed out that if we did this and the Russians then broke such an agreement in about two years, we would find that the capabilities of our laboratories had been reduced even further because -- and this was an important consideration -- the capability of our laboratories had been deteriorating. I thought it might be reduced even further under these circumstances because it is difficult to maintain a capability for testing in the atmosphere after such a long period of refraining from testing in that medium.

At this meeting, the President, hearing these arguments, did direct that the negotiations for Christmas Island be speeded up. We were negotiating at that time with England, as a follow-up of the Bermuda meeting. The President also asked that the whole atmospheric test series be planned in such a way that weapons systems tests -- such as those for the Polaris and Atlas missiles -- could be carried out in the event that they were authorized. So you can see that we were making progress step by step as to the type of test series it would be -- developmental tests, system tests, effects tests, and high altitude tests.

But, as I have indicated over and over again, the President was still looking for a way out of the resumption of atmospheric testing. On February 20, I recall that Mr. Bundy called me to say that the President had had a long talk with Hugh Gaitskill, who pressed him on the desirability of holding up our announcement on the resumption of

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testing until after March or until we had made more effort with the Russinas on inspection and control. Bundy was seeking the views of some of us in the Administration. Of course, the

Task Force was about ready to sail; part of it was under way for Christmas Island. Bundy said that if we took up this suggestion, we would let the Task Force sail for Christmas Island in order to be ready for tests but we would hold up the announcement until the first or second week in April. I knew that this might not be feasible because there was a problem of the two weeks' notice to the mariners in the test area. I told him that I did not think that at this late stage it would be a good idea to seek such a postponement. Furthermore, I thought that it would put the President in a rather bad posture, and I must say that Bundy indicated his view coincided with mine.

President's Decision on Atmospheric Testing

HEWLETT: Well, then, was this subject discussed in a White House meeting before the announcement was made?

SEABORG: Yes, there was an important meeting of the National Security Council on February 27, 1962. This was a meeting in which the President, Vice President Johnson, Ambassador Stevenson, Secretaries Rusk and McNamara, General Lemnitzer, Deputy Secretary Gilpatric, and Messrs. McCone, Foster, Murrow, Harold Brown, Mac Bundy, Wiesner, McDermott, myself, and others were present. This was sort of an assessment meeting to see where we stood at that time. The President called on a number of the people present as to their feeling regarding the resumption of atmospheric testing. Secretary Rusk felt that the

atmospheric testing program should go ahead because prudence suggested that the United States keep alert and stay ahead. He felt that there was enormous advantage to the United States if it could say it would be able to sign the treaty to be considered at Geneva, and he thought, therefore, we should not start the tests until we had been at Geneva for several weeks, and he did not feel that we should start early in March because he did not see how time could be that important. That is, he still wanted some advantage with respect to Geneva.

Secretary McNamara recommended that the US undertake a series of tests as scheduled, beginning about April 1 and running through about June 15, and he reviewed the various arguments for doing so. There was some discussion at that meeting about the advisability -- of signing the April 1961 Test Ban Agreement which had been tabled in Geneva. A number of people indicated that they would still sting the agreement, but General Lemnitzer said that the Joint Chiefs of Staff believed that it would not be to the military advantages of the United States to sign.

I explained the Commission's position with respect to the type of atmospheric tests series that we would undertake if the decision were to be made. By then we had outlined the series in some detail to consist of some 25 tests. I mentioned the various categories of advanced concepts, verification or proof test, effects tests, and I also pointed out the problem of the travel time required for the Task Force. This factor would set the starting date when we would have to make the announcement into early March in order to start the series in April.

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I also mentioned the possibility of atmospheric tests in Nevada to serve as standardization points for some of the weapons that had been tested underground, but I also recall that President Kennedy spoke vigorously against such early atmospheric tests in Nevada. He was very concerned about the psychological effect of the mushroom cloud which would be forthcoming. He said that this would have a very adverse effect and he felt such tests in Nevada at the beginning of the series certainly would not be feasible.

I recall that Ambassador Stevenson said that he didn't think that the technical case had been made for the resumption of testing. Mr. Dean said that he was still in favor of offering to sign the April 1961 treaty. I also recall that Vice President Johnson thought that the United States should proceed to test without delay. He concluded that military necessity outweighed any political considerations against resumption of atmospheric testing.

This meeting of February 27, 1962, concluded with a general discussion of the best time for an announcement. The President seemed to favor an announcement early in March on the basis of the arguments that he had heard, which left open the possibility that the tests would not start if dramatic progress was made at the March 14 meeting that was to be held in Geneva. However, such progress was not made so far, and it did not seem likely that it was to be. The tests might start sometime between April 1 and April 15. Of course, under this plan, the Task Force would start on its way early in March, and this, you will recall,

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is the way it turned out. The President made his public statement on March 2, 1962.

Further Efforts on Test Ban Agreement

HEWLETT: Mr. Chairman, did the United States during the weeks following the President's March 2 announcement make a real effort to negotiate a test ban agreement with the Soviet Union?

SEABORG: Yes. Our arm was out to the Soviet Union continuously during that time and the President's public statement of March 2, 1962, made the point that we would not resume testing if it was still possible to negotiate an agreement.

HEWLETT: Were there opportunities to discuss this possibility with the President?

SEABORG: Yes. I think this was discussed and I discussed it align with others a number of times during this period just before and after March 2. I recall, of course, participating in the drafting of the March 2 announcement by the President, this dramatic announcement which the President made to the American people on television. Ted Sorensen was the chief architect of that announcement, but we all worked together on it for hours, right up to the last minute.

HEWLETT: It was a very effective statement. I remember I recorded it at home, one of the few things of President Kennedy's I have. It is a complete recording of that statement.

SEABORG: Oh, that is good.

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HEWLETT: Well, then, were there meetings of the National Security Council at the time when this was discussed?

SEABORG: Yes. Well, in order to prepare a program with all its complet ramifications there were meetings of the National Security Council. I remember one in the Cabinet Room on April 18, 1962. The President, the Vice President, Secretaries Rusk and McNamara, Stevenson, Ball, Foster, Lemnitzer, Murrow, Bundy, Wiesner, Bowles, and myself were present. The subject was the review of the proposed nuclear atmospheric testing program. The President opened the meeting by asking Secretary McNamara to discuss the proposed Polaris, and interestingly enough, Atlas system proof tests. The Secretary described the need for the Polaris tests and the nature of the tests and said he recommended its inclusion. However, he said that the Atlas tests presented some problems in respect to the possibilities of an abort and the effect this would have on public confidence, safety, and so forth. And he said he would like a little more time to study that before he would recommend it. Lemnitzer spoke in favor of the inclusion of both of these system tests. I described briefly the safety consideration with respect to the Atlas tests, indicating that it probably did represent somewhat of a health hazard and that there certainly were public relations problems involved. However, the Atlas test, as it turned out, was not included in our atmospheric, or DOMINIC, series.

The President also asked me to discuss the proposed surface shot in Nevada. I said that this was a shot in which the DOD and AEC had an interest and that it was an effects test that had to be conducted in the

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atmosphere and had to be conducted over dry land because its aim was to measure the effects of electromagnetic radiation on electronic instrumentation under possible operating conditions. I also said that AEC had the aim of measuring the effect of weapons on weapon component parts. The President again inquired as to the possibility of a photographer taking a photograph of a mushroom-like cloud and publishing it and asked whether there would be such a cloud. I said that I found it difficult to describe it accurately in those terms, but some might call it a mushroom cloud and others not. He asked whether it would rise as high as 20,000 feet or so and I said that I thought it would. At this meeting, as I say, the program was discussed in some detail and it came close to setting the exact date for starting. It was indicated that the AEC would need at least five days' lead time. That is, we would need to

know at least five days ahead of time the exact date for starting. The President agreed to give us that notice and soon after that, as you know, the date of April 25 was set for the starting of the atmospheric test series in the Pacific.

First U.S. Atmospheric Test

HEWLETT: Then, was there any further consideration of changing or did the schedule just move ahead from that point on after the decision? Were there any second guesses again?

SEABORG: Well, even at this late date the President was looking for a way to soften the blow. On April 23, just two days before the opening of the test series, Secretary Rusk called me to say that the had talked to the President who was at that time at Palm Beach and the President

asked whether he should get in touch with Chairman Khrushchev to suggest that after the completion of the U.S. atmospheric test series and the presumed second Russian test series that we all expected would be undertaken, the two countries should sign a treaty banning atmospheric tests. This was one of the earliest indications of his thinking in that regard. And there was general agreement that this was a good idea, but we decided to explore further the possibility of other means of contact, for example, the possibility of Secretary Rusk discussing it with Ambassador Dobrynin.

HEWLETT: Then, the first test did occur on the 25th of April?

SEABORG: Yes, it occurred at Christmas Island at 10:45 in the morning on April 25, 1962. In this case, as soon as I learned of it, I phoned Mr. Bundy and asked that he notify the President and this was the beginning of the DOMINIC Test Series.

HEWLETT: Well, I think that pretty well completes the story of the series of decisions to resume full-scale weapons testing. We have been talking about this for the good part of two interviews. I wonder if you had any summary thoughts or other ideas that have come to you in the course of this that you would like to add here.

SEABORG: Well, I think it must be apparent from the accounts I have given that President Kennedy was most reluctant to resume testing of any kind, first underground and then atmospheric. However, when the facts developed, the inevitably of the necessity for doing this became clear, and he took the decision resolutely and in a straightforward manner.

Negotiation of Nuclear Test Ban, 1961-1962

HEWLETT: Now, I think we might turn to the important subject of United States efforts to negotiate a nuclear test ban. Perhaps you could summarize for us some of the background for the negotiations in 1963.

SEABORG: Well, I think that one of the considerations was that Mr. Kennedy had made as one of his principal commitments in the Presidential campaign during 1960 that he would make a new and determined effort to negotiate a nuclear test ban. And as I have already indicated, this came up very early in the Administration, the first months of 1961. The hope to negotiate some kind of a test ban was still very much on the President's mind.

HEWLETT: Yes, we have talked a good bit about this. For the purposes of the interview, we have split these two topics apart, but I think it is quite important to remember that as you read the record you see that the subject of the resumption of testing and the efforts to achieve a test ban went on simultaneously through 1961 and the early months of 1962.

SEABORG: Yes. And this problem was discussed, as I have indicated, many times. There was a meeting of the National Security Council on August 17, 1961, at which possible plans for general disarmament and the test ban were discussed. We considered the details of the test ban, having to do with lowering or eliminating the seismic 4.75 threshold in the test ban treaty. I recall that at that particular

meeting, I pointed out that eliminating that threshold would violate the basic U.S. position that the treaty should deal with enforceable measures. So it was decided that we would make the suggestion in the treaty to lower the threshold only to the limit of scientific capability for detection. This implied a redistribution of seismic stations in the USSR and perhaps adding one or two hundred unmanned stations in order to get to a low limit. This example illustrates the complexities involved in a comprehensive test ban -- that is, one that bans tests in the atmosphere and underground to the extent possible -- and perhaps, gives some indication of the incentive that finally led to the idea to go for an atmospheric test ban.

HEWLETT: Then I suppose the hopes for the test ban disappeared, at least temporarily, when the Soviets resumed atmospheric testing in September 1961. We talked about that event.

SEABORG: Yes. The hopes did become rather small at that time. The test ban talks in Geneva, of course, were recessed indefinitely in September of 1961. But on the other hand, I recall that we were quite pleasantly surprised by the Soviet acceptance of our proposal to return to Geneva for further nuclear test ban talks. This

announcement by the Soviets came on November 21, 1961. Our atmospheric test series, of course, did not start until after that time.

HEWLETT: In reading over the AEC files on the preparation for the 18-nation disarmament conference which was to begin in March 1962, I sensed that there was some feeling, at least within the staff, that the Atomic Energy Commission was left on the sidelines by the Arms Control and

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Disarmament Agency. In discussions leading to the United States' position to be taken at the conference do you believe at the time that greater AEC participation would have been desirable?

SEABORG: Oh, I suppose that one always believes that. I think there may have been a stage there when we did not participate as much as might have been to maximum advantage to the United States. I think this was related only to the urgency and the hurry with which the position was prepared and usually, I would say always, when I called this to the attention of Bill Foster he was more than anxious to confer with us. I can recall having lunch with him on many occasions during which we brought each other up to date on our thinking in this area.

HEWLETT: It was more a matter of time than anything else.

SEABORG: Yes, I would say it was mainly a matter of time -- urgent work to be done, and busy people.

HEWLETT: I noticed in the files an interesting memorandum from Commissioner Olson in which he seemed to indicate that he though AEC participation should limited to technical advice. I wonder if this was your feeling.

SEABORG: Well, I think I would agree that the major concern of the Commission was that the nation's disarmament position be based on sound technical facts. However, I participated as a member of the group of principals responsible for developing the disarmament position and I met on several occasions with leaders of the State Department and the Arms Control and Disarmament Agency and the President to discuss these matters.

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I believe it's a kind of a tenuous line between what you call technical advice and general advice covering the whole situation. I have in my personal files rather extensive notes which I took at disarmament meetings of the National Security Council in the Cabinet Room on April 6 and April 12, 1962 which would indicate how the matter was going at that time.

HEWLETT: In view of the obvious interest of both the United States and the Soviet Union in negotiating a disarmament agreement in the spring of 1962, why was there so little progress during the following months?

SEABORG: Well, we'll probably have to wait for some years before we have enough historical evidence on both sides to answer that question, but I feel that we had gone more than half way and that the Soviet Union had rejected our offers for a responsible settlement when, on the surface, one could not see any real reason for it. You will recall that on April 12, 1962 the United States presented a new draft of a disarmament agreement. We also offered concessions in terms of the threshold for underground explosions and also in the distribution of detection stations within the Soviet Union. This was a very sensitive point with the Soviets. However, the Soviet Union rejected these offers by contending without any supporting evidence that national detection systems would be adequate. You may recall that the situation was complicated also by the presentation of a proposal by the non-aligned countries. The Soviet Union, by pretending to support the neutrals'

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position, succeeded in confusing the issues before the conference. So I must say that the resorts from the AEC representatives in Geneva during the spring of 1962 reflect a strong sense of frustration and discouragement.

Draft Test Ban Agreements

HEWLETT: Well, at the same time I suppose the Administration was doing all it could to carry on negotiations with the Russians.

SEABORG: Yes, they were making every effort to find a test ban agreement which would be acceptable to the Russians. I recall that in July of 1962 the Arms Control and Disarmament Agency turned all of its effort to the drafting of a comprehensive test ban treaty to be presented when the conference resumed later in July. ACDA also worked on an alternate agreement for the banning of atmospheric tests only. The comprehensive agreement was designed to meet all the points in the proposal made by the non-aligned nations and at the same time to protect the security of the United States. The interesting thing is that these two agreements were tabled in Geneva, I believe in August of 1962, and although the agreement suggesting the banning of atmospheric tests alone seemed to be the minor one at that time, sort of an alternate agreement, that particular agreement, became the basis for the limited atmospheric test ban treaty, which was adopted the following summer.

HEWLETT: Were there discussions of the treaty with the President, during the summer of 1962?

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SEABORG: Yes. I think one of the most important discussions we had occurred at the White House on July 27, 1962. I remember that Mr. Rusk began the meeting by saying that the principals had agreed that we needed a treaty with control and that, in spite of the risk in such a treaty, it was desirable because the risk of proliferation of weapons in the absence of a treaty was even greater, much greater. He described the new proposed comprehensive treaty as it involved national control points and 12 on-site inspections per year. There was a great deal of discussion as to whether we could go lower in the number of on-site inspections. I think that the feeling was that we could be flexible on that point and not have a definite number to retreat to with respect to that particular item. This meeting on July 27 also got into the matter of how much we had learned from underground testing and presumably how much others could learn from similar techniques. I recall that toward the end of this meeting the President asked me to prepare for meetings to be held early the following week a memorandum on a system for continuous readiness for atmospheric testing. That is, in case we did have a comprehensive test ban, how could we be ready to resume testing if that treaty were abrogated? This would be a strong selling point, you see, with Congress, and a real assurance if we signed such a treaty, that we would be ready in case of abrogation. We did prepare a test readiness report for atmospheric testing in very short order and Commissioner Haworth presented the report at a meeting with the President at the White House on July 30, 1962.

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Of course, you will recall that we were right in the middle of our atmospheric testing at that time. So we were talking about disarmament and a comprehensive test ban treaty, and in the same meetings we were discussing how our testing was progressing. I remember that at this meeting on July 30 President Kennedy asked me how long it would take to repair the Johnston Island launch site which had been damaged by a recent unsuccessful high altitude test. I told him that it would take until about the end of September for the repair and until about the end of October to finish the test series. He also asked me how much more it would cost and how much longer it would take for the country to develop nuclear weapons when confined to underground testing. I said that I thought the cost would be comparable but that it would take a few years longer, although I must say that some people present at the meeting doubted that it would take that much longer.

It was at this meeting that William Foster presented his memorandum of that same date, July 30, 1962, which proposed the tabling of an atmospheric test ban treaty, and which expressed the willingness to accept a comprehensive test ban treaty involving internationally monitored national control posts on Soviet soil and a possible reduction in the number of on-site inspections. Although, as I have indicated, there was no agreed-upon number, I recall discussions of numbers like 7 or even 5 at that time.

We met again on August 1, 1962, to discuss this matter of test ban agreements. The President read to us at that meeting a letter from Prime Minister Macmillan saying that he

continued to feel that further nuclear tests were not needed, that a test ban was urgent, and that such a test

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ban could be fully effective with much less control than the U.S. seemed to think necessary. This indicated the type of thinking that was going on at that time, but I think the important thing to emphasize here, as I have already, is that at this meeting the concept of the limited test ban treaty banning tests in the atmosphere and under water and outer space, was drawn up in definitive form and this was tabled along with the modified comprehensive test ban treaty at Geneva in August of 1962. This was the basis for the test ban treaty that was successfully negotiated the following year.

HEWLETT: Can you tell us who was present at this historic meeting?

SEABORG: Yes. Present at the meeting on August 1, 1962, in the Cabinet Room at the White House were President Kennedy, Vice President Johnson, Secretaries Rusk and McNamara, Bill Foster, Mr. Dean, Adrian Fisher, Frank Long (who was with the Disarmament Agency), Mr. McCone, Dr. Wiesner, Mr. Keeny, Dr. Haworth, Mr. Webb, Mr. McCloy, Mr. Lovett, Mr. Murrow, Gen. Taylor, Gen. Lemnitzer, Mr. Nitze, Mac Bundy, Mr. McNaughton, Mr. Robert Kennedy, Mr. Bromley Smith, and myself.

Cuban Crisis

HEWLETT: Mr. Chairman, one of the things which disrupted the disarmament effort in the fall of 1962 was the Cuban crisis. I found very little in the files on these important days, but undoubtedly you have some vivid recollections of them. Could you tell us anything about that?

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SEABORG: Yes, I certainly do. I was kept informed day by day, or you might say hour by hour, as this developed. We in the Commission developed emergency plans, plans for our whereabouts and that of our families. We held meetings and had detailed plans in case anything happened along the lines that, of course, all of us feared, along the lines of the outbreak of a nuclear war.

HEWLETT: Did you feel that the Cuban crisis had any effect on President Kennedy's desire to achieve a nuclear test ban and general disarmament?

SEABORG: Well, I think it was characteristic of President Kennedy that the crisis in the fall of 1962 did not unduly discourage him about the long-range prospect for disarmament, but I say rather convinced him that such an arrangement was more than ever necessary. I feel that realization simply increased his determination. I recall

that at a meeting of the principals on November 10, 1962, Secretary Rusk stated that if there were progress on the Cuban situation the President in his public statements was committed to explore the possibilities for disarmament. Secretary Rusk said at that time he was somewhat gloomy about the prospects for disarmament but he noted that the President was determined to see if there was any way to move ahead on the test ban. Notice this was in November of '62.

Outlook for Test Ban, 1963

Then early in 1963 the President even went so far as to defer our underground testing program in the hopes of furthering the

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development of agreement with the Soviet Union. I recall that at a meeting in the President's office on January 22, 1963, he told me that he would like the AEC to defer underground testing for two or three weeks while the possibility of a test ban on the basis of an exchange of correspondence between President Kennedy and Chairman Khrushchev was benign explored by Mr. Foster and the ACDA. I was basically in favor of such a deferral under those circumstances, but I felt it my duty to point out that this deferral of the tests would have an adverse effect on the laboratories and possibly on some of the Commissioners because of the feeling that this might be the first step toward an unpoliced moratorium. That is, there was the feeling that "Here we go again!" I thought this might be a long period, and I indicated it might be better if the actual length of time of this deferral was not designated. Mr. Foster said he might be able to learn the prospects for a test ban before two or three weeks passed.

It is interesting to note that the AEC had not been testing during the past several weeks, that is, just prior to January, or early in January 1963 because of labor union troubles. Actually, a whole month had passed since the last test and this complicated the problem because an announcement of a test at that particular time would be particularly unfortunate so far as the negotiations were concerned. You see, it would be almost as if you were resuming testing. So there was general agreement at this meeting on January 22, 1963, that the AEC should defer its underground testing

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until an assessment could be made on the prospects of a successful negotiation.

At this meeting of the National Security Council, the President also presented a sort of year-end report on the completion of the second year of his Administration. In this report the President emphasized the test ban negotiations and the recent exchange of correspondence with Chairman Khrushchev. He indicated in this report that a test ban treaty was very important. He mentioned particularly the prospects that the Chinese might develop nuclear weapons, and he felt that a test ban treaty might lessen that prospect. The President said that if a test ban treaty would lessen this prospect of the Chinese developing nuclear weapons, he felt we should be very careful before turning down any reasonable test ban

treaty. He said (and this is very interesting as I have indicated this was in January of 1963), that he suspected the Russians were beginning to feel just the same way, that is, concerning the Chinese. He felt that perhaps a test ban treaty involving only the Russians and the United States would not be extremely valuable, but he thought certainly it would be valuable if it affected the rest of the world and particularly could somehow be made to affect the Chinese plans. He went on to say that a test ban treaty was much more important at that time, January 1963, then it had been a year or two earlier.

HEWLETT: Well then, this decision to postpone the resumption of testing during January was carried into effect?

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SEABORG: Yes, on January 26, the White House actually released a statement to the effect that during the discussions in Washington and New York on the test ban treaty which involved the Soviet Union, the United Kingdom, and the United States, the President had asked the Commission to postpone underground tests in Nevada. However, this directive was in effect only a few days because on February 1, 1963, the Soviets left the New York talks. And then interestingly enough, the President ordered us immediately to get back on our testing schedule to start the following week. So you could see President Kennedy had his ups and downs on this. He kept trying, but he would meet these reverses, these unexplainable reverses, from the Soviets.

HEWLETT: Well then, after the Russians went home was it some time before the President got back to the subject of a test ban?

SEABORG: No. There was really no delay at all. As you can see, we seem to have been meeting almost continuously. At a meeting with the President on February 8, 1963, we discussed again the U.S. position which Mr. Foster would follow in the test ban negotiations about to start in Geneva. Mr. Foster made the point that he thought the U.S. and the Soviet test series had not upset the balance of power, or the balance of strength in the nuclear weapons area, and that the key to any test ban was underground tests because detection of the other types was very easy and not at issue. There was some discussion at this meeting as to whether the United States had actually accepted, as some of the newspaper reports indicated, the idea of only two to three on-site

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inspections per year, and the President suggested that we get for the record, a letter from Mr. Dean to Secretary Rusk pointing out that he had really never suggested so small a number of on-site inspections. The Soviets had accused him, I should use that word, of making that suggestion. There was also discussion of the number of automatic seismic recording stations and a general discussion of the comprehensive test ban treaty at that meeting.

Effect on Plowshare

HEWLETT: I do not think it is necessary here to go through all the considerations that went into the limited test ban treaty which was signed in the summer of 1963. However, I think we might include a few words about the Commission's concern over the effects of a test ban on the Commissions' program for the development of peaceful nuclear explosives. I wonder if you could say a few words about the Commission's position on this question.

SEABORG: Yes. Very early in the negotiations the Commission became concerned that the test ban agreement might make it impossible to conduct peaceful nuclear explosions, that is, the Plowshare Program. The treaty that was tabled in August 1962 did not have very good provisions for the Plowshare Program. I can recall that at a meeting of the principals in the spring of 1963, I made a strong presentation and I believe convinced a number of the principals, I know I convinced Secretary McNamara, that we should have a provision in any treaty that allowed for Plowshare experiments and did so without making it necessary

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to reveal the inner part of a nuclear device. I made the suggestion that we go the whole way short of this. We would have international inspection, Soviets included, at any Plowshare test showing the emplacement of the device, the instrumentation used for the device, and including observation of the actual explosion: an international inspection that went the whole way, short of the actual revelation of the inner workings of the device. I felt that to reveal the device was not practical. Since Plowshare experiments required clean devices then being developed, opening the devices would reveal some of the most advanced principles of nuclear weapons. It would never be feasible to reveal these to other nations, especially to the Soviets. This idea was presented as a possibility at this meeting of the principals in the spring of 1963 but it did not find its way into the limited test ban treaty that was adopted later that summer.

Moscow Trip, August, 1963

HEWLETT: Mr. Chairman, I believe the limited test ban agreement was signed on August 5, 1963, and I believe you attended that signing. Could you tell us something about that trip to Moscow?

SEABORG: Yes. I would like to describe that trip in some detail. We left in the Presidential plane from the Andrews Air Force Base the evening of August 2. I recall present on the plane was Secretary Rusk, and a number of key Congressmen and Senators, Senator Fulbright, Senator Humphrey, Senator Pastore, Senator Aiken, Senator Saltonstall, Adlai Stevenson, and others. We arrived in Moscow about 6 PM after

stopping in Copenhagen on August 3, 1963. I recall that on the following day we had a meeting at the British Embassy in Moscow, attended by Secretary Rusk, Ambassador Kohler, Mr. Stevenson, Bill Foster, Mr. Thompson, Mr. Stelle, Mr. Home, Mr. Kasha, Sir Edward Heath, and others of the British contingent. [redacted] Preparatory to the signing which was going to take place the next day, a number of aspects of the limited test ban treaty were discussed by that group. I recall that they discussed the effect of the treaty on West Germany. They discussed the effect on the French and they discussed briefly the French plan for disarmament through the limitation on the delivery vehicle. They discussed the interesting suggestion by the Soviets of observation posts that had come out somewhat previous to that time. They discussed the anti-surprise attack agreements. I remember that the question was raised as to whether, if the French started to test in the atmosphere this would put an end to the treaty. I think there was a feeling that it probably would not.

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The following day, of course, was the interesting day and the historic day. This is August 5th, 1963, in Moscow. I remember that the American contingent began the day with an appointment at 9 o'clock in the morning with Gromyko. This was held in the Foreign Ministry Building in the Kremlin and was attended by Gromyko, Kuznetsov, Dobrynin, Tsarapkin, and the American contingent. At this meeting Rusk voiced the hope for the world that was inherent in the test ban

treaty that we had come to Moscow to sign. He said that he considered this an important first step toward disarmament and world peace. He also called upon Senator Fulbright, who, as chairman of the Senate Foreign Relations Committee, would play a key role in the final procedure of Senate ratification of the treaty. Senator Fulbright gave an eloquent defense of, and plea for, the test ban treaty. In fact, he was, I would say, a tower of strength at these meetings in Moscow and, of course, a real key to the final passage of the treaty through the Senate.

Signing the Limited Test Ban Treaty

Then from 11 to 12, we called on Chairman Khrushchev in his office in the Kremlin. I recall that Chairman Khrushchev indicated that the test ban treaty was only a first step toward world peace and that the main problem was the German problem. He said that the liquidation of the German Democratic Republic would be no victory for the United States and similarly, the liquidation of the Federal Republic would be no victory for Communists or the Soviet Union. Chairman Khrushchev said that we need a common solution to the German problem. Secretary Rusk said that he recognized this and he said that he understood the

importance of a solution to the German problem to the Soviet Union. Actually, Secretary Rusk spoke of the East in referring to the Soviet Bloc. Chairman Khrushchev quickly took this us and said, "I notice you refer to the socialist countries as the East." And Secretary Rusk immediately answered and said, "Well, some people in the United States call us socialistic so it isn't clear just what is meant by that term."

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And I recall that Chairman Khrushchev responded by saying, "Oh such a man to say that."

The Chairman went on to say that capitalism gave birth to communism and he felt that the two systems should compete through culture and not through rockets. Secretary Rusk in that connection mentioned that visits of men like Seaborg, Udall, and Freeman that had taken place not too long before this time, certainly represented important steps in this direction.

Secretary Rusk then called on Senator Fulbright who referred to a little trouble that we had between two sections of the United States about a hundred years ago and indicated that if the South, following that, had learned to get along with the "damn yankees" he did not see why it would be more difficult for the United States and the Soviet Union to get along. He indicated that capitalism, after all, was a sort of a mixed economy, and perhaps the difference between the two systems was not as great as some people seem to think. He indicated that the Soviet Union in a sense promotes capitalism, or is going in many ways toward the capitalistic system, and that many people regarded some of the Democrats in the United States as socialists. He was just trying to indicate the coming together of the two systems.

After this splendid talk by Senator Fulbright, Chairman Khrushchev said that he agreed on the common goal of the United States and the Soviet Union and he gave a little talk about the plans in the Soviet Union to advance, promote, and strengthen the chemical industry.

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Interestingly enough, he showed us, with great pride, some plastic objects, a plastic cup, and things of this sort, with almost child-like pride to show the Americans these Soviets products of the expanding and growing Soviet chemical industry. I might say that when I greeted him and shook hands with him on this occasion, he referred to me as "my old friend." By this, since I had not met him before, I am sure he had reference to my recent trip to the Soviet Union with a group of American atomic scientists to sign the agreement for cooperation with the Soviet group in May of 1963. This visit that he had been familiar with led him to feel that he was greeting an old friend.

It was later that afternoon that the limited test ban treaty was actually signed, at 4:30 PM on August 5, 1963, in Catherine's Hall. The signing was done by Rusk, Bromyko, and Home more or less simultaneously. It was followed by speeches by these three gentlemen as well as an excellent speech by U Thant, who was also present. I recall that there were some 50 to 60 press and photographers present and continuous flashing of the light bulbs. The

signing was accompanied by numerous toasts and raising of glasses. I happened to be standing quite close to Chairman Khrushchev and I remember that I clinked glasses with him at least five times on each of about five toasts. He was in the finest humor and actually, I must say, he looked also to be in the best of shape, the picture of health.

Meeting with Khrushchev

After the completion of the signing ceremony we went over to a very large room called the Georgian Halland this was at about 5:15 PM,

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where I found it very interesting that Chairman Khrushchev mixed freely with this large crowd of people. I would say there were hundreds, really thousands of people in this room, just going around about as freely as one could imagine would be possible. At this reception I saw and talked to Brezhnev, Chairman Petrosyants of the State Committee on Utilization of Atomic Energy, Gromyko, Kuznetsov, Dobrynin, Zorin, Tsarapkin, and the grand old military leader, Voroshilov. I had a chance to talk with all of them.

We were mixing quite freely and having a good time, and then at a certain stage there was a sort of realization that something was coming up. Chairman Khrushchev stepped up to the microphone and pulled a prepared speech out of his pocket. And I must say it was a rather good speech, whether he wrote it himself or whether a speech writer wrote it, it was very much to the point, very well written, and made some very interesting points. This, I believe is what impresses one about the Soviet speeches on occasions like this. They seem to be ready with appropriate remarks at the drop of a hat. I would say that my impressions of Khrushchev were that he was a very able person. In the conversation that we had with him in his office he was right on top of the situation. He had an amazingly good sense of timing. His remarks were interspersed at exactly the correct psychological moment and he was a master at repartee in the give and take. And as I have indicated also, he seemed to be in good physical shape, full of bounce, in good humor, and mixed freely with the people in that Kremlin area.

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Ratification of the Treaty

HEWLETT: Mr. Chairman, could you tell us something about the problem of ratifying the treaty in the United States Senate? This was quite an effort over a number of weeks.

SEABORG: Yes. Extensive hearings were held. I came back from Moscow a day or so later. Actually I had planned to be on vacation and my family was up in New England. I joined them for a few days, then came back the following week, near the middle of August, for my testimony. My testimony, of course, is a matter of record. I

testified all day in the session, morning and afternoon. My impression is that the hearings were fairly conducted and that Senator Fulbright did a masterful job in the questioning and in leading the questioning. He was a dedicated man, a person who wanted the test ban treaty ratified, and as I have indicated, certainly played a key role in it. The sort of things that the members of the Senate Foreign Relations Committee wanted to hear from me was whether I felt adequate progress could be made in the underground testing program to assure national security and whether some progress could be made under Plowshare which I assured them could be, although I tried to indicate to them realistically what the limitations on that progress were. I feel that the assurances that I gave that progress could be made on Plowshare probably played quite an important role in the final ratification of the test ban treaty.

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IV. FOURTH INTERVIEW, JUNE 27, 1964

Civilian Power Report

HEWLETT: Mr. Chairman, at the beginning of our fourth interview, I would like to move to the subject of the civilian power report. One of the major policy issues facing the Commission during the Kennedy Administration was the future course of the reactor development program. Could you tell us something of the background of the civilian power report?

SEABORG: Yes. This report has a rather long history. It did not just originate overnight as an idea. Actually, I would like to go back to the considerations concerning nuclear power that went into the President's budget message to be delivered in January of 1962. The members of the Commission had become concerned that the Administration did not recognize sufficiently the value of a vigorous program in civilian nuclear power. I must say that we were encouraged in this point of view by the members of the Joint Committee on Atomic Energy and by Congressman Chet Holifield, who at that time was the chairman of the Joint Committee on Atomic Energy.

We began to talk with the Bureau of the Budget about the possibility of the President including in his budget message a rather strong statement on the development of civilian nuclear power to be carried forward in the fiscal year 1963 budget.

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We went so far as to draft with the Bureau a statement that we considered satisfactory from this point of view. But the Bureau felt that the statement went too far and edited it down to the level that suited them but did not suit the Atomic Energy Commission. This is where the matter stood in the early part of 1962.

When I referred to the Administration position, of course, I meant at this stage the position of the Bureau of the Budget. This was the friendly give and take between the Atomic

Energy Commission and the Bureau concerning what the Administration's position should be. However, the result was that the President did not make a statement concerning civilian nuclear power of the type that the Atomic Energy Commission hoped he would. January passed without a real Administration position on this, and, of course, we were still discussing the amount of support for civilian nuclear power that would be in the fiscal '63 budget, particularly with respect to the construction of reactors and prototype reactors, and so forth.

This discussion continued throughout February, 1962. At this time the Commission attempted to enlist the support of the Bureau of the Budget for a statement by the President, perhaps in a press conference, or on some other occasion, that would indicate strong support for a substantial program in civilian

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nuclear power. However, again it was not possible to convince the Bureau that such a statement by the President was in the best interests of the Administration. Thus February passed and we began to approach the time of the annual hearings required by Section 202 of the Atomic Energy Act. In these hearings the Commission was required to give each year a status report on the atomic energy civilian power industry. As this time approached, the Joint Committee on Atomic Energy was getting more and more restive. As a matter of fact, Chairman Holifield wrote me a rather critical letter dated March 15, 1962, in which he spoke of the lack of new starts in reactor prototypes and the general fall-off as he saw it, in civilian nuclear power expenditures.

President's Letter

However, previous to this letter, Howard Brown, my executive assistant, and I had been discussing a course of action. It occurred to us that the best course of action, (and we were certainly, I believe, proven correct by history) was to convince the President to write us a letter requesting the preparation of a report on the status of development of civilian nuclear power and a plan for its future development. We helped the President, through cooperation with the Bureau of the Budget, draft such a letter, and succeeded in having the President send us such a letter dated March 17, 1962. In this letter, it was stated that the study should identify the objectives, scope, and content of a nuclear power development program

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in the light of the nation's prospective energy needs, resources, and advances in alternate means of power generation. The Commission was asked to recommend appropriate steps to assure the proper timing of development and construction of nuclear power projects, including the construction of necessary prototypes. We were very happy to receive this request in this way from the President. However, it had a curious reception from some members of the Joint Committee on Atomic Energy because as sort of an accident of timing the letter from the President, as I have indicated, dated March 17, 1962, appeared, just a day or two before the beginning of the Section 202 hearings. The members of the Joint

Committee drew the implication that this letter from the President was a quick response to Chairman Holifield's letter of March 15, when, of course, the draft had been in process for a week or two.

BROWN: Actually, Mr. Chairman, Mr. Holifield had written the President on February 13.

SEABORG: As a matter of fact, yes.

BROWN: Yes. You may recall that we were concerned about this thing happening in just this way. We did not want this letter to get up there just a couple of days before.

SEABORG: No. We had been trying to get this letter

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up almost three weeks sooner than this, but in the course of the natural pressure of other events, it did not get out of the White House until March 17. Well, this merely meant that it had this initial critical reception by the Joint Committee on Atomic Energy, but I must say that they changed their position on it. After the report appeared they generally felt that it was a very worthwhile report and they were laudatory of the report.

Then their concern turned to whether there would be Administration implementation of the report.

Contents of the Report

The report summarized the Commission's program for the future, and in that connection suggested a number of specific objectives. One was the demonstration of economic nuclear power by assuring the construction of plants incorporating the presently most competitive reactor types. By this was meant ensuring the construction of pressurized water and the boiling water reactors. Of course, we now know this objective has been very successfully carried out.

The second objective was the early establishment of a self-sufficient and growing nuclear power industry that will assume an increasing share of the development costs. Substantial progress has been made to meet this objective.

The third objective was the development of improved

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converter, and later breeder, reactors to convert the fertile isotopes to fissionable ones, thus making available the full potential of nuclear fuels. The Atomic Energy Commission is making every effort to implement this part of the report at the present time.

The fourth objective was the maintenance of U.S. technological leadership in the world by means of a vigorous domestic nuclear program and appropriate cooperation with, and assistance to, our friends abroad. I think that this objective is also being met and that much progress has been made since the report. I am very optimistic about our cooperation with countries throughout the world, with Euratom, and with the International Atomic Energy Agency.

All in all, I believe that our report to the President, which came out in November of 1962, entitled "Civilian Nuclear Power," was a most successful venture. A plan was greatly needed at that time. This report was very well received in government and by industry, by the White House, and by the Congress. As I have indicated, I think it was a very successful venture.

HEWLETT: You would say then, Mr. Chairman, that you feel the report was something of a turning point in the Commission's reactor development program?

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SEABORG: Yes. I would describe it as that. I might also indicate that I believe that a great deal of credit for the preparation of the report should go to Commissioner Leland Haworth and the staff. He took personal charge and was involved personally in the final writing, although it was also of such importance, in my own opinion, that I worked on it personally and was involved in the editing right to the end. But the major-domo in the operation was Lee Haworth.

Significance of the Report

BROWN: Mr. Chairman, it is interesting, I think, to contrast the actual results, the things that have grown from the report and from its conclusions, with some of the attitudes which were encountering back in early 1962 which led us to feel this kind of report was necessary. I think there was some feeling that maybe the civilian power program was "over the hill" and was replaced in importance by space applications. Is this your recollection?

SEABORG: Yes. Also, there was even the feeling that civilian power did not have an economic future, that we were force feeding something that was not viable. As a matter of fact this was one of the reasons that we had difficulty in the budgetary process at that time. The feeling that perhaps we were throwing good money after bad. Interestingly enough, civilian nuclear

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power has come so far economically that now we have almost gone full circle and have some difficulty in obtaining budgetary support on the basis that if civilian nuclear power is so economical, why does it need further support. This, of course, misses a very, very important

point; namely, that we must develop the second and third stages as described in the report on civilian nuclear power. We must develop improved converters and breeders in order to utilize efficiently our fissionable material resources. Ultimately, of course, we hope to develop much more economical nuclear power than we have now. The present stage is a rather limited stage and it would be shortsighted to stop at this. I strongly believe that we should go ahead with the full three-stage program as spelled out in the report and I am confident that will be our national policy.

BROWN: Mr. Chairman. It is difficult to imagine what might have happened to the program if the March 17 letter had not been written, but it is now clear that the President, in cooperation with you, did the country a great favor by requesting this study. As Dr. Hewlett pointed out a while ago in his question, the study may very well have been the turning point in this whole civilian nuclear power program.

SEABORG: I think that is right, Howard. I think that if we had not produced this important, historic, definitive report

on civilian nuclear power in 1962, the civilian nuclear power program would not be nearly in as advanced a stage as it is today. Nor would it have as optimistic a future as appears possible today.

Stanford Linear Accelerator

HEWLETT: Dr. Seaborg, I gather that one of the first problems the Administration had to face in the area of high energy physics was the decision to build the Stanford Linear Accelerator. Was this a subject which you discussed with the President?

SEABORG: Yes, it was. This was a difficult decision because of the costs of the project, amounting to something like $115 million. This came up early in the Administration, in the first months in 1961. The basic decisions had been made during the Eisenhower Administration, when, after some ups and downs connected with the relations with Congress, it was decided to go ahead with the project. Actually, as I recall it, President Eisenhower had announced the decision in one of his speeches. This caught Congress somewhat by surprise and they were not ready to support it. It was somewhat of a stalemate early in 1961 and really had to be re-evaluated.

We began to discuss the Stanford accelerator in our meetings concerning the fiscal ‘62 authorization bill and budget. I recall that there was a meeting with President Kennedy on March 9 in his office. In addition to President Kennedy and myself, the Director

of the Bureau of the Budget David Bell, Dr. Wiesner, and Presidential Assistant Fred Dutton were present. At that meeting Mr. Bell gave a short history of the ups and downs of the project. He brought out that it would be quite expensive but that the cost would be spread out over four or five years. The cost during fiscal '62 would be in the range of only $10 to $20 million. It was also brought out that the Joint Committee on Atomic Energy, or at least some of the members, were coming around to support the project. It was also pointed out to the President that it had been in the Eisenhower budget. The President was interested in what some of the competing items might be. It was pointed out that some of the money could be used alternatively to supplement the National Science Foundation Budget, or for the oceanographic program, or things of that sort. I pointed out that I was strongly in favor of the project and Dr. Wiesner said that he was strongly in favor of it. We indicated, Wiesner and I, that there was general agreement among high energy physicists in the United States, that the accelerator was needed and that we should go ahead with it. On this basis the President said at that time, "Let's go ahead with it."

HEWLETT: I think that must have indicated something of the President's interest in science in the first days of his Administration. We have spoken of this before, but he apparently

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was willing on the basis of these opinions to go ahead.

SEABORG: Yes, although in a sense it was a tentative decision. I pointed out to him the great importance of meeting with the members of the Joint Committee on Atomic Energy on this and a number of other items that were current issues. The President did arrange for such a meeting in his office on March 23, 1961. Present besides President Kennedy and myself were Vice President Johnson, Bureau of the Budget Director Bell, and from the Joint Committee, Senators Pastore, Anderson, and Jackson, as well as Congressmen Price and Holifield, and the Executive Director of the Joint Committee, James Ramey. I should indicate that there were a number of issues discussed at that meeting, including the NPR and certain other projects, but the Stanford accelerator was included among them. The members of the Joint Committee more or less supported it but I recall that Senator Clinton Anderson spoke out rather impetuously. He indicated that he did not think too much of the Stanford Linear Accelerator project. However, I must say that after I had spoken to him about it as sort of an aside during the meeting, at my urging he approached the President after the meeting to indicate that he thought it should be supported. He was really good about it and he thought in balance it was the right thing to do. However, this raised in the President's mind some questions

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about the support of so expensive a project. As an interesting little point here, after the meeting, David Bell called me to indicate that he had been with the President to get some

final decisions on these matters including the NPR, additional funds for ROVER and the Stanford Linear Accelerator. Dave Bell told me that the President at that stage nearly threw the Stanford Accelerator out. But he said he thought that in balance the President would ride along with the judgment of those of us who were advising him on this matter and would keep it in. Actually Dave Bell called me again, I think it was the next day, to say that he had seen the President again and that he was prepared to go along with the Stanford Linear Accelerator.

MURA Accelerator

HEWLETT: Another policy question during the Kennedy Administration was whether to support the project of the Midwestern Universities Research Association (MURA) to build a large accelerator in the Midwest. The records do not show that this matter was ever discussed with President Kennedy. Do you recall any discussions with him?

SEABORG: Yes. This was discussed with President Kennedy. This is the so-called Fixed-Field Alternating-Gradient (FFAG) Accelerator that was proposed by the MURA scientists to be built at Stoughton, Wisconsin. The project, by the way, was priced at

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something of the order of $150 million, even more expensive than the Stanford Accelerator and of course suffering from the fact that it was following so close after the authorization for the Stanford Accelerator. Another factor was that there was in the offing two other large accelerators, even more expensive, a 200-bev accelerator and then a larger one in the 600-800 or maybe even 1000-bev range of energy. The decision had to be made in this context and in the context of the report of a panel of scientists that has been assembled under the auspices of the President's Science Advisory Committee and the General Advisory Committee of the Atomic Energy Commission under the chairmanship of Professor Ramsey of Harvard University. The Ramsey Panel had more or less recommended the construction of MURA but only on the basis that it did not interfere with the construction of the two higher energy accelerators which they considered more important because they considered more important because they considered higher energies more important than high intensities, such as the MURA machine would furnish. It was against this background, then, that the problem was put to President Kennedy in the fall of 1963. It is my opinion, supported by Dr. Wiesner, that President Kennedy that the government would go ahead with the construction of this expensive

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MURA accelerator.

HEWLETT: Well, then, as I recall, the issue was finally decided against MURA. Was this an action taken by President Johnson?

SEABORG: Yes. And taken by him personally. This was one of the first problems to face President Johnson, and we had a number of meetings with him about it. Jerry Wiesner, Kermit Gordon, the Director of the Bureau of the Budget, Elmer Staats, and others, joined me in discussing this with the President. The discussion culminated in a meeting with representatives of the Midwest Universities. President Johnson was very good about it and said that he would be willing to see these representatives.

The political pressure became very great because during the fall and winter of 1963 a number of letters began to pour in to members of Congress representing the midwestern states involved, to myself, and to Dr. Wiesner urging the support of the MURA accelerator. Thus the decision as it was finally made in December of 1963 was in the context of a strong political pressure situation. I think the President had pretty much made up his mind that the country could not afford this. He was influenced, I think, by the fact that the scientists were not unanimously in favor of it. The scientists supporting the 200-bev and the 1000-bev accelerators were actually opposing this MURA machine. It was in this context of divided scientific opinion and the tremendous cost that

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President Johnson had just about made up his mind that he would not include this project in his authorization and appropriation bills for the coming fiscal year.

The meeting that I referred to was held in the President's office on December 20, 1963. Present at the meeting was a very interesting group: President Johnson; myself; Kermit Gordon, Director of the Bureau of the Budget; Dr. Wiesner; Elmer Staats, Deputy Director of the Bureau; Bernard Waldmen, who was the head of the MURA organization of scientists; Edwin Goldwasser of the University of Illinois, who was a member of the MURA group, one of the articulate scientists that they wanted to have present the case to the President; Elvis Stahr, who is the President of Indiana University, and the President of the MURA association, at the University Presidents' level; and Senators Humphrey, Proxmire and Nelson of Wisconsin, and Congressmen Price of Illinois, and Kastenmeier of Wisconsin.

The President began this meeting by saying that I had requested that the MURA scientists be afforded the opportunity to present the case for MURA. He said that he wanted an explanation why the Government should go into this expensive project when there already was an accelerator at the Argonne Laboratory in the Midwest. This was another consideration. President Stahr explained the need for adding to the support of university

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research and graduate education in the Midwest. This argument was also strongly supported by Senator Humphrey, Senator Proxmire, Congressman Kastenmeier, and Senator Nelson. They emphasized what they called the inequity of federal research support in the Midwest as compared to the East and the West Coast. Congressman Price also expressed his support for

the machine. Goldwasser described the value of the machine from the scientific point of view.

At the President's request, I described such items as needed support for the existing machines and the fact that we had been forced to consider these as being higher priority than the MURA machine. That is, it would be inefficient to operate the machines we were already supporting at less than their capacity because of a lack of funds. However, I made it clear that I supported the MURA machine and that I agreed generally with Stahr, Goldwasser, and the Senators. The President then read from a letter that he had previously requested from Wiesner pointing out a number of arguments against the building of a machine. He had requested Wiesner to write this letter, and therefore Jerry had written down the arguments opposing the machine. Actually, Jerry was in favor of building the machine. I think that because the letter was ready by the President at that time. Jerry Wiesner got unwarranted credit for killing the machine. The President made it

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quite clear in the course of the meeting that it would be difficult for him to approve such a budget item in the fiscal '65 budget even though it would only be small, some $3 or $4 million in fiscal '65, in view of the continuing commitments and the large cost of the machine. As you know, it was not approved.

HEWLETT: Well, this illustrates something of the problems that come to the President in those times of complex issues of science and technology.

SEABORG: Yes and this one is not settled yet, of course. There is still a lot of ferment in the Midwest on this issue. President Johnson and those of us who are working with him are still trying to find a satisfactory plan for the support of science and high energy physics in the Midwest that may center a good deal around the Argonne National Laboratory. We have moved the MURA scientists to the Argonne National Laboratory - the actual physical move to take place within the next year or so. We hope that sufficient support for the ZGS at the Argonne National Laboratory will be helpful in alleviating some of the dissatisfaction.

New Production Reactor

HEWLETT: Mr. Chairman, one rather controversial issue during the Kennedy Administration was whether to build electrical generating facilities for the New Production Reactor at Hanford,

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Washington. Could you tell us how this question came up?

SEABORG: Well, the question was primarily that of Congressional authorization of such

facilities. Congress had authorized the New Production Reactor, that is, the NPR, itself in 1958, and the reactor was being constructed in such a way that electrical generating facilities could be added later.

In the early part of 1961 as the new Administration took over, the Joint Committee took a new interest in adding the generating facilities, largely because of a more favorable report on the economics of power generation prepared by the Federal Power Commission, although the Bureau of the Budget questioned the economics of adding the generating facilities. I recall discussing this with members of the Joint Committee very early. I attended a White House luncheon at which I sat next to Congressman Holifield on March 7, 1961. He said he would like to discuss this question of converting the NPR with me in the presence of Senator Jackson. I did discuss it with Congressman Holifield, Senator Jackson, Mr. Ramey, and Mr. Bauser of the Joint Committee staff in the Joint Committee offices on March 10. Jackson pointed out that the new FPC studies showed that the development of power was now economical and he thought that we should push for going ahead with this conversion. I pointed out that this was a reactor that would not serve as a prototype for others, that it

was a very special reactor. I said I did not oppose it, I just wanted to point out that this might not be the best way to spend $100 million if we had our choice as to the way that that much money might be spent. I told him, however, that the Administration was making a study of this was my help and that we would certainly come to a conclusion on it. However, as I indicated, the Bureau of the Budget, after a very careful analysis, summarized in a memorandum to the President dated March 20, 1961, came to the conclusion that on balance the conversion facilities should not be installed. They felt that it was only marginally attractive on the basis of the stated assumptions and unattractive on the basis of what they called more realistic and reasonable assumptions. So that was the recommendation that the Bureau made to President Kennedy in March.

However, the matter did not end there. I have already indicated that we met with the President on March 23 on a number of matters. At this meeting the NPR, as well as the Stanford Linear Accelerator and other items involved in the forthcoming budget, were discussed. Senator Jackson took this opportunity to speak very strongly for the NPR. He pointed out that this had been authorized as a plutonium producer with a convertible feature in 1958 on a straight party vote with a three-vote margin and he felt that this was more or less of a commitment of the Democratic

Party. This, of course, was not his only argument. I just mention this. He based his argument more strongly on applications to the peaceful uses of atomic energy – the economic arguments for utilizing the waste steam and things of that sort. He spoke very eloquently and I feel he had a great effect on President Kennedy as a result. He also wrote letters to the President during March of 1961 suggesting the inclusion of this in the forthcoming authorization bill and the Administration's budget. As I have indicated, as a result of the

meeting of March 23, the President did decide to go ahead and include the NPR in his budget for fiscal '62.

As a result the Commission prepared the necessary language for the authorization bill, and the Commission made every effort to support the NPR project in the summer of 1961. I personally felt that it was worth going ahead with it, that on balance the arguments favored it. I wrote letters indicating my support. I recall writing to Senator Anderson on July 17, 1961, supporting the project. This was the letter that Senator Anderson wanted in support of his description of the project in the debate on the Senate floor. I also recall writing a letter to SEnator Kuchel on September 5, expressing my support to the project. But as you know, the Congress did not authorize the generating facilities for construction by the Government in the 1961 sessions.

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WPPSS Proposal

HEWLETT: Well, what did this defeat mean for the NPR Project?

SEABORG: It meant that some new approach had to be found and actually such an approach was presented to us in a letter dated November 28, 1961, from the managing director, Owen W. Hurd, of the Washington Public Power Supply System. He made a very complex proposal, but in effect, the Washington Public Power Supply System, that is the WPPSS, offered to serve as the non-federal entity for the construction and operation of the NPR power facilities. This approach they felt, would make the need for Congressional authorization unnecessary.

HEWLETT: Well, now we have a new approach to the NPR. What role did the Commission play in the following year in carrying out the project?

SEABORG: Well, I would say the Commission took the major responsibility for translating the WPPSS proposal into a formal agreement. We held many meetings with the agencies involved. We urged the Administration to support this new approach. We worked with the Departments of Interior and the Bonneville Power Administration. However, one complication was that some members of Congress raised the question of whether the Commission had the authority to enter into such an agreement.

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The Commission therefore asked the Comptroller General for an opinion. Somewhat to our surprise the Comptroller General concluded that although the Commission had the authority, such an agreement would have to be specifically authorized by the Congress. This opinion came in the form of a letter from the Assistant Comptroller General, Frank H. Whitesell, on July 6, 1962. As I indicated, this came as somewhat of a surprise.

HEWLETT: Well then, this matter had to go to Congress for their approval. What action did Congress take on the proposal?

SEABORG: Well, the authorization bill, which included the NPR power facilities was extensively debated in Congress, and then finally passed in September of 1962, somewhat to our surprise actually. In fact as I recall it, it essentially failed passage in the House and then there was a reconsideration.

HEWLETT: There was a long conference --

SEABORG: -- a conference and a reconsideration and then some changes because some members of the House became rather incensed at the attitudes taken by others and sort of reversed themselves, and passed the bill. As I say, this actually happened in September of 1962. In its final form the act authorized the Commission to enter into the WPPSS agreement only after it had made three determinations. These determinations were to be that usable by-product energy would be produced incident to the

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production of special nuclear material in the reactor in accordance with the design of the reactor as originally authorized by Congress; two, that the sale of by-product energy could provide a substantial financial return to the United States Treasury for the benefit of the taxpayer; and three, that the national defense posture would be improved by the enhanced capability for resumption of special nuclear material production through non-federal operation and maintenance of the reactor during periods when it was not being operated for special nuclear material production. The interesting point here is that the Commission was over in Vienna for the annual conference of the International Atomic Energy Agency at that time. I say the Commission, that is a quorum of three members, Commissioner Wilson, Commissioner Ramey, and myself, met in session in Vienna and made these determinations. We formally determined that, after deliberation and review of all the material, the determinations called for with respect to the proposed arrangements between the Atomic Energy Commission and the WPPSS for the construction and operation of an electric generating plant at Hanford could be made, and were being made by the Atomic Energy Commission.

HEWLETT: I think this is one of the few instances when the Commission had a formal meeting outside the United States.

SEABORG: Yes, I understand that this is the case.

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President Kennedy at Hanford

BROWN: Well, Mr. Chairman, this was the final authorization. The authorization passed and construction commenced. Do you recall developments which occurred after the bill was passed?

SEABORG: Well, I described our efforts to get authorizing legislation passed in 1961 and then the successful effort in 1962 under the WPPSS arrangement. Actually, the bill was passed on September 26, 1962. The plans then went forward. We negotiated a satisfactory agreement with the WPPSS in accordance with the authorizing legislation and actually matters had proceeded to the point where the dedication of the conversion facilities could take place by September of 1963. The date chosen was September 26, 1963, the anniversary of the passing of the authorizing legislation. President Kennedy was so interested in this project, as he had been from the beginning, that he wanted to take part in the dedication ceremonies himself. On September 26, on the site at Hanford, President Kenneyd made the dedicatory address, and a very exciting one it was, indeed. Interestingly enough, I again was in Vienna at a general conference of the International Atomic Energy Agency. I recall calling Commissioner Tape who was representing the Atomic Energy Commission on this occasion, from Vienna on the morning of September 26 and asking him to extend to President Kennedy my greetings and a short report on how the conference was going in Vienna.

Commissioner Tape participated in this dedication with President Kennedy. As I have indicated, it was a very exciting occasion. There was some fear that this would not be a very successful operation out there on the desert with the helicopter having to land under conditions that might not be the best -- that it might be difficult to obtain a satisfactory crowd to witness the event, and so forth. However, the fears were all unwarranted. There was an enthusiastic crowd of 35,000 people present on a sunny day and President Kennedy gave one of his really inspired addresses on that occasion. He had prepared material, but he spoke in large part off-the-cuff, with, I would say, better material than the prepared material and I am sure that this is an occasion that all 35,000 of the witnesses will remember all their lives. Actually there was an excellent film of the occasion which we have now for the historic record, made by the General Electric Company, the contractor operating Hanford, with the cooperation of the WPPSS. I have seen this film and feel that it recaptures a great deal of the spirit and excitement of the day.

BROWN: It certainly shows President Kennedy in remarkably good health, a vigorous, scintillating young man.

SEABORG: At his best. This was on September 26, 1963. And as you indicated, it shows him at his best, and I believe I have never seen him in better form.

BROWN: Mr. Chairman, you might recall that there was

another bit of history made that day in that not only were there 35,000 people there but it was the first time that any people not connected with the program had ever been allowed to get into the controlled area of the Hanford production plant.

SEABORG: Yes. That is true also. I might bring this to a conclusion by just indicating that, as you know, this was the dedication of the facilities for the conversion of the byproduct steam to electrical energy at a level of something like 800 megawatts. The NPR reactor itself was under construction during all of this period, and went critical just a few months after that, on December 31, 1963. It is now being brought up to power for operation for the production of plutonium, and the construction of the conversion facilities amounting in cost to something in the order of $100 million is proceeding at a good pace and will lead to the capability within a year or two for the generation of this much electrical power.

HEWLETT: I might say also, Mr. Chairman, that we have the copy of that film which we are going send to the Kennedy Library along with our other material.

SEABORG: Good.

Fermi Award to Oppenheimer

HEWLETT: Mr. Chairman, I would now like to turn to another matter that came up during the Kennedy Administration and that was

the presentation of the Enrico Fermi Award to Dr. Robert Oppenheimer. I notice in the records that there was a concerted public effort to nominate Dr. Oppenheimer for the award. There were a good many letters which were sent to you in March of 1962. There were so many of these that it seemed to me it was impossible to be just a coincidence and that there was some effort, perhaps among the scientists I would guess, to suggest Dr. Oppenheimer's nomination. I wonder whether this was the first time this had been attempted, or whether you understood how this was coordinated.

SEABORG: I believe this was the first time this was attempted in connection with the Fermi Award, yes. There must have been some kind of a concerted effort because I recall that there was a certain similarity in tone, or even in wording, of the letters, many of which were addressed to me, but which, of course, I forwarded to the General Advisory Committee.

HEWLETT: Yes. Of course the 1962 Award went to Dr. Teller and there is always some speculation as to why Dr. Teller was chosen at this time, whether it had any

connection with Dr. Oppenheimer's award the following year.

SEABORG: Well, there was a connection in a way, but I think I need to explain this. in the minds of many, the two logical candidates who were eligible to receive the Fermi Award were Dr. Edward Teller and Dr. Robert Oppenheimer. Both, by the way,

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were controversial people, controversial in different ways of course with entirely different supporters and detractors. Actually, I foresaw problems if the award was to be given to these two scientists, but on the other hand, I felt that they qualified on the basis of their scientific accomplishments. That should be determining and the award should be given on that basis. However, I did meet with key members of the General Advisory Committee to discuss a possibility with them. I felt that they were perhaps considering these two people. It was almost obvious from the correspondence that had come in, and there might have been a question as to whom the first award might go, if they were indeed considering the two of them. I made the suggestion that perhaps they should be given the award simultaneously. I thought this would be quite possible because the 1960 award had been bypassed. This could be done either by giving the award simultaneously in 1962 or waiting a year until 1963, and this seemed to be perfectly legal so far as I could tell. This approach might have resolved the question as to who should receive the award first. This is all on the assumption that the General Advisory Committee was planning to give the award to both of them.

HEWLETT: So that was the reason for the Commission's request for a legal opinion on whether it was possible to give two awards in one year?

SEABORG: Yes.

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HEWLETT: The GAC might wish to do that.

SEABORG: That is right, we requested a legal opinion from the General Counsel and he felt that it would be possible to give both awards in the same year.

HEWLETT: Then the GAC decided to give the '62 award to Dr. Teller?

SEABORG: Yes, the GAC decided to do this their own way. They did not particularly care to go along with any detailed advice from the Commission. Of course, I want to make it clear, we were not advising them as to who the candidate should be. We were just discussing procedure with them. But they felt that they should make the award each year as they had in the past on the basis of the merits of the candidates. They decided

after a very careful consideration, as they do in all their choices for awards, to recommend the award of the 1962 Fermi prize to Edward Teller.

HEWLETT: I see. So then when they made their recommendation, that recommendation went to the President for his approval. Did you have any occasion to discuss this matter with the President? Was he aware of the difficulties and the sensitive points here?

SEABORG: Yes, he was. As a matter of fact, he had even been subject to what amounted to criticism by Teller because of his stands or lack of stands on testing. Teller felt that we could move much faster in these areas. I do not know that this was public

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criticism, but certainly it was a fact that Teller disagreed strongly with some of the President's attitudes toward trying for a test ban. President Kennedy knew this but he felt that this should not be a consideration. Further, he said, without any particular hesitation, that he would go ahead and make the presentation to Edward Teller, just as he had to Hans Bethe. As you know, he did make the presentation to Edward Teller in a nice ceremony in the Rose Garden at the White House in December, 1962.

HEWLETT: Then the following year, Dr. Oppenheimer was nominated for the award, and I note that there was no letter barrage from scientists that year. I suppose you feel that people felt in general that Oppenheimer was going to get the award that year?

SEABORG: No, I do not think so. I do not think they felt that way. I think they just felt the letters were on the record and as I understand it the General Advisory Committee considers past letters as part of the record for future nominees. They were brought up to date, of course, if there was anything needed in the interim. So I think this was the only reason for that.

HEWLETT: So there was no firm connection between the two awards from one year to the next? Well, the GAC nomination certainly raised political questions. Was there any occasion to discuss this with the President, or was the award just handled routinely?

SEABORG: Oh no, there was a discussion with President

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Kennedy as to whether there were special circumstances here that would

affect his approval of the award or the manner in which the award was given. However, he met these questions in a very straightforward manner. He said certainly he would approve the award and he also indicated clearly that he would go ahead with the presentation. He had told Mr. Bundy, myself, and Dr. Wiesner that he proposed personally to award the Fermi Prize to Dr. Robert Oppenheimer in the White House as he had done in the cases of Dr. Bethe and Dr. Teller.

HEWLETT: And I believe, as it happened, the President had already signed the certificate before his death.

SEABORG: That is right. The President had signed the certificate before his death and President Johnson indicated that he wanted it to stand that way. When we put the problem to President Johnson he indicated that he wanted to go ahead and personally make the presentation in the White House as President Kennedy had planned to do. As you know, he went ahead and did that in December of last year.

Scientists and the Government

HEWLETT: Mr. Chairman, I would like to turn now to general questions about the relationships between scientists and the Government during the Kennedy Administration. Did you see any significant trends in relationships during these years, any sorts of changes that had occurred or new emphases in the administration of

science projects?

SEABORG: Of course my first experience as a participant in the Federal Government was with the Kennedy Administration. I feel that from the beginning there was a very good relationship, a sympathetic relationship between the Administration and the scientists in the Administration. Certainly, there was a real appreciation for the academic and for the scientific attitude. It seems to me there was a real appreciation for the fact that we are in a scientific age, in a scientific revolution, and, as I have indicated in my remarks throughout, a real understanding of the place of science in Government and in the world. The role of the scientist had been an important one, a critical one, in the Kennedy Administration. Dr. Wiesner played, I think, probably a more personal role with the President in his position as a special advisor on science and technology than any of his predecessors. He had a day-by-day access to the President. I feel that I had a fine relationship with President Kennedy and I met with him on all the major issues as many times as was necessary, and almost daily on a number of occasions, as the record that I have presented here shows, in connection with the resumption of testing, the test ban, and other items of budget concerning science. I can remember on occasion President Kennedy saying to the budget group as we were discussing matters, “Well, if Glenn thinks this is an

important item to be carried on in the field of science, let's do it." The Atomic Energy Commission, at President Kennedy's insistence, had two scientists on it for the first time. It was his wish that a scientist serve as Chairman of the Commission, and his first words to me when I met him on the day of the inauguration were that I should find another scientist to fill the vacancy on the Commission. Then when he moved Dr. Leland Haworth over as Director of the National Science Foundation, he directed me to make a recommendation of another scientist.

HEWLETT: And this was Dr. Gerald Tape who was also appointed?

SEABORG: And this was Dr. Gerald Tape whom he also appointed. I feel that the President's Science Advisory Committee has played an important role, a key role, in the Kennedy Administration. I had the privilege of sitting on the PSAC Committee, almost as a member in spite of my ex officio role as Chairman of the Atomic Energy Commission. The reason I had and have continued to enjoy this special status is that I am an alumnus of the PSAC and served in the Eisenhower Administration as a member of PSAC. I would say that other scientists in the Administration have played important roles and were listened to by President Kennedy. Dr. Harold Brown, Director of Defense Research and Engineering, has played a key role in all of these National Security Council meetings having to do with defense

problems, for example, in considering the resumption of underground and atmospheric testing, disarmament, and the Limited Test Ban Treaty. So that I feel that all in all the role of the scientist has been an increasingly important one in the Kennedy Administration. There was also created the Office of Science and Technology, which indicated another increasing role of the scientist in the Government.

I believe that American scientists also have a strong appreciation of the attitude of the Kennedy Administration toward science. I have talked to a number of them and they have certainly led me to feel that they appreciate the increasing role of scientists in the Federal Government. There are, of course, some real complexities in this whole area of the relation of science and scientists to a democracy, questions that have not yet been resolved. I believe that scientists are going to play an increasing role in government and I hope not only in the Executive Branch of the Government, but in Congress. I do not feel, however, that I should try here to describe my views on this complex problem but perhaps mention some of my thoughts on this as they have been expressed elsewhere, in particular in my Harrelson lecture entitled, "Science and the General Welfare in a Democracy," which I delivered on March 11, 1964 at North Carolina State College in Raleigh, N.C. There I explored in some detail the various aspects of the relationships between science and government, the scientist and government, and some of

the problems that will face us in the connection in the future. I might also refer to the book that I have written with Daniel Wilkes to be used as a presentation volume at the 1964 Geneva Conference on the Peaceful Uses of Atomic Energy entitled "Education and the Atom." Although this has a s somewhat limited title I actually explore the matter of the relationship of science and the Federal Government in some detail in that book.

International Atomic Energy Agency

HEWLETT: Mr. Chairman, we have spoken earlier about the President's great interest in science and his appreciation of the role of science in the modern world. I suppose one aspect of this was his interest in the International Atomic Energy Agency. I know you represented him at several meetings of that organization. Could you tell us something about this?

SEABORG: Yes, he certainly had an interest in the IAEA. He sent me as his representative in 1961, 1962, and 1963. The message he gave me to deliver in 1961 indicated his interest in the IAEA and the future of nuclear energy in general. I reported to him when I returned from the meeting and he was very interested in what went on, the attitudes of the various nations involved, their voting on certain critical issues and things of that sort.

HEWLETT: You have mentioned, Mr. Chairman, that several times you went to Vienna for the annual meetings of the International

Atomic Energy Agency in September. Could you give us some of your recollections of those meetings?

SEABORG: Those meetings were very interesting, the first one, of course, being the most interesting of all. That is when a lot of fireworks took place. Sterling Cole had come to the end of his term as the Director General and we were faced with the problem of electing his successor. The Western nations had decided Sigvard Eklund would be a good candidate but we did not check as completely as perhaps we should have with the representatives of the Soviet Union and some of the other nations. This led to quite a fight over the election of Eklund at the first meeting in September of 1961.

I recall that this was a battle right down the line to the end, involving procedures and methods of voting. The members of the American delegation and our friends, particularly the British, kept tallies of how the voting seemed to be going and at times it looked as if it was running against us. [redacted]

[redacted]

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[redacted] This was a very difficult situation. Those of us in the American and British delegations decided to stick to our guns.

[redacted] We thought Eklund was a good man. The vote was taken and we won by a substantial, if not overwhelming, majority.

I recall when I returned from this conference, I reported this in some detail to President Kennedy. He was quite interested and wanted to know how various nations voted. The voted was interesting because the African nations split. Some went along with the Russian point of view and more went along with the American and British point of view.

Now the interesting thing is that despite these threats the IAEA survived quite well. Emelyanov was back in Vienna in a matter of months. Although he indicated that he would not ever talk to Eklund in his capacity as Director General, he was talking with him almost immediately. He was back at the Vienna conference the following September, 1962, friendly to Eklund, and things went very well. I think one of the incidents that impressed Emelyanov greatly was that despite his vituperative attack on the Western nations, I delivered a very temperate speech on the values of

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international cooperation through science. He was actually quite shaken by this. He told me that as a result of that, he had had to rewrite a good deal of one of his following speeches; and I think that as a result of that and other incidents of a similar nature, Emelyanov felt that he certainly should go along.

Each year has been more pleasant. In 1963 we had a meeting that could be characterized as one of cooperation between the Soviet Union and the United States. At the present time our relations through the IAEA, as well as through other means, have never been better.

One of the important functions of the IAEA in my opinion, is in the area of the safeguards, that is, in preventing the diversion of the special nuclear material like plutonium,

produced in civilian power reactors, to weapons purposes. The United States has been a strong proponent of adequate safeguards administered by the IAEA for this purpose. Although the Soviet Union resisted this stand at the beginning and was distinctly against it at the time of the early meetings, I recall, in 1961, the Russians now have come along to the point where they are one of the strongest supporters of the United States on this matter and regard the problem of the proliferation of nuclear weapons as a very important one. They are with us 100% in the establishment of the safeguards.

BROWN: Mr. Chairman, you mentioned the President's

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message in 1961. Do you think it is possible that the tone of the President's message then might have been in some way responsible for the improvement in relationships? Do you think it set the tone of the contacts that were to follow?

SEABORG: Yes, I think so. The President in that message referred to the International Atomic Energy Agency as an agency that is welcome to all people who value peace. He indicated in his message that the IAEA can assume a position of leadership in bringing the peaceful uses of atomic energy to the people of the world. He said that when people from different countries work together in a common cause they can help to maintain a bridge of understanding between nationals during times of tension and build firmer foundations for a more stable and peaceful world of the future. He ended his message by saying, "I applaud your efforts and assure you that they have the full support of the United States." That certainly set the tone for my speech to the IAEA and did a great deal to counteract what Professor Emelyanov was saying at that time. However, I want to emphasize that my personal relations with Emelyanov, despite these incidents, were the very best, even during the 1961 meeting, and have continued to be very good ever since. As a matter of fact, I had dinner with him with a group here in Washington at the International Club just last evening.

HEWLETT: Although there have been a number of weaknesses

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in the IAEA it certainly has many strengths and I suppose one of the great things it has done is in safeguards as you have already mentioned. So that on balance you see the IAEA as a positive force?

SEABORG: I see it very definitely as a positive force. I see it as stronger now than it has ever been. I see it as playing a crucial role in the safeguards area and I see it was playing a crucial role in the disarmament area and in the general proposed program for the cut-off of the production of fissionable materials. I think that the IAEA has a

strong, important future to look forward to and I think we can be very happy that there is such an international organization available to us.

International Cooperation

BROWN: Mr. Chairman, in this connection, two questions come to mind on which I believe we would value your comments. The first concerns the IAEA. Indeed the whole peaceful uses program throughout the world has come in for some criticism because it is the feeling of some people that many of the countries participating in IAEA need other things first more than they need atomic energy. However, I wonder if it has been your experience, in attending the IAEA meetings, that the caliber of people drawn to Vienna from each of these countries has probably been generally higher than would have been attracted by some other less magnetic matter. Also, do you think it has been possible through the use of atomic energy to

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"bootstrap" the technology and standard of living in some of the other countries throughout the world?

SEABORG: Yes, I think that the IAEA has played such a role, that a number of countries have sent strong representatives to the IAEA, that it has not been only a matter of building up atomic energy in these countries, that this had served as an example for the country in each case, and a means by which it could increase its overall strength through science. Atomic energy has been a symbol that has made this possible.

BROWN: Thank you. I am glad to have that view, Mr. Chairman. Now for the other question: You mentioned that you had been sent to Vienna for three years as President Kennedy's personal representative to this international organization. I suppose these trips to Vienna also afforded you an opportunity to visit some of the other atomic energy installations in Europe?

SEABORG: Yes, I visited a number of countries on each of these trips, I think a total of perhaps a dozen or fifteen countries in all. I visited England on each of the three trips. I visited France, Belgium, Italy, Spain, Germany, Sweden, Denmark, Norway, of course, Austria (where the headquarters is located) in the Siebersdorf Laboratory of the IAEA, Greece, and Yugoslavia. I visited NATO headquarters, Euratom, and the 6th Fleet at the time when Admiral McDonald was in charge. McDonald is now the

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Chief of Staff of the Navy and a member of the Joint Chiefs. I toured in the Mediterranean, visited Turkey, and most recently, of course, visited the Soviet Union.

BROWN: In the Mediterranean you were on an aircraft carrier as I recall. Was that the *Independence*?

SEABORG: Yes, in September of 1961.

BROWN: And then you were probably on Admiral McDonald's flagship, which, as I recall, was the *Springfield*.

SEABORG: Yes. I took part of the trip on those ships.

BROWN: Well, as a result of this, Mr. Chairman, you have made many contacts throughout the world which many of your counterparts, the chairman of atomic energy commissions in all of these important countries in Europe as well as in the Soviet Union. I should think, Mr. Chairman, that this is a very interesting development in history in that through you the United States has contacts at high levels in foreign countries that more or less parallel, but are independent of, usual diplomatic channels; and that through these you are able to accomplish missions on behalf of the United States, perhaps more quickly and directly and informally than could happen if you went through the normal diplomatic channels.

SEABORG: Yes, I think so. I think that on a number of occasions we have been able in this way to supplement the normal

diplomatic contacts and relationships between the United States and a number of these countries. There are, of course, something on the order of 80 countries in the IAEA. They are represented in each case by top level people in the countries, including high level scientific people, usually the chairman or the head of the atomic energy agency in the country. This has made it possible for me to make a number of contacts and establish these supplementary relationships which I personally think do make quite a contribution to our diplomacy.

Moscow Trip, May 1963

BROWN: I should imagine this would be an especially important relationship with the Soviet Union. I do recall from your previous interviews that you were there at least once, probably twice, were you not?

SEABORG: Yes. Actually the trip to the Soviet Union was not in connection with a visit to Vienna for the annual meeting of the IAEA. This came about as a separate matter. In the winter of 1963, we began to think about the value of renewing the agreement for the exchange of information in the atomic energy field. This was the so-called McCone-Emelyanov agreement and we began to make contacts with this in view at

that time. On February 8, 1963, I wrote Mr. Petrosyants, the new chairman of the State Committee of the USSR Council of Ministers on the Utilization of Atomic Energy,

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to introduce him to Mr. Algie Wells, the Director of the Atomic Energy Commission's Division of International Affairs. I wrote that Mr. Wells would be discussing with him the problem of renewed agreements in the atomic energy field. In that letter I said that I would be pleased if he and perhaps Professor Emelyanov could come to Washington for the purpose of visiting some of our facilities and also for the purpose perhaps of signing a new agreement in the field of the peaceful uses of atomic energy between the Soviet Union and the United States.

BROWN: Mr. Wells then proceeded to Moscow. Did he report to you upon his return, Mr. Chairman?

SEABORG: Yes. Mr. Wells and Mr. Abrahams proceeded to Moscow and consulted with the people in the State Committee on the Utilization of Atomic Energy in Moscow. They found a very friendly reception there to the concept of negotiating an agreement in the peaceful uses of atomic energy between the U.S. and the USSR. Mr. Wells carried back to me a letter from Petrosyants dated February 19, 1963, which, by the way, he delivered to me here in this office at H Street in Washington. In this letter Petrosyants agreed wholeheartedly to the value of negotiating a new agreement in the peaceful uses of atomic energy. He suggested that, since the previous agreement in 1959 had been signed in the United States, they would very much like to invite me and my colleagues to visit the Soviet Union to see Soviet research institutions and

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at the time of that visit to sign a new memorandum on cooperation in the field of the peaceful utilization of atomic energy.

BROWN: Did you make a decision at that meeting, Mr. Chairman, whether or not to accept the invitation?

SEABORG: Yes, I did. I decided that we would go ahead and we set a time, actually May 19 to May 31, 1963. We then assembled a team of ten people and flew in the President's plane. President Kennedy made his personal airplane available to us, and as you may recall we flew non-stop to the Soviet Union from Washington to Moscow, setting a new record for the trip. The delegation consisted of, besides myself, Dr. Gerald Tape, who had just been nominated by President Kennedy to become a Commissioner of the Atomic Energy Commission; Dr. Manson Benedict, Chairman of the General Advisory Committee; Mr. Alvin Luedecke, General Manager of the Atomic Energy Commission; Dr. Albert Crewe, Director of the Argonne National Laboratory; Mr. Albert Ghiorso, who is a

scientist working on the transuranium elements at the Lawrence Radiation Laboratory; Dr. Alexander Zucker, scientist from Oak Ridge National Laboratory; Mr. Algie Wells, Director of the Division of International Affairs of the Commission; Dr. Arnold Fritsch, one of my technical assistants; and Mr. Cecil King, one of my staff assistants. This was the ten-man team that visited the Soviet Union. Petrosyants and I signed the agreement for cooperation in

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the peaceful uses of atomic energy in Moscow on Tuesday, May 25, and during that trip to the Soviet Union, we visited a number of the installations and were very well received indeed.

BROWN: Can you tell us a little bit about your reception there, Mr. Chairman. Did you find that the scientists were free to express their views or to be identified with the U.S. group over there? Do you have any recollections on that point?

SEABORG: We felt that the scientists were relatively free to express their views and one of the notable things about the trip was the way in which we were shown around. We were allowed to see laboratories that had never before been visited by Western scientists, in some cases had never before been visited by scientists of any other nation. I recall that our visit came at a time of some tension between the United States and the USSR. Ambassador Kohler was giving a reception at which a number of Soviet scientists had been invited and there was a fear that they would not turn up as a result of this tension. Actually, they all turned up, almost to the surprise of Ambassador Kohler. This was indicative of the great degree of cooperation that the scientists wanted at that time.

Soviet Visit to the United States

BROWN: Mr. Chairman, this was a highly successful trip and a thrilling one. I am sure it did much to establish good relationships between the scientific sector of the United States

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and the Soviet Union. I recall you mentioned that in your letter of February 8 to Mr. Petrosyants, you had also invited him to visit the United States. Did this ever eventuate?

SEABORG: I renewed that invitation as soon as we returned to the United States from the trip to the Soviet Union. He accepted, and we agreed upon the date of November for his return visit. He returned with a group of ten Soviet scientists and engineers, arriving in the United States on the night of November 16, in New York. I recall that I met him at that time, together with Commissioner Palfrey. This, unfortunately, was a very difficult time because it was just at the time of the Frederick C. Barghoorn incident. The Soviets were holding Professor Barghoorn in jail in the Soviet Union, and the

question arose whether I should, in fact, meet Petrosyants and the Soviet group at that time. I indicated to the State Department and others that I felt that I definitely should meet Petrosyants and the group. I did and it was very clear that Petrosyants and his people appreciated this very much.

BROWN: Mr. Chairman, you mentioned that this was a rather awkward time, that Professor Barghoorn was still incarcerated in the Soviet Union. I imagine this must have been a rather anxious situation for Mr. Petrosyants and his party coming here. I recall that the Professor was released, either at about the same time or

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shortly after the Soviet group got here. I have often wondered whether the reception of the Soviet people here and our willingness to have them here, despite this awkward situation, might possibly have been influential in the release of Professor Barghoorn.

SEABORG: My own opinion is that it probably was. I think that the Soviets were watching us with this in mind. I know that Ambassador Dobrynin called me a day or two before Petrosyants and his group were due to arrive to ask how the arrangements were coming along. There was no reference, of course, to the Barghoorn incident, but I told him that I thought the arrangements were in order and we were expecting Petrosyants on schedule on the night of November 16. It is my feeling that perhaps Ambassador Dobrynin sent that word back to the Soviets before they had actually taken off in the airplane for the United States. It was while they were in transit, actually, that I believe Barghoorn was released, or perhaps slightly after their arrival. I think that maybe our attitude in continuing to welcome the Soviet group in the face of the Barghoorn incident may have contributed to the release of Professor Barghoorn.

BROWN: You know there is another interesting side of this too, Mr. Chairman, that I am sure you will recall. The confinement of Professor Barghoorn aroused a great deal of sentiment in this country and I am sure that a great many people were incensed.

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Yet it was in this atmosphere that you had to decide whether you would go to New York and be identified with the Soviet group. You must have had some moments of debate on that.

News of the Assassination

SEABORG: Yes, I did. But I decided that I would go ahead with it and, as you know, I did meet the airplane and the visit went very well. We proceeded with the visit as

planned. It was while the Soviets were in Berkeley visiting the Radiation Laboratory on the morning of November 22, 1963, that we received the word of President Kennedy's assassination.

BROWN: How did you receive that word, Mr. Chairman?

SEABORG: One of the administrative people in the Radiation Laboratory came up to me, very excitedly, and called me aside and told me they had just heard on the radio that President Kennedy and Governor Connally had been shot in Dallas.

BROWN: You did not know at that time whether the wounds were fatal?

SEABORG: No, we immediately retired to one of the offices to try to receive such information as we could. If you recall, Howard, I called you here in Washington to learn whether you knew any more about it than I did. I got through to you immediately, but, obviously, you did not have any more information. We learned, of course, within the hour that President Kennedy had passed away.

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BROWN: Mr. Chairman, as I recall, there was a second call from you about that time. While you were on the telephone with me I was watching the television in this very office, and talking to you at the same time. At that moment there flashed on the screen the confirmation of the news that the President had died, and I gave that information to you on the phone. I think at that time you decided immediately to come back here, did you not?

SEABORG: I did. I caught a plane within a matter of a couple of hours. Actually, there was some question whether we should allow the Soviet group to continue with their trip through the United States. As you recall, there was some indication that President Kennedy's assassin might be in some way connected with the Soviet Union. We were afraid of, perhaps, adverse reactions in the United States as a result of that. Actually, we did cut short their trip with respect to the visits that had been planned for Friday afternoon and Saturday. We took the Soviet group through Yosemite where we had planned that they would visit over the weekend and then we continued with the trip, quite successfully and without incident.

BROWN: Mr. Chairman, do you recall the reaction of the Soviet visitors to President Kennedy's death?

SEABORG: I think they took it very well. They placed themselves entirely at our disposal to carry on the visit in any way that we saw fit. Actually, Chairman Petrosyants called Ambassador

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Dobrynin, and Ambassador Dobrynin asked that he place himself in my hands to continue with the visit or not, as I saw fit.

BROWN: I have wondered about their own reaction to his death. I mean, did they express regret?

SEABORG: Yes, they expressed great regret, and obvious show of sorrow.

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V. FIFTH INTERVIEW, JULY 1, 1964

BROWN: Mr. Chairman, Mr. Hewlett and I are again with you this afternoon on a very hot July day to continue, and perhaps conclude these series of interviews.

SEABORG: At the H Street Office again.

Advances in Nuclear Science

BROWN: There is one question which may not have been discussed in our previous interviews. During the period from January 21, 1961 to November 22, 1963, were there what you would consider to be significant breakthroughs in basic science? Would you care to identify these?

SEABORG: Yes, there were. In the atomic energy field, there were a number of discoveries during that period. I could mention just a few of them as they come to my mind. In the field of elementary particle physics, that is, in the field where these huge accelerators are used, there was the discovery of the anti-cascade hyperon, the so-called xi-minus particle. Second, there was the experimental discovery and amplification of the theory of the two types of neutrinos -- the one type that is associated with the electron and the other that is associated with the Mu meson. Third, there was the discovery of the concept of the hydrated electron by scientists at the Argonne National Laboratory. Fourth, there was the first production of simple binary compounds of the rare gasses. This was done at the Argonne National

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Laboratory, also, as a result of work done at the University of British Columbia. Fifth, there was promulgated a new theory of electron structure -- I guess I should say a new electron theory of crystal structure -- which concerns the 33 transition metals. This leads to great power in the prediction of different kinds of alloys that can be produced. Sixth, the new Zero Gradient Sychrotron at the Argonne National Laboratory went into operation. Seventh, there

was progress in this period, and I believe history will show perhaps that this was the critical period, in successfully confining plasmas at thermonuclear temperatures. This may have been the first true thermonuclear type of plasma. Eight, it was during this period that great progress was made in the huge transuranium production program. In this program gram amounts of californium are to be produced by about 1967 as a result of first irradiating ten-kilogram quantities of plutonium in a Savannah River reactor, to be followed by the irradiation of hundreds of grams of curium product in the new High Flux Isotope Reactor being built at the Oak Ridge National Laboratory. This material will then be chemically processed in the Transuranium Processing Facility at Oak Ridge. It will be a great advance in the whole transuranium field to have these large amounts of these transuranium elements. Then finally, among the items that come to my mind, is the discovery of the new chemical element, lawrencium, through bombardments with the Hilac at the University of

California. Lawrencium is the transuranium element with the atomic number 103, and the last of the actinide elements.

BROWN: Mr. Chairman, you speak of the latter development with a good deal of knowledge and affection. I expect you are rather on "home ground" are you not? Is this not the continuation of work which was started by you some years ago?

SEABORG: Yes, this is a continuation of the work in the discovery of the transuranium elements. Lawrencium is actually the eleventh of the transuranium elements to be discovered. All are members of the actinide series of elements. The first was discovered by McMillan and Abelson at the University of California in 1940. I was a member of the team that discovered the next one, plutonium, element 94, at the end of 1940 and early 1941. Over the intervening years I, and my associates, have been fortunate enough to be involved in the discovery of all of the intervening elements from element 95 through element 102.

Seaborg's Publications

BROWN: That is certainly a prodigious accomplishment, Mr. Chairman. Despite your very busy schedule during the time that you have been Chairman and particularly during the Kennedy Administration, have you been able to add to the literature in your field?

SEABORG: I did have the opportunity to continue some scholarly work. I wrote a short, concise, rather complete book

entitled, *The Man-Made Transuranium Elements*. I continued work on the three-volume treatise that I had been writing with Professor Perlman and Dr. Hyde at the University of California Laboratory entitled, *The Nuclear Properties of the Heavy Elements*. This book is completed and will be published this fall. I started writing, with Mr. Daniel Wilkes, the book *Education and the Atom*, which describes the educational program of the Atomic Energy Commission since its inception. It really goes further than this in explaining the whole relationship between the Federal Government and the universities in the education field. This is to be one of the presentation volumes at the Geneva Conference on the Peaceful Uses of Atomic Energy later this year in September 1964. I also wrote a number of scientific papers for journals and managed to give a number of speeches on a variety of topics.

International Trends

BROWN: When did you find time to sleep or eat with a schedule like that, Mr Chairman! I wonder if I could shift for just a moment to the international picture again. You talked earlier about the decisions having to do with the resumption of testing and the negotiation of the limited test ban treaty. Were there during this period any other significant world trends involving or affecting the atomic energy program and our national security?

SEABORG: I suppose you are referring to the general

problem of the acquisition of weapons by other countries?

BROWN: Yes.

SEABORG: the Nth country problem, things of that sort? Of course, France made great strides during this period in acquiring nuclear capability. Questions arose as to the intentions of a number of other countries such as Israel, Sweden, and perhaps, India. The Kennedy Administration gave close attention to these situations as they developed. The possible building of facilities for producing special nuclear materials like enriched U-235, using something like a gas centrifuge which can be produced at considerably less cost than the huge gaseous diffusion plants, was a question of concern to the Administration. But, of course, a great deal of attention was given to the matter of safeguards to prevent plutonium, which is developed in any power reactor, from being used for weapons. A great deal of progress was made in this area of safeguards, and a start was made toward turning the safeguards responsibility over to the International Atomic Energy Agency in Vienna. Also, the concept of the multilateral force was developed. This concept has a future which, at this time, cannot be clearly discerned; but if it proceeds, it will have a great effect on our international relations, obviously.

BROWN: And on our alliances?

SEABORG: And on our alliances, yes.

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Contributions to National Security

BROWN: Would you say, or could you identify any particularly significant contribution that we made to our own national security either in the fields of weapons, weapons delivery systems, or mobile reactors?

SEABORG: Well, it is difficult to say what the greatest contribution was. This was a period when a large number of Polaris submarines were launched and certainly this has been one of our greatest factors in the deterrence picture during this period. It has also been a period when a number of advanced nuclear weapons, atomic and hydrogen weapons, were perfected and developed to a point where we have a very formidable arsenal at the present time.

BROWN: Thank you, Mr. Chairman. I can see that you were preoccupied with a multitude of problems during this period.

Impressions of the Administration

HEWLETT: Dr. Seaborg, I would like to come back now to some general questions about President Kennedy and his Administration. We have spent a great deal of time in these interviews talking about your frequent contacts with the President and other members of his Administration. I wonder if you could summarize for us in a general way your impressions of the Administration.

SEABORG: Well, first of all, this was certainly an exciting period in American history. Our nation was under the leadership of an energetic young man who was willing to face the realities

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of the modern world and who was eager to move on and solve these problems. He tried to identify the problems and then he met them head-on. He gathered around him, perhaps with some exceptions, people of high caliber and he was successful in attracting people of high caliber to serve with him, people of a type which had not been attracted to Governmental service before this. He had a quality that made people feel they wanted to associate themselves with the new adventure -- with the New Frontier. President Kennedy created sort of a continuing atmosphere of excitement. I believe I had this feeling of excitement almost every time I met with him in spite of the fact that I met with him dozens and dozens of times. I also had it every time I heard him talk. I attended many dinners, luncheons, and other

occasions when I heard him speak; and I believe I got the same thrill every time. The discussion at the White House meetings I have described before were of an informal type in which each of us had our opportunity to speak our views. On the other hand, they were quite effective in drawing each of us out, in order to arrive at a consensus on some of the complicated problems that we discussed together in an effort to arrive at mutually satisfactory solutions.

Impressions of the President

HEWLETT: Well, then to come a little closer to the President, I wonder if you could give us your impressions of President Kennedy as a person, and as a national leader.

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SEABORG: Well, I would begin by saying that he was a very considerate man; a man who was easy to work with. He was a man of exceptionally high intelligence, of high intellectual capability; a man who enjoyed his job and a man who worked with a great deal of drive in order to accomplish his objectives. He set his objectives and then he drove through consistently to their accomplishment. I think the attainment of the test ban treaty is an excellent example of this. President Kennedy was a man of a great curiosity about all aspects of American life; a man who had a great faith in America and its future.

I also appreciated the fact that President Kennedy had an interest in science and understood the importance of science in the modern world; the importance of science in this era of the Scientific Revolution. I have often referred to the present era as the Third Revolution, referring, of course, to our American War for Independence as the first revolution, and the Industrial Revolution as the second revolution.

This interest in science was exemplified in many ways. You will recall I mentioned that the first time I met him he indicated his interest in having a strong scientific representation on the Commission and that he wanted the vacant Commissionership filled by a scientist. This interest in science was also indicated by his willingness to support projects on the basis of their scientific value.

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I mentioned the Stanford Linear Accelerator, and his early support of the SNAP Program where he was willing, at the time the Aircraft Nuclear Propulsion program was terminated, to allocate, on my oral recommendation, in a meeting in his office in the White House, $25 million to get the SNAP (Systems for Nuclear Auxiliary Power) program underway. I have also indicated the great interest he showed in our atomic energy program by his desire to visit German town for a briefing within the first few weeks of his tenure in office.

Presidential Decisions

HEWLETT: One thing that has impressed me during these interviews has been the great number of decisions the President was called upon to make in the atomic energy area. What would you say were the most difficult decisions the President had to make?

SEABORG: One of these was certainly the cancellation of the Aircraft Nuclear Propulsion project, the so-called ANP project. This was a project in which the Federal Government had already made a large investment and it enjoyed strong support among members of the Joint Committee on Atomic Energy and American industry. It took great courage to make this decision, but President Kennedy did it. An even more difficult decision, personally, for President Kennedy was the one he made in March, 1962, to resume atmospheric testing of nuclear weapons. He was fundamentally opposed to the continuation of atmospheric tests and did everything

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he could to reach some kind of agreement with the Soviet Union in this area; but on the other hand, when he realized there was no immediate hope for an agreement, he accepted that fact, and made the necessary decisions.

HEWLETT: What would you say were the most significant decisions that the President made in the atomic energy area during his Administration?

SEABORG: Well, I think by far his most significant decision was to negotiate the limited nuclear test ban agreement. He felt very deeply that some concrete steps had to be taken toward ending the nuclear armaments race and, in particular, toward ending the proliferation of nuclear weapons. Although, perhaps the limited test ban agreement fell short of what he had hoped to achieve, he certainly realized the importance of this as a first step. Just how significant that decision was we will have to let the historians of the future decide, but we should remember that this was the first successful step toward disarmament to come in some 18 years of negotiations with the Soviet Union, and I want to emphasize this. I do not think that it was an accident that this success came during President Kennedy's Administration. I think that he had carefully planned for and cultivated the kind of atmosphere that made such an agreement possible. We can also hope that the limited test ban agreement will really prove to be the first step toward general world disarmament.

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If this hope is realized, the limited test ban agreement may well be one of the most significant decisions, not only of the Kennedy Administration, but also in the history of the modern world.

I could mention other decisions. One that stands out in my mind as having great significance is that connected with President Kennedy's request for a report on the civilian

nuclear power program, the request that he made to us, you recall, in March, 1962. His willingness to take a new hard look at this program has resulted in a new perspective which has helped us to get the development of civilian nuclear power going again in new directions. I believe that this report was a turning point in the long history of the Commission's effort to develop this new source of power.

Memorable Moments

HEWLETT: Mr. Chairman, as a final question which may summarize your impressions of President Kennedy and his Administration, I wonder if you could single out and describe what were for you the most memorable moments of your association with him.

SEABORG: Well, I could certainly go on and on in answer to that question. I would like to recount perhaps one event in some detail, and then just mention a number of others.

The one that I want to describe in some detail was President Kennedy's visit to Berkeley, California, my old home, on March 23, 1962. He had been invited to Berkeley to deliver the Charter Day

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address, an annual event on the Berkeley campus, commemorating the establishment of the Charter of the University. You recall, I mentioned that at dinner at Bermuda we talked about his forthcoming visit to Berkeley, and at that time he invited Mrs. Seaborg and myself to attend. I would say that the air of exhilaration and excitement that surrounded the late President Kennedy was seldom more apparent than on this day in Berkeley, March 23, 1962.

Mrs. Seaborg and I had the privilege to accompany President Kennedy and his party to California on the Presidential plane. We left Andrews Air Force Base early that morning in fine weather, and the flight was smooth one all the way. President Kennedy was in a sunny mood, and when we landed at the Alameda Air Station, it was one of those glorious spring days in the Bay Area. We were greeted by a group of dignitaries, including Governor Pat Brown, and University of California Regent Edwin W. Pauley. We went in sort of a cavalcade to the University. Actually, we drove first to the Lawrence Radiation Laboratory at the University. We drove up the Cyclotron Road to the Chemistry Annex Building, arriving about 11:00 in the morning. Waiting for us there were leaders of the Lawrence Radiation Laboratory, both Berkeley and Livermore, and the Los Alamos Scientific Laboratory. These included Dr. Ed McMillan, Director of the Lawrence Radiation Laboratory; Dr. John Foster, Director of Livermore; Dr. Norris Bradbury, Director of

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the Los Alamos Scientific Laboratory; and Dr. Edward Teller. Secretary McNamara and Dr. Harold Brown of the Department of Defense had come to California earlier, and they also met us at the Laboratory.

For about an hour President Kennedy met with the scientists, and made an inspiring talk expressing his and the country's appreciation for their work. I remember that a movie was taken of this talk which is something that should be available for the Kennedy Library. Then, following his visit to the Laboratory where he reviewed a display the scientists had prepared for him, our cavalcade proceeded down to the campus and to University house, where, by the way, as Chancellor I had often entertained distinguished visitors to the campus. There we were greeted by President Kerr and Chancellor Strong, the Regents and other University officials.

Then, following lunch came the exciting part of the day. We went to Memorial Stadium attired in academic robes and formed in line to march to the speaker's platform on the floor of the stadium. The stadium was packed; every seat was taken. More than that, the crowd had overflowed and the floor of the stadium was jammed. It was the biggest crowd that had ever packed into Memorial Stadium. I am sure there were at least 100,000 people there. We marched down this narrow aisle through a mass of humanity, with the crowd cheering our smiling President as we went along. I would say it was an unforgettable spectacle -- an occasion. The crescent shaped platform

that we mounted was flanked by flags and faced the west, as I recall, the bright sun. On the platform were many of the leaders of California and of the University, all dressed in academic robes. Of course, in front of the platform on the floor of the stadium were the large faculties of the University, similarly attired, and all around was this colorful mass of humanity filling the stadium to the top tier. Above the east rim of the stadium were the green Berkeley hills where the Radiation Laboratory is situated. It was a warm day with a slight cooling breeze rippling the flag.

President Kenneyd, after he was introduced, rose to speak. He removed his mortar board and spoke bare-headed. What the President said, of course, is a matter of record, but I would like to say a word about how he said it. He seemed to speak extemporaneously, but he did not miss one salient point in the manuscript in front of him. I know that he had read the manuscript over on the airplane on the way, because I saw him doing this. I must say he did not study it very much. He spoke confidently of the future and the place of education is that future, but I think what stood out was the strong, although intangible communication between the President and his audience. It was electric; it was indescribably electric. It was obvious that the President was loved and admired by the people in the crowd. In fact, it would be difficult to imagine an occasion where he could have been more loved than by this audience on this

golden day.

Then when he finished speaking, shortly after the ceremonies concluded, President Kennedy departed in the line of academic march. The press of people on the floor of the stadium was so great that a lane had to be maintained by lines of University cadets from the platform to the stadium exit. Then he entered his car and drove on to his next engagement. All in all it was a very exciting day and one that I will never forget. I do recall that at a meeting of the National Security Council just a week or two later in Washington, he called across the table to me and expressed his delight and complete satisfaction with the day, indicating that he, perhaps, regarded it as about as satisfactory a day as he had ever had.

Now, I have described this in some detail, but I would like to describe a few others, each of which I could describe in perhaps similar detail, but I will just identify them for you. Of course, I have mentioned already and certainly would not want to overlook here in this context, my first meeting with President Kennedy in the reviewing stand in front of the White House during his inaugural parade. Perhaps, in spite of what I have just said about the Berkeley occasion, an even more memorable experience was listening to his great inaugural address on January 20, 1961. I think most people who were there sensed that this was a great moment in history; that this was the beginning of a new and exciting period in American

history. I certainly feel that subsequent events proved that we were correct.

Another exciting occasion that I recall was the trip that President Kennedy took in the Presidential plane in November of 1962 to visit a number of Atomic Energy Commission sites, starting with a short visit to the Strategic Air Command headquarters in Omaha. We flew to New Mexico, and by helicopter to Los Alamos. There he visited the Los Alamos laboratory, looked over the work there, particularly the work on the nuclear propulsion system for space -- the ROVER project. Then the President spoke to the people of Los Alamos in the high school stadium at Los Alamos. There again he just completely captured the audience. I have never seen -- I guess I should not say that, I have said that twice now, but it illustrates my feeling that each time he spoke it seemed as if it was the most exciting -- he just captured that audience. And, he spoke completely, one hundred percent extemporaneously -- there was no manuscript, no notes. He praised them; not only the scientists, as he put it, but the people of the town of Los Alamos for the contributions they had made as a group, to national security.

He visited also the Sandia Laboratory on this occasion. We showed him a number of exhibits having to do with the nuclear weapons and their component parts, and he displayed great interest.

The following day we flew to the Nevada Test Site, and I had

the pleasure there of touring, in the helicopter with President Kennedy, the Nevada Test Site. We went over the area where the weapons tests had taken place and looked at the craters in the ground. Most interestingly, we went over the SEDAN crater where the huge SEDAN shot in the Plowshare excavation program had taken place in July of that year -- July, 1962. To our

consternation, and especially to the consternation of the pilot, President Kennedy was so intrigued by this huge crater, some 1200 feet across and 400 feet deep, that he asked that word be sent to the pilot of the helicopter that we sit down on the edge of the crater. Well, the worried word came back from the pilot suggesting that the President change his mind because if we sat down into that dusty terrain on the edge of this huge crater it was not at all clear that the helicopter would be able to take off again. When this word came back to the President, he smiled and said he would defer to the judgment of experts in that field, and then directed the helicopter pilot to fly around the lip of the crater at low altitude. So we circled the circumference of it, and President Kennedy peered out intently at the hole during this trip around the crater, while I tried my best to explain to him what had taken place; that the 100-kiloton explosion was partially submerged; that this tremendous amount of earth and rock had been removed in a matter of seconds; that this program was making great progress; that the cleaner and cleaner

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explosives were being developed so that in the future it would be possible to apply this technology to many parts of the world for digging canals and making excavations where these were required at costs that would be only a fraction of the cost using conventional explosives for such purposes.

Those are just a few of the more memorable moments concerning my association with President Kennedy. In a sense, the whole Kennedy Administration was a memorable experience. All of us who had the experience of associating with President Kennedy and working with his Administration will treasure those memories all of our lives.

Conclusion

I might conclude by saying that I am very grateful to have had the opportunity to serve my country during this historic period under that great President -- President Kennedy. I am honored to have had this opportunity to contribute to this great project, part of the library in the memory of President John F. Kennedy.

HEWLETT: Mr. Chairman, we have been speaking today about memorable occasions and I would like to say that it has been a memorable experience for me to do this interviewing. I think as the Commission's historian one of the great joys of my work is to be dealing with important matters just a few years after they occur and here we are dealing with things that happened only a few months ago. I think it is a marvelous thing that we can record these

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recollections and on behalf of historians of the future I would like to thank you for all the time and thoughtful consideration you have given to this project. Thank you.

SEABORG: Thank you for me, it has been an unmitigated, complete pleasure.

END OF INTERVIEW