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JOURNAL OF  
**GLENN T. SEABORG**

Chairman, U.S. Atomic Energy Commission, 1961 - 1971

*January 20, 1969 - April 30, 1969*

Lawrence Berkeley Laboratory  
University of California

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JOURNAL  
OF  
**GLENN T. SEABORG**  
Chairman of the U.S. Atomic Energy Commission  
1961 - 1971

VOLUME 18

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under Contract DE-AC03-76SF00098



*To Glenn Seaborg  
With best wishes,*

*Richard Nixon*

Seaborg and Nixon at the Atomic Pioneer Award ceremony at the White House  
February 27, 1970

## PREFACE

During the ten years (1961– 1971) that I served as chairman of the U.S. Atomic Energy Commission I kept, on a daily basis, a rather complete journal. During the early years, off and on until 1969, I recorded my day's activities each evening at home in my study, in an unclassified, handwritten form in my large ledger type notebooks. This was augmented during each working day in my office by the dictation of memos to cover the content of telephone conversations, appointments, attendance at meetings, congressional hearings, etc. During my many trips within the United States and my visits to foreign countries (some 60 in all) I recorded my activities in little pocket notebooks which were transcribed when I returned home to my office. On some of these occasions, as well as for some appointments or meetings at home, my activities were covered by one of my able assistants or secretaries.

Finally, in 1969 I gave up altogether the laborious task of recording each day's activity by handwriting a summary at home during the evening. Rather, I covered each day's entire activity by producing memoranda during the day with the help of my secretaries and assistants. Thus, the journal began to be assembled each day on a current basis. In addition, the accumulated earlier material began to be assembled into daily journal form, a task that was soon completed. In both cases, the current and past material was augmented by daily attachments in numerous categories—selected incoming and outgoing correspondence and other relevant documents (deemed to be unclassified, with classified material placed in a separate file), and unclassified Summaries of Commission Meetings, and Commission Regulatory Meetings, and Notes on Information Meetings and Regulatory Information Meetings, so ably produced by Commission Secretary Woodford McCool and Director of Regulation Harold Price and their staffs.

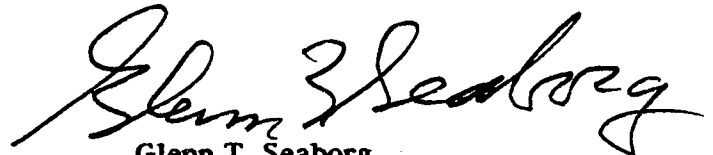
When I returned to the University of California, Berkeley, in November 1971, a couple of months after my tenure as Chairman of the Atomic Energy Commission, the two copies of my journal, which I presumed had been cleared, were sent there. Copy #1 eventually came to my Lawrence Berkeley Laboratory office and Copy #2 to my home, while the segregated, classified portions went to the local AEC–SAN office.

Due to the pressure of other activities no action was taken on my journal until early 1985, when I began working on editing my home copy (correcting spelling and typographical errors, adding first names or initials, etc.), preparatory to publication in DOE report form. About a year earlier, I had sent Copy #1, at their request, to the DOE History Division in Washington, D.C., for their use in the preparation of Volume IV of the official history of the Atomic Energy Commission. This led to questions as to whether my journal met present DOE declassification standards. As a result, a declassification officer was sent to my home in May 1985 to check my home copy (Copy #2). He made 162 deletions of a technical nature, which, in my opinion, reflected increased security standards but did not adversely affect the value of the journal. A second check, this time with my home copy sent to the Lawrence Livermore National Laboratory by a team of reviewers in October and November 1986, led to about 1,000 security actions (including the 162 deletions incurred in the earlier review). These actions included, in addition to deletions, the removal of 500 sections of or attachments to the journal for review by "other agencies" of our government or, in a few cases, of the British government. The majority of these documents have been returned to me either declassified or with some deletions. However, a number are still outstanding. I have decided to go ahead with the publication of my journal in the DOE report form with the intent of adding these now missing portions in an additional volume when they become available. Also, I have decided to proceed with such publication prior to the production of a name index; when this herculean task is completed, the name index will appear as an additional volume. It remains to be seen if a subject index will ever be added in such additional volumes. Although many news clippings are added as attachments, these were too numerous to include them all and, thus, there is a separate volume of these. (A little later Copy #1 underwent a similar security review, with similar results, and was returned to me.)

The journal consists of 25 volumes, averaging 700 pages each. This comprises about 15,000 items consisting of the approximately 4,000 daily journal entries and the average of about three attachments per day. The journal has three sections corresponding to each of the three presidents I served as chairman of the Atomic Energy Commission--the first six volumes covering the John F. Kennedy years (February 1, 1961-- November 22, 1963), the next 11 volumes covering the Lyndon B. Johnson years (November 22, 1963-- January 20, 1969) and the final eight volumes, the Richard M. Nixon years and a few months of post--AEC chairman activities in Washington (January 20, 1969-- November 6, 1971).

I am indebted to my many assistants and to the secretarial staff that served so ably during my AEC chairmanship (see Page 1 of Introduction) and to the Commission's administrative staff (Appendix B to Introduction) and feel grateful for the team help of my fellow AEC Commissioners (Appendix A to Introduction).

I also want to acknowledge the invaluable help of my staff at Lawrence Berkeley Laboratory for putting this journal in publishable form--June Jackson, Sherrill Whyte, Grace Nubla, and Margie Hollander, and temporary assistants Susie Campbell and Mildred Varner.



Glenn T. Seaborg  
University of California  
Berkeley, CA  
January 1989

## INTRODUCTION

This introduction to my journal of 1961-1971, covering my years of service as Chairman of the U.S. Atomic Energy Commission, is written from the perspective of 1971, in order to reflect the attitudes expressed in my journal, which was written on a daily basis during that period. Thus, I express the points of view of that time rather than those of today (1988), which might occasionally be somewhat different.

I served as AEC Chairman from March 1, 1961 until August 17, 1971, ten and a half years. President Kennedy appointed me first to a two and a half year term, the time remaining on the appointment of John McCone, whom I replaced as chairman. Kennedy reappointed me to a full five-year term when the initial appointment expired in 1963. President Johnson reappointed me in 1968, limiting the appointment, at my request, to a two-year term. When President Nixon reappointed me in the summer of 1970, it was with the understanding that I would return to my professorial post at Berkeley a year later. The termination date of this appointment, August 17, 1971, occurred while I was in the Soviet Union leading a group of U.S. nuclear scientists, engineers, and administrators on visits to Soviet nuclear establishments and laboratories. The president asked me to continue with the visit and to serve in September as head of the U.S. delegations to the Fourth U.N. Conference on the Peaceful Uses of Atomic Energy (in Geneva) and the Fifteenth General Conference of the IAEA (in Vienna).

President-Elect Kennedy first offered me the position in a telephone call from Boston on January 9, 1961. I had never met Kennedy, although I attended the Democratic National Convention in August 1960 and heard him give his eloquent acceptance speech.

Upon my arrival in Washington I was greeted cordially by outgoing AEC Chairman John McCone, who introduced me to his key staff, including his administrative assistant Howard Brown, his chief secretary Mildred Cecil, his driver James Haddow and his general assistant Cecil King. On McCone's recommendation I asked all of them to stay on. I also met my new colleagues, fellow commissioners John S. Graham, Loren K. Olson, and Robert E. Wilson, the Commission's General Manager Alvin R. Luedecke, Deputy General Manager Robert E. Hollingsworth (who became General Manager in 1964), Secretary Woodford B. McCool, the six Assistant General Managers (Dwight A. Ink, E. J. Bloch for Operations, Spofford G. English for Research and Development, George F. Quinn for Plans and Production, Algie A. Wells [Acting] for International Activities, and Harry S. Traynor for Administration), the Division Directors, and other principal staff. Many of these individuals I had known from previous contacts with the AEC. During my first meeting with President Kennedy, in the reviewing stand for the inaugural parade in front of the White House on January 20, 1961, he suggested that I find a scientist to fill the vacancy in the five-member Commission. I suggested Leland J. Haworth and he was appointed soon after I became Chairman.

The composition of the Commission and its officers and of my staff changed throughout my ten and one-half years as chairman. The Commissioners who served as my colleagues on the Atomic Energy Commission are listed in Appendix A--a total of 13 in all. Marie Janinek soon joined me as a lead secretary and remained with me during the entire ten and one-half years. When Mildred Cecil left to join the Regulatory staff in the spring of 1967 she was replaced by Helen Gearin. My administrative and technical assistants at various times over the years included, besides Howard Brown, Chris Henderson, Arnold Fritsch, Victor Schmidt, Julius Rubin and Justin Bloom. My principal speech writers were Dan Wilkes, John Napier, and especially Stanley Schneider. Among those assisting me with writing assignments were Benjamin Loeb, Betsey McFadden and Sydney Gaarder.



Although the commissioners operated pretty much as a collegial body, we did use a system of "lead" commissioner, in which individual commissioners paid special attention to certain areas of the AEC's program. For example, John Graham and Robert Wilson specialized on civilian nuclear power; Loren Olson on regulation; Leland Haworth, Gerald Tape and Clarence Larson on weapons and research (and attended meetings of the Federal Council on Science and Technology); James Ramey on regulation and civilian nuclear power; John Palfrey on international activities; Samuel Nabrit and Polly Bunting on life sciences and education; Theos Thompson on weapons and civilian nuclear power; and Wilfrid Johnson, on civilian nuclear power.

Congressional oversight was a very serious fact of life for the AEC. In our case it was exercised primarily by the Joint Committee on Atomic Energy, a unique body established by the Atomic Energy Act. Under the statute, we were required to keep the JCAE "fully and currently informed" on all our activities. In addition, the AEC's budget had to be authorized in detail by the JCAE before it could be acted upon in the normal appropriations process. Much of my time and that of the other commissioners and principal staff was spent testifying at hearings held by the Joint Committee on various aspects of the AEC's program. The record of these hearings provide a valuable source of information on the agency's programs throughout its history. According to a custom established by the committee itself, its chairmanship alternated each Congressional session between a House member and a Senate member. During my tenure the post was filled alternately by California Congressman Chet Holifield and Rhode Island Senator John Pastore. By and large, we had smooth relations with the JCAE and the White House. These sometimes required a difficult balancing act by the AEC.

Soon after I came, I initiated Information Meetings (held in the Chairman's Conference Room), informal sessions of commissioners and staff, to deal in an expeditious manner with day-to-day operational and administrative matters. These sometimes dealt with as many as 30 or 40 agenda items. They were in addition to the long-established, more formal Commission Meetings (held in the Commissioners' Conference Room), in which the commissioners and staff dealt with policy matters and more long-range business, usually with the help of staff papers submitted by the general manager stating a problem, possible solutions, and recommending an action. During my tenure I presided over some 1700 Information Meetings and some 850 Commission Meetings. About 500 of the Information Meetings and 100 of the Commission Meetings dealt exclusively with regulatory matters.

From its inception the AEC had a profusion of advisory committees. I was familiar with the nine-member General Advisory Committee (GAC), having served as a charter member when the committee was established in 1947. The GAC [see Appendix B] met about four times per year and advised the Commission on major scientific and technical questions. Another important committee was the Advisory Committee on Reactor Safeguards (ACRS), which was charged with various safety studies and with the responsibility for reviewing licensing applications in the civilian nuclear power field. The ACRS met monthly and, later in the decade, as the applications for licenses burgeoned, created subcommittees that met several times a month. The Military Liaison Committee (MLC), whose responsibility was to assure adequate liaison between the Commission and the military services, had been very active in the AEC's early days, when policies concerning nuclear weapons were being debated. By 1961, however, the MLC's importance had diminished and, during my chairmanship, it met with us only about once a year. There were more than a dozen other committees advising the AEC on particular subject areas and some of these occasionally met with the Commission.

Since 1957, the AEC's official headquarters was at Germantown, Maryland, some 30 miles from downtown Washington. This made for great inconvenience for those of us who needed to transact business at the White House, the Executive Office Building, Congress, and government departments and agencies in Washington. Therefore, an alternative headquarters had been established in rented space at the Matomic Building (1717 "H" Street, NW) two blocks from the White House, where my fellow commissioners and I, secretarial and key staff, spent most of our time. Still, we regularly held forth in Germantown as well. This gave rise to serious logistical problems because all of our files had to accompany us as we moved from one office location to the other. Adding to the cumbersome arrangement was the fact that the Regulatory people were quartered in still a different location, namely in rented space in Bethesda.

At one of my first meetings with Budget Director David Bell he suggested that we should try to move toward replacing the five-member Commission with a single administrator, a position that I would presumably fill. The other commissioners were amenable, and on May 16, 1962, we sent him a letter. We argued that, due to changed circumstances, the initial concern over concentration of too much power in a single individual had become relatively less important than the need for a more efficient decision-making process. This was a remarkable step—a government administrative body was recommending its own demise. An additional reason why the White House wanted this change was to reduce the leakage of confidential administrative information to the JCAE. There had been many such leaks.

Attempts to get the support of the Joint Committee on Atomic Energy, which would have had to provide the necessary legislation to effect the change, were without success. Congressman Holifield, a powerful force in the JCAE, was adamantly opposed. Several later attempts, including some during the Johnson Administration, were similarly unsuccessful. I was not too disappointed with this result. I found the Commission form of administration, although somewhat cumbersome, to have many advantages for attacking the numerous knotty problems we faced. Five minds were potentially better than one.

Worthy of special note was the role of Admiral Hyman S. Rickover, head of the joint Navy-AEC naval reactors program. The commissioners and I had good rapport with Rickover, but we couldn't claim that we gave much direction to his program. Brilliant, articulate and irascible, Rick was his own man. No more than by the AEC could he be controlled by the Department of the Navy, and largely for that reason, successive naval secretaries tried to get rid of him, especially after he reached the nominal retirement age. Navy Secretary Paul Nitze tried especially hard, but met with no more success than other secretaries. The prime reason was that Rick had enormous influence in Congress, which always insisted on his reappointment as Admiral and as head of the naval reactors program. The other commissioners and I visited him on occasion at his buildings on the mall just off Constitution Avenue. He, of course, attended Commission Meetings whenever he had an issue to propose or defend.

I recall that in February 1962, Rick invited me and my whole family to Norfolk and Newport News, Virginia, to visit the cruiser Long Beach, the first nuclear-powered surface ship, to attend the launching of the nuclear submarine Thomas Jefferson, and to have lunch on the nuclear submarine Sam Houston. On other occasions I took an overnight cruise with him on a nuclear submarine (where my fellow commissioners and I held a regular Commission Meeting), made an exciting, tight landing on the nuclear aircraft carrier Enterprise, and spoke at the commissioning of the nuclear-powered submarine Sturgeon at the U.S. Naval Submarine Base at New London, Connecticut.

During my decade as chairman Rick led the development at his Westinghouse Bettis Laboratory in Pittsburgh, at the AEC's National Reactor Testing Station (NRTS) in Idaho, and at other research facilities of more efficient, new, powerful and compact reactors for the propulsion of naval vessels. During the decade an extraordinary number of nuclear-powered naval vessels was built and launched. Thus, construction was begun on 43 attack submarines, 32 Polaris missile submarines, two aircraft carriers and three guided missile cruisers. Forty-four attack submarines, 38 Polaris missile submarines, one aircraft carrier and three guided missile cruisers were commissioned.

Rickover also ran an important show in the civilian nuclear power field. He utilized the pressurized water reactor technology developed for naval propulsion as a basis for design of the Duquesne Power and Light Company's Shippingport Atomic Power Station near Pittsburgh, which in 1957 became the world's first commercial nuclear power plant. Rick used this reactor as a basis for the development of the thermal neutron breeder reactor, the Light Water Breeder Reactor (LWBR) (the "Seed and Blanket" concept), and he continually encouraged the Commission to support this project.

As AEC Chairman, I was a member of a number of interagency committees that existed for all or part of my tenure. Foremost of these was the Committee of Principals, which advised the president on arms control policy. Established by President Eisenhower, this group was expanded and achieved new prominence under President Kennedy, continued to be important in the Johnson administration, but was abandoned by President Nixon in favor of more closely held White House control. Other committees that I or my designated representative attended included the Federal Council of Science and Technology (FCST, 1961-1971, composed of scientific representatives of federal agencies that had a science component in their operations); the U.S. Intelligence Board; the Federal Radiation Council (1961-1969); the President's Committee on Equal Employment Opportunity (1961-1965); the President's Science Advisory Committee (PSAC), as an observer and as an alumnus of this Committee; the National Aeronautics and Space Council (1961-1971); and the National Council on Marine Resources and Engineering Development (1966-1971). Vice Presidents Johnson, Humphrey and Agnew served as chairmen of the Space Council, Humphrey and Agnew of the Marine Council--I first became well acquainted with Lyndon Johnson because of his service as chairman of the Space Council.

I also found time while I was chairman to publish some books. In 1962, my book Man-Made Transuranium Elements appeared. Intended as part of the high school CHEM Study program (which I continued to serve as chairman of the Steering Committee), it turned out to have much wider appeal. In 1964, Earl K. Hyde, Isadore Perlman and I came out with the two-volume treatise (long in preparation) The Nuclear Properties of the Heavy Elements. Volume I was entitled Systematics of Nuclear Structure and Radioactivity and Volume II, Detailed Radioactivity Properties. Also, in 1964, Daniel Wilkes and I, with the help of Benjamin Loeb, produced Education and the Atom, which was used as a U.S. presentation volume given to the delegates of all countries at the Third Geneva Conference on the Peaceful Uses of Atomic Energy. The year 1969 saw publication of Oppenheimer with co-authors Isidor Rabi, Robert Serber, Victor Weisskopf, and Abraham Pais. And in 1971, there was Man and Atom: Building a New World Through Nuclear Technology with co-author William R. Corliss, a U.S. presentation volume at the Fourth Geneva Conference on the Peaceful Uses of Atomic Energy. Also, the AEC published several volumes of my speeches in paperback form.

I, of course, had close operating relationships with the presidential science advisors--Jerome Wiesner in the Kennedy Administration, Wiesner and Donald Hornig in the Johnson Administration, and Lee Du Bridge and Edward David in the Nixon Administration. Wiesner had an excellent working relationship with Kennedy. The role of the science advisor faded under Johnson and due in part to the attitude of Henry Kissinger deteriorated even further under Nixon. Du Bridge, for example, was completely frozen out of discussions on arms control policy. Although I had known Nixon since February, 1948 (when we met in Chattanooga, Tennessee, as members of the Junior Chamber of Commerce's "Ten Outstanding Young Men of the Year") my relations with him as president were less close than those I had with Kennedy and Johnson. I was not, like Du Bridge, cut off entirely from arms control matters, but my information came secondhand through the staff of our Division of International Affairs. Nixon's attitude seemed to be mirrored in a comment he made after I offered an opinion at a meeting about a SALT proposal. He said that he would look to me for scientific, but not for political, advice.

There were several episodes during the Nixon Administration that led to difficulties for me. During the early period when there was a push for the installation of an ABM system in the United States I was asked by Nixon's aides to make supporting speeches. This I declined to do. (Later, Nixon, to his credit, revised his own position and began the negotiations with the Soviet Union that led to the ABM Treaty.) I had a brush with Attorney General John Mitchell in connection with a charge that fissionable material had been diverted to Israel from a processing plant in Pennsylvania. He wanted me to revoke, without a hearing, the security clearance of the key individual involved. This I refused to do, as a matter of principle and because I was convinced that the charge was false.

I was pleased when President Kennedy volunteered in 1961 to make the presentation of the AEC's Fermi Award (\$50,000, a medal and a certificate) in a White House Oval Office ceremony to the eminent Cornell physicist, Hans A. Bethe. Kennedy repeated this for the presentation to Edward Teller in 1962 and President Johnson continued the practice with his presentation to J. Robert Oppenheimer in 1963 and to subsequent award winners during his Administration, Admiral Hyman G. Rickover for 1964, and John A. Wheeler for 1968. The Commissioners and I presented the Award in 1966 to Otto Hahn and Fritz Strassman in Vienna and I, to Lisa Meitner in Cambridge, England. No Awards were given in 1965 and 1967. I made the presentations to Walter H. Zinn in 1969 and Norris E. Bradbury in 1970 because President Nixon refused to carry on the tradition started by Kennedy and Johnson.

With Presidents Kennedy and Johnson I was given the privilege of appealing to the President some of the adverse budgetary decisions made by the Bureau of the Budget. With Kennedy this was done in White House meetings and with Johnson in meetings (in December) at his ranch in Texas. Here I defended my requests for budget restorations in debates with the Director of the Bureau of the Budget before the President. I was singularly successful in winning the approval of President Johnson. In my one opportunity to present an appeal to President Nixon I didn't win a single point. Thereafter, I was asked to present my appeals through the OMB director (Office of Management and Budget, the changed name from BOB), the person who had already ruled against me; this procedure led to no appeal victories for me.

The sections that follow provide an historical summary of the major activities and events with which the Atomic Energy Commission was associated during the period of my chairmanship (1961- 1971). This is done in a topical manner, i.e., by describing in summary form the accomplishments in each of a selected number of subject areas over the ten-year period. This is in preference to dividing the account into three parts, covering the Kennedy, Johnson and Nixon administrations, which would inevitably result in a good deal of repetition in thus describing each of the subject areas three times.

**I have chosen to touch briefly (not in any order of priority) on the following subjects:**

- I. The Limited Test Ban Treaty (LTBT)**
- II. The Nonproliferation Treaty (NPT)**
- III. Arms Limitation**
- IV. The Cuban Missile Crisis**
- V. The program of international cooperation, including my visits to 60 countries**
- VI. Support of research**
- VII. Los Alamos Meson Facility and 200 Bev Accelerator**
- VIII. The National Transplutonium Production Program**
- IX. Civilian nuclear power**
- X. Raw Materials Program**
- XI. Gas Centrifuge Program**
- XII. Cutback in production of fissionable materials**
- XIII. Regulation**
- XIV. Radioisotopes Program**
- XV. Nuclear power in space**
- XVI. Nuclear weapons tests**
- XVII. Plowshare**
- XVIII. Controlled thermonuclear research (CTR)**
- XIX. Nuclear education and training**
- XX. Technical information**
- XXI. Civil Defense**

## I. The Limited Test Ban Treaty (LTBT)

The United States, United Kingdom, and USSR began serious negotiations on a test ban treaty late in 1958. They were impelled to the bargaining table in part by a worldwide concern over radioactive fallout from nuclear tests. The negotiations soon became bogged down over disagreements about the details of a control system. Essentially, the United States wanted extensive controls because of a suspicion that the Soviets would cheat; the Soviets resisted controls because of a suspicion that we would use them for espionage. Nevertheless, a compromise agreement was almost reached in the spring of 1960 on a treaty that would have barred all tests considered to be verifiable; namely, all except underground tests producing signals of less than 4.75 on the Richter scale. Shortly before a Big Four summit at which it was thought such a treaty might be signed, however, the U-2 incident occurred and the way this was handled ended hopes of any agreement during the Eisenhower administration.

President Kennedy was deeply committed to achieving a nuclear test ban treaty with the Soviet Union and he pursued this goal persistently, despite numerous discouragements, showing sensitivity and patience in his diplomatic relations with both the Soviet Union (meaning, basically, with Nikita Khrushchev) and with the United States Senate. Discussions within the Committee of Principals, in which I participated, to define a U.S. position began immediately, in February 1961, and negotiation with the Soviet Union, within a matter of weeks thereafter, in March 1961. A draft treaty was introduced by the U.S. and U.K. in April 1961. It would have banned all but smaller underground tests; offered a moratorium on such tests; and allowed the Soviets to inspect devices we proposed to use for seismic research or for AEC's Plowshare (peaceful nuclear explosions) program. We also agreed to a Soviet suggestion that the number of onsite inspections on the soil of each party be limited to an annual quota. The most serious disagreement was over the size of this inspection quota: we proposed it be 20, the Soviets, while contending that no inspections were necessary, offered to accept three as a political concession to Kennedy. Over the ensuing two years we several times modified our quota demand until in February 1963 our chief negotiator was authorized to produce the number six as a final fall-back offer. But the Soviets would go no higher than three.

In August 1961 the Soviets surprised us by breaking an informal test moratorium begun three years earlier and launching a massive series of atmospheric tests. After some hesitation, President Kennedy authorized a series of U.S. atmospheric tests which took place in the Pacific between April and November 1962. (See Section XVI.)

President Kennedy's extraordinary commencement address at American University on June 10, 1963, finally set the stage for the high-level negotiations with the Soviet Union. Kennedy chose W. Averell Harriman, the experienced American diplomat, who had the respect of the Soviet leadership, to lead the U.S.-U.K. negotiating team in Moscow. On the specific issue of a test ban, Harriman was instructed that the achievement of a comprehensive test ban remained the U.S. objective. If that was unobtainable, he was to seek a limited treaty in three environments, (atmosphere, water and space) along the lines of a Western draft treaty of August 1962. Khrushchev made it clear before the emissaries arrived, however, that he was prepared to accept only a limited test ban, not the comprehensive agreement Kennedy wanted.

Harriman made an unsuccessful attempt to negotiate a Comprehensive Test Ban Treaty, then went on to negotiate the details of the Limited Test Ban Treaty. In 12 days of intensive negotiation in July, which Kennedy supervised on a daily basis, Foreign Minister Gromyko and Averell Harriman, leader of the small U.S. negotiating team, with minor British participation reached agreement on a treaty. It banned all tests in the atmosphere, outer space, and under water, environments where verification was feasible without onsite inspection. In order to achieve agreement with the Soviets, Harriman had to give up the U.S. peaceful uses of nuclear explosives (the Plowshare) provision in exchange for Soviet acceptance of a withdrawal clause.

I was pleased to be a member of Secretary of State Dean Rusk's delegation, which flew to Moscow for the signing, on August 5, 1963, exactly 18 years after Hiroshima, of the Limited Test Ban Treaty. We met with Soviet Chairman Nikita Khrushchev for an hour in his office in the Kremlin in the morning to discuss the significance of the Treaty, the future of East-West relations, etc. The Treaty was signed at 4:30 p.m. in the Kremlin's Catherine Hall by Rusk, Soviet Foreign Minister Andrei Gromyko and British Foreign Minister Lord Home.

To help assure a large favorable vote in the Senate, Kennedy agreed to four national security "safeguards" put forward by the Joint Chiefs of Staff as conditions for their support. These required the president to commit himself to a vigorous underground testing program, high-level maintenance of weapon laboratories, continued readiness to resume atmospheric testing, and improving our ability to detect Soviet violations.

The treaty was referred for study to the Committee on Foreign Relations, which began hearings on August 12, four days after the Senate received the President's message. The first three witnesses before the Foreign Relations Committee--Secretary of State Dean Rusk, Secretary of Defense Robert McNamara and I--were each separately questioned, each for an entire day. Without doubt, the most important aspect of my testimony of August 14 had to do with the effect of the treaty on the AEC's Plowshare program for peaceful nuclear explosions. Reassured by the safeguards and by forecasts (some by me during my day-long testimony) that peaceful nuclear explosion experiments would be permissible under the treaty, a number of senators who had been leaning against voted in favor. On September 24, 1963, the momentous vote on the treaty was taken. Every able-bodied senator was present. The treaty was approved by a vote of 80 to 19. This was 14 votes more than the required two-thirds majority, a margin that satisfied the President's desire for a strong endorsement. The treaty entered into force on October 10.

## II. The Nonproliferation Treaty (NPT)

It was fear of the further spread of nuclear weapons more than any other consideration that prompted President Kennedy's push for a comprehensive test ban. Kennedy was so concerned about China acquiring the bomb that he authorized Averell Harriman, when the latter was in Moscow negotiating the Limited Test Ban Treaty, to feel out Khrushchev on the subject of launching a joint preemptive strike on China's nuclear facilities. Khrushchev shrugged off the suggestion--he said he didn't think China would be a serious nuclear threat.

By the time Lyndon Johnson became president, the Arms Control and Disarmament Agency had adopted nonproliferation as its number one objective. This position conflicted with another objective, which had strong support in the State Department, namely, the establishment of a NATO naval force, manned by personnel from several nations, and equipped with U.S. nuclear weapons, the so-called Multilateral Force (MLF). The purposes of the MLF included giving NATO countries, particularly Germany, a greater role in planning their own defense, thereby helping to dissuade them from wanting to be independent nuclear powers; preserving allied cohesion in the face of the Soviet threat; and encouraging the budding movement toward a united Europe. While it could be, and was, argued that the MLF and a nonproliferation treaty were not inconsistent, the former tended to exclude the latter because of the Soviet Union's attitude. The Soviets were fiercely hostile to a scheme that seemed to place a revengeful West German finger on the nuclear trigger. They made it clear they would not join in an NPT unless we abandoned the MLF.

Germany, and to a lesser extent Italy, seemed interested in the MLF from the start. The British were opposed--they didn't think this was any way to run a navy. Other NATO allies were indifferent at best. President Kennedy was himself rather cool toward the idea, although he was willing to go forward if the allies showed a clear desire to do so. Later, after France began to distance itself from NATO, Kennedy showed more interest because of a desire to give the Germans an alternative to nuclear cooperation with France. But there was strong opposition in Congress to sharing U.S. weapons with anybody, and to do so would have required Congressional approval in the form of an amendment to the Atomic Energy Act.

Despite the political problems, technical work on the MLF went forward, and when Johnson became president he was immediately subjected to strong pressures from MLF advocates in the State Department. Following some intense discussion within the administration he authorized a campaign to sell the idea to our allies, hoping to reach agreement by the end of 1964.

But then, on October 16, 1964, my journal contained the following entry:

"The big news today is that at 3 a.m. Washington time the Red Chinese exploded an atomic bomb in the atmosphere."

Our analysis of the debris convinced us, to our surprise, that the Chinese had detonated a  $^{235}\text{U}$  device of sophisticated design, not a plutonium bomb such as the other four nuclear powers had used for their first tests. I reported these findings to a Cabinet meeting on August 20.

The Chinese test had long been expected, but the actual occurrence nevertheless shook up the whole international equation. Potent forces in India immediately began agitating for an Indian bomb to match China's. This made the Pakistanis edgy. The Australians began to stir. Proliferation seemed to be in the air. The need for an NPT seemed more urgent.



President Johnson had to confront the MLF issue seriously in December 1964. The occasion was a visit by British Prime Minister Harold Wilson. The principal item on the agenda was the MLF, and the British had made no secret of their opposition. But it was probably the runup to the meeting rather than the meeting itself that had the biggest effect on the President's mind. In five days of intensive meetings with his principal advisors, Johnson grappled with the MLF question, seeking a policy position of his own. In the end he determined that the United States, while not opposing the MLF, would no longer actively try to bring it about.

The president's new position, by seeming to remove the MLF obstacle, really energized the diplomatic quest for an NPT. In August 1965 the United States unfurled a complete draft at the Eighteen Nation Disarmament Conference (ENDC). The draft did not fully rule out a future MLF, however--die-hards in State had managed to keep it alive--so the Soviets promptly rejected the draft. The Soviets wanted to outlaw any transfer of nuclear weapons whatever--their position seemed to bar even existing NATO arrangements by which U.S. weapons were stationed in Europe. Then Secretary McNamara devised a substitute for the MLF--the idea of a consultative committee to devise NATO nuclear strategy. This seemed to satisfy the motive of giving Germany and other NATO allies a voice in their own nuclear defense.

The situation now seemed ready for forward movement on an NPT. The missing ingredient was presidential involvement. President Johnson had become somewhat disengaged from arms control matters because of his preoccupation with the Vietnam War following the major escalation early in 1965. Pressures to get him to focus again on the NPT came from a number of directions. One was a Senate resolution in May 1966 that urged "additional efforts by the president. . . for the solution of nuclear proliferation problems." Next, some inside the administration managed through Bill Moyers, to get to the president and make the case on the urgency of getting an NPT. The break seemed to come on July 5, 1966, when, in answer to a question at a news conference, the president stated: "We are going to do everything within the power of our most imaginative people to find language which will bring the nuclear powers together in a treaty which will provide nonproliferation." Secretary of State Rusk, previously quite removed from the issue, now became for the first time an active and very effective NPT advocate.

Just to allay any doubts there might have been about where he stood, President Johnson stepped up the pressure in a speech at the National Reactor Testing Station on August 26, 1966. Speaking of the NPT negotiations, the president said, "I believe that we can find acceptable language on which reasonable men can agree." The search for such language was underway in hard and intense and private negotiation between the U.S. and Soviet sides.

On October 10, 1966 Foreign Minister Gromyko showed up at the White House in a visit full of smiles, indicating that the process had borne fruit. On December 5, 1966, the two sides unveiled the text of the first two articles of an NPT. Article I forbade states having nuclear weapons from transferring them "to any recipient whatsoever." Article II forbade States not having nuclear weapons from accepting their transfer or manufacturing them. Article I essentially ruled out the MLF. The United States, however, prepared a series of interpretations which we told the Soviets would be submitted to the Senate with the treaty. Most important of these was that the treaty would not prevent a federated European state, if one ever developed, from inheriting the nuclear weapons of Britain or France, or both. Apparently, the Soviets considered this eventuality sufficiently remote that they were willing to take a chance on it.

After the breakthrough on Articles I and II, there was still one other important matter to clear up. This concerned so-called "safeguards," meaning inspections and other mechanisms for detecting on a timely basis any diversion of nuclear materials from peaceful to weapons uses. In this matter the AEC became embroiled in a dispute with other parts of the U.S. government. We wanted safeguards, preferably administered by the International Atomic Energy Agency, to be made mandatory. Our European allies resisted mandatory safeguards, ostensibly because they did not like the idea of inspectors from other countries roaming around in their nuclear plants. They were supported in this attitude by elements in our State Department. The ACDA, bowing to allied and State Department pressure, at first introduced in Geneva a miserably weak treaty provision specifying merely that the parties to the treaty would "cooperate in facilitating the application of safeguards." The AEC bitterly protested the weakness of this provision, and our position won support from the Joint Committee on Atomic Energy. In fact, the JCAE implied that any treaty that did not have mandatory safeguards would be in trouble in the Senate. This helped tilt the balance and mandatory safeguards for all non-nuclear weapon countries soon became the U.S. position.

It did not, however, settle the question of who would administer the safeguards. In deference to our European allies, the U.S. argued in Geneva for a formula specifying "International Atomic Energy Agency or equivalent" safeguards. "Or equivalent" was a reference to safeguards already being applied to its members by the European Atomic Energy Community (EURATOM). Several allied countries very much preferred EURATOM to IAEA safeguards. Their argument was that IAEA inspectors might make off with industrial secrets about their growing nuclear businesses.

But the Soviets stated that "self-inspection" by EURATOM of its own members was unacceptable. Various compromise proposals were then thrown into the mix, all seeking some way that EURATOM safeguards could remain, at least for a while, subject to some verification of their adequacy by the IAEA. At length, informal talks among negotiators from the two sides produced basic agreement on a compromise solution. This was that each non-nuclear party to the treaty would within a specified time reach a safeguards agreement with the IAEA. This formula allowed for the possibility of continued EURATOM safeguards in that the agreements could be negotiated either individually or together with other countries.

A key step to soften allied opposition to the proposed safeguards article was taken on December 2, 1967, when President Johnson announced that the United States would accept the application of IAEA safeguards to all its own peaceful nuclear activities at the time that such safeguards were generally applied to other nations under the NPT. This announcement was the culmination of a series of prior suggestions and events in which the AEC had played a key role. The British immediately followed our example. These actions tended to cut the ground from under previous allied objections based on presumed commercial disadvantage. The allies then agreed to the text of the safeguards article and, after some last minute haggling with the Soviets over wording, the agreement was announced in Johnson's State of the Union message in January 1968.

The first three articles of the NPT (Articles I and II setting out the basic obligations of nuclear-weapon states not to transfer, and non-weapon states not to acquire nuclear weapons, and Article III prescribing safeguards) pretty well encompassed what the superpowers hoped the final treaty would be. Not so the non-nuclear countries who were the main object of the treaty. There was very great resentment among them about what they considered the draft treaty's discriminatory nature. They felt they were being asked to renounce a future means of defense and without any compensation.

Ultimately three articles were added to the treaty in an effort to appease the non-nuclear states. Article IV stated the right of all countries to pursue the peaceful atom without discrimination. It also announced the obligation of more advanced countries to provide technical assistance in peaceful uses to others, particularly to those in "the developing areas of the world."

Article V referred to a technology that has since declined in importance, namely, the use of nuclear explosions for peaceful purposes like excavation, mining, and research. Both Brazil and India objected to the draft NPT on the grounds that it would preclude their independent development of such explosives. In a trip to Brazil in 1967 I spoke to Brazilian officials at length about this. I pointed out to them that the USAEC stood ready under an NPT to provide a peaceful nuclear explosives service to them at a fraction of what it would cost them to provide it for themselves. I found that they were generally not well informed about the issues and that their arguments did not hold up. I became convinced that their avowed interest in peaceful nuclear explosions was mainly a cover to keep alive a nuclear weapons option. Nevertheless, to meet such objections as the Brazilians advanced, an Article V was added to the NPT providing for such a nuclear explosives service as I had described to them.

The most clamorous demand of the non-nuclear states was that, in exchange for their abjuring nuclear weapons, the superpowers must do something to halt their bilateral arms race, which was regarded as a threat to everybody. The tide of revolt on this issue ran very strongly--so much so that the superpowers felt that if they did not give ground they might lose the treaty. They therefore added an Article VI pledging "to pursue negotiations in good faith on effective measures regarding cessation of the nuclear arms race and disarmament..." Later they were forced by the efforts of Sweden's Alva Myrdal to agree to an amendment requiring that these negotiations take place "at an early date."

Formal UN debate on the NPT began in the General Assembly on April 24, 1968. It was approved on June 12 by a vote of 95 to 4, with 21 abstentions. The treaty was opened for signature on July 1, 1968, in Washington, London, and Moscow. It was signed on that day by the Big Three and more than 50 other countries. Senate hearings began on July 10 with supporting testimony by Secretary Dean Rusk, ACDA Director William Foster, Deputy Defense Secretary Paul Nitze, Joint Chiefs Chairman Earle Wheeler, and me. My own testimony concentrated on IAEA safeguards, and the provision for a peaceful nuclear explosives service. There was little opposition, but the Foreign Relations Committee did not vote out the treaty until September 17. On October 11, with the presidential election campaign in full swing, the full Senate voted to postpone action. After Nixon's election, he made it clear that he wanted action still further deferred, until after his inauguration. On February 5, 1969, President Nixon recommended ratification in a special message to the Senate. The Senate gave its consent on March 13, and two days later, having been ratified by the requisite number of countries (the Big Three plus 40), the Treaty on the Nonproliferation of Nuclear Weapons entered into force.

### III. Arms Limitation

On July 1, 1968, the very day they signed the Nonproliferation Treaty, President Johnson and Soviet Premier Kosygin announced their intentions to enter into talks on the limitation and reduction of offensive and defensive nuclear weapons.

This was by no means the first approach to this subject, but it may have been the first serious one. During the previous four years the United States and the Soviet Union had batted back and forth a series of proposals, some of which were obviously unacceptable to the other side and probably intended mainly for propaganda effect. In January 1964, President Johnson proposed a "verified freeze on the number of strategic nuclear offensive and defensive missiles." As details of this idea were worked out in Washington, it proved quite complex, much more so than its simple statement by the president would have indicated. The Soviets never took it seriously, possibly because verification of the freeze would have required intrusion into some of the most secret Soviet facilities.

One week after Johnson's freeze proposal the Soviets proposed that the major powers destroy all their bombers. This was obviously unacceptable to the United States, which held a large lead in number of bombers. The United States responded with a proposal that both superpowers destroy an equal number of bombers. The Soviets promptly rejected this since it would have increased the proportional U.S. advantage.

The superpowers also flirted briefly during Johnson's term with reductions in military budgets as an approach to arms limitation. Late in 1963 Chairman Khrushchev announced a 4.3 percent cut in planned Soviet military expenditures for 1964. President Johnson then announced a small reduction in the U.S. defense budget for fiscal year 1965. After both sides announced they intended to make additional cuts the process was aborted by the sharp escalation in the Vietnam War initiated by Johnson early in 1965. From that time forward, military spending by both superpowers resumed an upward course.

Section XII of this introduction describes the cutback in capacity to produce fissionable materials carried through by President Johnson. Though the president succeeded to some extent in surrounding these actions with the aura of arms control, they were prompted largely by the excess of materials production capacity built up during the 1950s. This same excess contributed to some U.S. proposals that both sides transfer already produced stocks of weapons grade U-235 to civilian use. In August 1963 the United States formally offered to transfer sixty thousand kilograms of such U-235 if the Soviet Union would transfer forty thousand kilograms. There was scant risk in this since our stockpile at the time was about five times that of the Soviets. Early in 1964 President Johnson suggested a halt in production of fissionable materials for weapons purposes and offered to act quickly on our past offer of a transfer to peaceful purposes in a 60-40 ratio. The Soviet response on both occasions was cold. They claimed that the amounts transferred would not diminish the U.S. nuclear potential, because we had excess weapons, that the verification procedures would require the most intrusive controls, and that, in general, the proposals amounted to "control without disarmament." To meet the last objection, we proposed that the transferred material be obtained from destruction of weapons chosen by each side from its stocks. U.S. efforts on behalf of such proposals reached their peak in 1965 and early in 1966. We ceased to press them thereafter, in part because our lead over the Soviets in stockpiles of fissionable materials was diminishing rapidly.

Meanwhile, both sides had been adding new and better weapons to their arsenals. One aspect of the continuing arms race appeared particularly alarming to serious-minded individuals. This was the deployment, first noticed in 1964, of an antiballistic missile system around Moscow, and rising pressure within the United States to deploy similar systems, then under development, to protect American cities.

In March 1966, Secretary of Defense MacNamara tried to still the clamor for an American ABM by stating it would not be capable of defending against a Soviet attack, although it might be effective against a lesser Chinese attack. He suggested that funds already authorized for an ABM system not be spent until arms limitation was explored with the Soviet Union. President Johnson agreed and was strengthened in this belief by a climactic meeting of his advisers held in Austin, Texas, in December 1966. He wrote to Kosygin in January 1967 setting forth the situation quite bluntly: if the Soviets deployed an ABM, we would follow suit, and also would increase our capabilities to penetrate their system. They would then increase their offensive and defensive capabilities and both sides would have incurred "colossal costs without substantially enhancing...security.." Johnson therefore suggested that some of the two sides' "highest authorities" meet to "carry the matter forward."

In response to the president's initiative, conflicting signals came from Moscow. Kosygin made public statements defending the Soviet ABM. This was in keeping with the Soviet military doctrine's emphasis on defense. At length, a month after the president's letter, the Soviets replied, stating their willingness to exchange views on strategic weapons but without suggesting a date. Meanwhile, discussions began within the U.S. government about the position we should take in the talks. The Joint Chiefs wanted any agreement to take the form of a treaty and that it both assure continued U.S. strategic superiority and allow future development of an American ABM. State and ACDA were less obdurate.

Preliminary discussions with the Soviets about arms limitation took place at a hastily arranged summit meeting between Johnson and Kosygin at Glassboro, New Jersey on June 23 and 24, 1967. The climax of the meeting was a passionate effort by MacNamara, over lunch, to persuade Kosygin that the security interests of both sides required some limitation of strategic arms. Kosygin appeared not to respond, continuing to argue that defense threatened no one. Yet there was evidence that he and his aides were indeed impressed with the logic and force of the American presentation.

They were not impressed enough to schedule strategic arms talks, however, and in the absence of such talks weapons developments continued apace. In September 1967, at the end of a long speech in which he argued the futility of a "heavy" ABM system to protect against the Russians, MacNamara announced a "light" one (SENTINEL) to defend against the Chinese. In December it was revealed that the United States was developing MIRVs.

President Johnson continued to pressure the Soviets to schedule talks and on July 1, 1968, as indicated above, the two sides announced their intention to enter into near-term talks "on limitation and reduction of offensive strategic nuclear weapons delivery systems as well as systems of defense against ballistic missiles." Still no date was announced.

Now the task of preparing a U.S. position began in earnest. A staff in the Pentagon prepared a draft treaty. Essentially it proposed a quantitative, but not a qualitative, freeze on strategic missile launchers, and an agreement to limit ABMs to an equal, but as yet unspecified, number. An ominous limitation of the proposal was that, at the insistence of the Joint Chiefs, it did not restrict MIRVs. Thus, while the number of missile launchers might be held steady, the number of warheads could increase substantially.

On August 19, the Soviet Union finally agreed to schedule a summit conference that would launch SALT, the strategic arms limitation talks. The date was to be in the first ten days of October, the site probably Moscow. On the night of August 20, however, a few hours before the joint announcement was to be issued, news came of the invitation of Czechoslovakia by Warsaw Pact forces. Anticipating a popular outcry, President Johnson felt he had to call off the scheduled announcement.

In the remaining months of Johnson's administration, some efforts were made to get the summit conference back on the rails. These were finally defeated by President-elect Nixon, who made it clear that he would not be bound by the results of such a meeting involving his predecessor.

The Nixon administration took several months to prepare before indicating a willingness to initiate SALT. A variety of options were considered. ACDA's new director, Gerard Smith, advocated an across-the-board freeze of the number and characteristics of strategic weapons. This "Stop Where We Are" proposal, which I supported, would have banned MIRVs on both sides. It would also have saved vast sums of money. The Joint Chiefs opposed this, and any other, limitation on technology.

The options were considered in a series of White House meetings in June 1969 which I attended. At one of these President Nixon stated with great emphasis that he would personally make all decisions regarding U.S. policy, setting the stage for very close White House control of the negotiations to follow. Discussions continued in coming months but before a more limited group, from which I and White House science adviser Lee DuBridge were excluded. President Nixon and Security Adviser Henry Kissinger apparently did not feel that the advice of scientists was of much use in matters like this.

SALT did not in fact begin until November 1969. There was early agreement on the desirability of limiting ABMs. But the asymmetry between the forces on the two sides led to difficulties in reaching agreement on an offensive arms. The Soviets then sought to limit negotiations to ABMs, but the United States, fearing unlimited growth in the Soviet Union's burgeoning ICBM arsenal, insisted that offensive weapons be included as well. After a prolonged deadlock, it was decided to negotiate a permanent treaty limiting ABMs and, as a holding action, to add an interim agreement (not a treaty) restricting the growth of offensive arms for five years.

#### IV. The Cuban Missile Crisis

Periodic intelligence reports since late August of 1962 had revealed the off-loading of military equipment from Soviet ships and an increase in military construction activity at several locations in Cuba. Although the AEC was not a "collector" of intelligence, it did serve as an evaluator and interpreter of nuclear-related intelligence data collected by the CIA, the Department of Defense, and other elements of the intelligence community. I served as a member of the U.S. Intelligence Board, the highest intelligence estimating body in the government. Commencing in October, the AEC's Director of Intelligence Charles Reichardt, often accompanied by Assistant General Manager for Administration Harry Traynor and General Manager Alvin Luedecke, came to my office in the early morning nearly every day to give me the latest reports and estimates on developments in the Cuban situation. Many of these reports bore classifications above top secret.

The crisis broke on Monday, October 15, when analysis of photographs from reconnaissance overflights by U-2 planes disclosed evidence of a medium-range missile site, though not yet the missiles themselves, in Western Cuba. Now a nuclear confrontation with the Soviet Union over Cuba appeared to be a distinct probability.

The president immediately established a top-level group, later formally named the Executive Committee of the National Security Council (EXCOM), to consider policy alternatives and make recommendations to him. By Wednesday, October 17, launchers and missiles could be seen in U-2 photographs, and it was clear that the missiles could be fired within two weeks. EXCOM discussions began to focus on two options: 1) a swift air strike to take out the missiles, or 2) a naval blockade while diplomatic pressure was exercised to get the missiles removed.

It is necessary to recall that, almost from its inception, but especially since the Korean War, the AEC had maintained a readiness plan for continuity of essential operations in the event of hostilities. Indeed, when the new headquarters of the AEC was constructed at Germantown, Maryland, in 1957 (as part of President Eisenhower's plan for the dispersal of critical government functions), a reinforced structure replete with sophisticated emergency communications systems was built into the underground structure of the new complex. It was known as the Emergency Relocation Center (ERC), and was built with compartmentalized sleeping facilities to house 120 people with sufficient water and food to meet their needs for several weeks.

Periodically, mock exercises were held in the ERC during which imaginative efforts were made to write a realistic scenario. For most of the key officials who participated, these exercises, were a bit of a nuisance, interrupting their busy schedule. In mid-October 1962, however, the exercises commenced to assume a new reality.

The ERC was meant to house, in the event of a war emergency, the Initial Cadre, consisting of the Chairman, the commissioners, and those members of the AEC staff essential to operation of the agency in such an emergency situation. It was also contemplated that the members of the Initial Cadre might be accompanied by their families, although the feasibility of this was in doubt and subject to much debate.

By Friday, October 19, the blockade concept appeared to have won out over the air strike in the deliberations of EXCOM, but with the proviso that an air strike would follow if diplomacy failed. The president's address to the nation on radio and television, which revealed the extent of the crisis to the world for the first time, took place on Monday evening, October 22. This address "brought home" to the nation the gravity of the situation. AEC employees, who had been enjoined by secrecy, were now for the first time able to discuss and develop with their spouses concrete plans for the safety of their families. This raised serious questions among the members of the Initial Cadre as to whether, if ordered to occupy the ERC in the face of impending outbreak of hostilities, they would actually bring their families to take up residence in the underground Emergency Relocation Center in Germantown. Helen and I had serious discussions as to our proper course of action should we be faced with such a fateful decision. Fortunately, we never had to make this decision.

The day following the president's address, I informed the Commissioners that AEC operations had been placed under Phase I Alert, i.e., instructions to check that communications were in order, 24-hour duty for communications personnel, additional security guards, etc. It was a tense day, featured by a meeting at which the Organization of American States (OAS) endorsed President Kennedy's action, a spirited discussion in the UN Security Council, and reactions of various types from around the world. What the USSR reaction would do was not yet clear.

Fortunately, after an historic exchange of messages between Kennedy and Khrushchev, a message came from the Soviet government on Sunday, October 28, agreeing to remove the missiles under UN inspection.

Although it was not publicly announced at the time, it is now known that, in return, Kennedy conveyed private assurances to Khrushchev: (1) that the United States would not attack Cuba, and (2) that we would remove Jupiter missiles we had deployed in Turkey.

This brush with disaster brought President Kennedy and Chairman Khrushchev closer together, a prelude to the successful attainment of the Limited Test Ban Treaty less than a year later.



## V. The program of international cooperation, including my visits to 60 countries

In 1954 the Atomic Energy Act was liberalized to permit the AEC to transmit peaceful atomic energy information, research tools, and nuclear materials to other nations under "Agreements for Cooperation" pledging the recipient not to use what was received for any military purpose. The number of such agreements greatly increased during the decade of my chairmanship. By the end of 1971 they were in effect with 30 individual nations and two international organizations (EURATOM and the IAEA).

At first, the "safeguards" to prevent military use were implemented by the United States and the cooperating nation. In accordance with what had always been the U.S. intention, this responsibility began in the mid-1960s to be transferred to the IAEA through trilateral agreements among the agency, the United States, and the recipient nation. The principle of international safeguards administration was further strengthened by the 1968 Nonproliferation Treaty (see Section II), which required non-nuclear weapons signators to negotiate safeguards agreements with the IAEA.

The enthusiasm engendered by the U.S. Atoms for Peace Program led in 1955 to the convening in Geneva of a huge UN Conference on the Peaceful Uses of Atomic Energy. The success of this conference led to a second one being held in 1958, a third in 1964 and a fourth in 1971. At the first two Geneva Conferences I was a member, at the third the Chairman, of the U.S. delegation. I had the honor of being elected president of the fourth (1971) Conference. Another repeated occasion for travel abroad was the IAEA General Conference. During my ten and a half years as AEC chairman, I, along with one or more of my fellow commissioners, attended this annual event eleven times, held in Vienna except in 1965 when it was held in Tokyo.

It became my practice to visit other countries before and after the various conferences I attended. Thus, in 1965, when the IAEA General Conference was held in Tokyo, I visited nine countries in a trip around the world. A presidential plane was placed at my disposal for three of my trips: in January 1967 when I circled the globe in visiting five countries; in January 1970 for a trip to six African countries, Spain, and Germany; and in July 1971, when I visited six South American countries. One highlight of my travels abroad occurred in September 1964. Leaving the third Geneva Conference for a weekend, I served as host to high-ranking officials of 15 national nuclear energy organizations aboard the USNS Savannah, the world's first nuclear-powered cargo-passenger ship. The Savannah, which had started operation in August 1962, was completing a tour of the Scandinavian countries and was at anchor in Halsingborg, Sweden. My guests and I spent the night aboard ship, then cruised the Baltic the next day. (Actually, I made several visits to the Savannah during my tenure as AEC Chairman; even before it was launched, my entire family and I [except Dianne, who was judged to be too young] visited her at Yorktown, Virginia, in February 1962.)

Throughout the 1960s, fruitful cooperation on peaceful uses of the atom was enjoyed with the USSR. This was accomplished pursuant to several bilateral Memoranda on Cooperation in the Field of Utilization of Atomic Energy for Peaceful Purposes negotiated between the USAEC and the Soviet State Committee for the Utilization of Atomic Energy. The first of these was signed in 1959 by AEC Chairman John A. McCone and his Soviet counterpart, Professor Vasil Emelyanov. I and my counterpart Andronik M. Petrosyants signed succeeding memoranda in May 1963, July 1968, and early 1970.

One of the fruits of the Memoranda of Cooperation was exchanges of visits by American and Soviet scientists to laboratories and facilities in each other's country. A notable exchange of visits occurred in 1963. In May I led an American delegation on a tour of Soviet nuclear energy facilities. Everywhere we went we were treated with the warmest hospitality. Our hosts accepted unhesitatingly the itinerary we had proposed and even included some additional sites they thought would interest us. Our journey achieved a number of "firsts." We were the first foreign group to visit the Soviet reactor testing station at Ulyanovsk and the site of the high energy accelerator at Serpukhov, the first Western visitors since World War II to visit the Radium Institute in Leningrad, and the first foreign group to see certain industrial reactors and other scientific equipment. Overall, I believe this visit contributed to the improved relations that made possible the negotiation, some two months later, of the Limited Test Ban Treaty.

A high point of the trip took place on May 29, when I met for over an hour with Leonid Brezhnev, who occupied at that time the largely ceremonial position of "president" of the USSR. While interesting at the time, this talk became even more so in retrospect, since Brezhnev's elevation to the post of general secretary of the Communist party occurred less than a year and a half later. It is symptomatic of the extreme insularity of Soviet leaders at that time that, as I was told later, I was only the second American to meet Brezhnev, the other having been Gus Hall, head of the U.S. Communist Party. A reciprocal visit by Chairman Petrosyants and his colleagues took place during the period from November 16 to December 3, 1963. It was while the Soviet group was visiting the Radiation Laboratory in Berkeley on November 22, that news came of President Kennedy's assassination. I will always be grateful for the sympathetic and sensitive behavior of our visitors during the aftermath of the assassination. They seemed sincerely to share our grief.

The first Soviet-American experiment in the nuclear sciences began in 1970. Pursuant to the fourth Memorandum on Cooperation, six U.S. physicists were assigned for six months to the High Energy Physics Institute at Serpukhov, working with Soviet scientists at the 70 Bev (billion electron volts) accelerator. In return Soviet scientists were to be assigned to the 200 Bev accelerator at Weston, Illinois, when it would be completed.

Another exchange of scientist visits led by Chairman Petrosyants and me took place in 1971. The Soviet group visited nuclear facilities throughout the United States from April 15 to 28. Our return tour took place between August 4 and 20. Following visits to laboratories in the Moscow area, an extensive ten-day tour by our party utilized a specialized Aeroflot plane used by Premier Kosygin on some of his trips. Travelling a distance of 12,110 kilometers, we visited nuclear facilities in and around eight cities: Minsk, Leningrad, Ulyanovsk, Novosibirsk, Tashkent, Erevan, Tbilisi, and Schevchenko--with a stop at Samarkand. I also attended meetings and visited research laboratories in Moscow after our tour.

On entering the Soviet Union at this time, I had newly acquired and rarely bestowed status of Foreign Member of the USSR Academy of Sciences. This honor had been conferred on me during the Academy's General Assembly in March.

These trips involved extended separations from my family, disruptions of normal eating and sleeping habits, exhausting schedules at nearly every stop, intensive in-flight "homework" to prepare for the next visit, a host of minor frustrations and inconveniences, and, on return, a mountain of accumulated work. But the rewards were great. I am convinced that my personal discussions with scientists and statesmen of other nations, and visits to their scientific facilities, contributed significantly to the constructive use of the peaceful atom and nuclear safeguards and to better international relations generally. It was gratifying to know that President Johnson, for one, in repeatedly urging me to take such trips, felt the same way.

During my travels I met a rather large number of heads of state or high government officials--British Prime Minister Harold Macmillan, Soviet chairman Nikita S. Khrushchev, Soviet President Leonid I. Brezhnev, Soviet Foreign Minister Andrei A. Gromyko, and V. M. Molotov of the Soviet Union, Swedish Prime Minister Tage Erlander, Indian Prime Minister Indira Ghandi, Pakistani President Ayub Khan, President Chiang Kai-shek and Premier C. K. Yen of Taiwan, Finnish President Urho Kekkonen, Austrian Chancellors Josef Klaus and Alfors Gorbach, Austrian State Secretary Karl Gruber, Yugoslav Vice President Aleksandar Rankovic, Trygve Lie of Norway, U.N. Secretary General U Thant, Israeli Prime Minister Levi Eshkol, Irish President Eamon De Valera, Prime Minister Kittikachorn Thanan of Thailand, Brazilian Foreign Minister Jose da Magalhaes Pinto, President Juan Carlos Ongania of Argentina, Mexican Foreign Minister Antonio Carrillo Flores, President Nicolae Ceausescu of Rumania, Moroccan Foreign Minister Mohamed Sylnassi, Tunisian Foreign Minister Habib Bourguiba of Tunis, Ethiopia's Emperor Haile Selassie and Crown Prince Asfa-Wossen Haile Selassie, Vice President Daniel arap Moi of Kenya, Prime Minister Kofi A. Busia of Ghana, Spanish Foreign Minister Gregorio Lopez Bravo, Prince Juan Carlos and Princess Sofia of Spain, Korean President Park Chung Hee, President Suharto of Indonesia, Prime Minister Amir Abbas Hoveyda of Iran, and Canadian Foreign Minister Mitchell Sharp.

The trips were not without some personal "spin-off"--the Danube at Budapest on a clear September day, Roman paving-stones on the Appian Way, the Bibi Khanym Mosque in Samarkand, Inca ruins in Peru, the Great Buddha at Kamakura, the Temple of Bacchus at Baalbek, the Acropolis in Athens, the ruins of Carthage, the house where Beethoven composed "Fidelio," the mighty Congo 2,000 feet below me winding through green jungle toward a dam construction site, canals in Venice, the charm of exotic animals in Australia, sunset over Scotland's downs--kaleidoscopic contacts with nature and the history of man.

## VI. Support of research

### Physical sciences research programs

From its inception the AEC has felt a responsibility to support research in both the physical and life sciences. These endeavors have been spearheaded by a succession of scientist-commissioners. Starting with Robert Bacher, these have included Henry Smyth, John von Neumann, Willard Libby, John H. Williams, and, during my tenure, in addition to myself, Leland Haworth and Gerald Tape.

The research supported by the AEC in the physical sciences has covered a wide spectrum of knowledge and applications, including the search for new knowledge about nuclear structure and behavior, the discovery of new elements, and the expansion of nuclear technology, among other subjects. Much of this work requires very large, specialized machines. This is one reason why most of AEC's physical research program is carried out in National Laboratories or other AEC-owned, contractor-operated research and development centers. The remainder--about one fourth in terms of expenditures--of the program involves the support of unsolicited research proposals submitted by private organizations, usually educational institutions. In the off-site research program--mostly university research--the number of contracts remained around 550, while the total annual cost level increased from about \$47 million in 1961 to some \$73 million in 1970.

#### Accelerator facilities:

During my tenure there were major construction activities under the physical research program centered around the building of large accelerator facilities for research on elementary particles. At the same time, the need to proceed with plans for more complex and expensive machines, such as the National Accelerator Laboratory and the Los Alamos Meson Physics Facility, coupled with budgetary stringencies, forced the AEC to shut down two older, more obsolescent machines--the Brookhaven cosmotron and the Cal Tech synchrotron--in the 1960's.

The principal accelerator improvement program planned for the Alternating Gradient Synchrotron (AGS) at Brookhaven National Laboratory was the "conversion project." The primary objectives were modification of the AGS for operation at increased intensities and provision for improved experimental facilities. The 50 Mev injector was to be replaced with a new proton linear accelerator injector having an energy of 200 Mev. The conversion was authorized in fiscal 1966. Completion is expected in fiscal 1972. The converted AGS will make available secondary beams of nucleons, pions, muons, neutrinos, and strange particles of higher intensities. The higher intensity will also permit support of more experiments running in parallel and sharing the particles of each machine pulse.

The Cambridge Electron Accelerator (CEA) was constructed at Harvard University at a cost of \$10.2 million and by August 1962 had achieved an energy of 6.2 Bev. It is operated under an AEC contract with Harvard and is co-sponsored by MIT.

In August 1963, the Princeton-Pennsylvania Accelerator (PPA) of Princeton University reached its design energy of 3 Bev and, following a brief debugging period, operation was sufficiently reliable to schedule experiments. The first 3 Bev proton beam survey experiments were performed in November 1963. By January 1964, an active research program was under way. The PPA was from the beginning under the joint management of the University of Pennsylvania and Princeton University. In March 1971, fiscal stringencies caused the \$11.5 million machine to be shut down. AEC support ended on July 1, 1971. Other sources of operating funds were being sought.

The \$50 million, 12.5 Bev proton Zero Gradient Synchrotron (ZGS) at the Argonne National Laboratory (ANL) near Chicago was completed in the summer of 1963. The first scientific experiment there began in June 1964. The operating efficiency (the fraction of scheduled machine time actually delivered) was at first between 60 percent and 80 percent. Between three and five experiments were carried out simultaneously. Some two-thirds of the operating time was being devoted to the research program, the remainder being given to machine studies. Through the several years of ZGS operations, steady improvement in operating efficiency has been achieved.

An early decision faced by President Johnson was whether he should support the construction of the large fixed-field alternating gradient (FFAG) accelerator being developed by the Midwest Universities Research Association (MURA). There was a serious difference of opinion in the high energy physics community about whether such a high intensity, but relatively low energy (10 Bev) proton accelerator should be supported (at a cost of \$115 million to \$125 million) in competition with other research facilities, such as a high energy (200 Bev) proton accelerator. The president decided to stop this development but, as a sort of compensation to the universities involved, he directed me to explore and implement a plan to involve some of them in the operation of Argonne National Laboratory.

The Argonne Universities Association (AUA), an organization of 26 Midwestern universities, came into existence in July 1965 in response to this request from President Johnson. It was organized to aid in stimulating scientific and technological advancement in the midwest, assisting and supporting ANL staff, and helping make the facilities at ANL broadly available to the scientific community. The high energy physics program at ANL is, of course, only one of many major programs at this multi-purpose laboratory.

In November 1966 a tripartite contract involving the AEC, AUA, and the University of Chicago went into effect. Under this contract, AUA has the primary role for formulating, approving, and reviewing policies and programs of ANL. The contract also states that the University of Chicago is to be the operator of the Laboratory in accordance with policies established by the AUA and that the University shall collaborate with AUA developing long-range objectives, programs, and facility plans, and in evaluating the program accomplishments of the Laboratory.

Congressional hearings on a 1957 Stanford University proposal for the construction of Stanford Linear Accelerator culminated in authorization of \$114 million for the project in 1961. The AEC entered into a contract with Stanford for the design and construction of the 20-Bev electron facility on a 480-acre site near Palo Alto, California, which was leased to the government for 50 years. Actual construction of the accelerator was begun in July 1962. It was constructed within the initial cost estimate. In May 1966 electrons were accelerated for the first time through the full length of the accelerator obtaining an energy of about 10 Bev. Soon thereafter an energy of 18.4 Bev was achieved. Research operations with the accelerator began in late fall of 1966, six months ahead of the original schedule, and in January 1967 the machine exceeded its design objective when a beam of 20.16 Bev was achieved.

Following completion of a major improvement program, the Bevatron at the Radiation Laboratory of the University of California at Berkeley reached, in March of 1964, a beam intensity of  $0.8 \times 10^{12}$  particles per second.

The Berkeley Heavy Ion Linear Accelerator (HILAC), unlike its sister machine at Yale, had its intensity increased several times. The discovery at the Lawrence Radiation Laboratory of unexpected variable energy capabilities in the HILAC was accomplished during 1962. A \$1.5 million remodeling and modernization program was largely completed in the spring of 1965. It gave the machine the potential of accelerating particles continuously. The intensity (number of particles accelerated in a given time) was increased by about 800 percent for heavy nuclei such as neon and argon, and about 1,000 percent for lighter nuclei such as carbon and oxygen. Suppression of unwanted radiation, which formerly swamped counters in some experiments, opened up new areas of experimentation with sensitive counters. The modification provided for beam splitting and multiple experimentation for the first time, and it reduced the time required for a typical HILAC experiment. With highly desirable lower, monochromatic energies, ranging from 1 to 10 Mev per nucleon, the HILAC became able to elicit a large amount of detailed information on the structure and properties of complex nuclei.

A transformation of the HILAC was approved in 1970. The \$3 million overhaul began in February 1971. When it resumes full operation as a research machine in 1972, it will be known as the SuperHILAC and will feature a 3 million volt Cockcroft-Walton injector, improved electron-stripping capability and a 40 kilogauss quadrupole magnet, twice as powerful as any previous magnet of its size, for focusing the beam. Two new linear accelerator tanks, 60 and 100 feet long, will replace the old 15 and 90 foot tanks.

The SuperHILAC will be capable of accelerating all elements to energies between 2.5 and 8.5 Mev. Beam intensity will range from 100 billion ions per second for such heavy elements as uranium to milliamperes (10 million billion ions per second) for such light elements as carbon. It will be the world's first machine capable of accelerating all ions (including uranium) to energies high enough for nuclear penetration.

The 88-Inch Cyclotron accelerator at the Lawrence Radiation Laboratory, Berkeley, built at a cost of \$4.6 million, became operative in early 1962. Key features of the accelerator are its versatility in the medium-energy field (deuterons, helium ions, light heavy ions at 30 Mev per nucleon) and its beam intensity of some million-billion particles per second, about double that of the 60-Inch Cyclotron and 1,000 times greater than that of the 184-Inch Synchrocyclotron. The intense beam on the 88-Inch Cyclotron has allowed the production of research quantities of important isotopes of heavy elements.

In a meeting with President Johnson at the LBJ Ranch in December 1966, I succeeded in persuading him, over the objections of Budget Director Charles Schultze, to support the construction at the Lawrence Radiation Laboratory of a new type of accelerator, known as the Omnitron. This accelerator, the invention of Albert Ghiorso, was estimated to cost \$24 million and expected to be capable of accelerating substantial beams of heavy ions, over the entire range of elements up to and including uranium, to energies capable of penetrating into the nucleus of even the heaviest target nuclei. Unfortunately, due to the lack of backing by the director of the Lawrence Radiation Laboratory, support for the Omnitron was later stricken from the AEC budget by the Joint Committee on Atomic Energy and it was never possible to restore it. A little later, Ghiorso came up with the idea of using the HILAC as an injector of heavy ions into the Bevatron, a combination which came to be called the Bevalac. It would be capable of accelerating heavy ions to relativistic energies.

The building for the Isochronous Cyclotron (ORIC) at Oak Ridge National Laboratory was completed early in 1961 and the fabrication and installation of the cyclotron components approached completion by the end of 1961 at a cost of 3.7 million. The first proton beam at full radius was obtained in ORIC on March 19, 1962. In 1969 and 1970 major improvements were made in the ion-source of the ORIC so as to permit the acceleration of argon ions.

New isochronous cyclotrons were established during the 1960's at Texas A&M University, the University of California at Davis, and the University of Maryland. The Maryland machine has accelerated protons to more than 100 Mev, making it the world's highest energy operating isochronous cyclotron. An isochronous cyclotron injecting into a tandem Van de Graaff accelerator (called a cyclo-Graaff facility) was established at Duke University.

In view of the need for electron beams of higher intensity, resolution, and duty factor for higher energy nuclear physics research, a 400 Mev electron linear accelerator was built at MIT. It is scheduled for operation in late 1971. Operation of the Oak Ridge Electron Linear Accelerator (ORELA) began in 1969. New tandem Van de Graaff accelerators were established at ANL, Oak Ridge, Rice University, University of Minnesota, Yale University and BNL. The one at BNL is the world's highest energy Van de Graaff system accelerating hydrogen ions to an energy of more than 30 Mevs.

#### Research reactors, nuclear chemistry, neutrino detection:

The High Flux Isotope Reactor (HFIR) is discussed in section VIII.

The High Flux Beam Reactor (HFBR) at Brookhaven National Laboratory became operational on October 31, 1965. Built at a cost of \$12.5 million, this 40-thermal-megawatt reactor is cooled and moderated by heavy water and contains a heavy water reflector and provides a maximum flux of more than  $1.6 \times 10^{15}$  neutrons per square centimeter per second at full power. The HFBR is used for basic research in nuclear physics, nuclear chemistry, solid state physics and metallurgy.

The Ames Laboratory Research Reactor (ALRR) became operational on February 17, 1965. In 1968 researchers at the Ames Laboratory succeeded in growing a large, single crystal of solid helium and scattering neutrons (from the ALRR) off it to study the vibrations of the helium atoms in such a lattice.

Throughout the history of science, as a given area of research has developed, the interrelations between that discipline and others have increased. Never has this phenomenon been more apparent than in the chemistry research programs supported by the AEC's Division of Research. Some of the developments over the past decade have been: a) the synthesis of new elements and new isotopes, b) new insights into nuclear structures and properties, c) new methods for studying the chemistry of radioactive ("hot") atoms, d) new light shed on the chemical effects caused by ionizing radiation, and e) further development of new analytical techniques.

The past ten years were marked by increasing applications of nuclear methods. These included neutron diffraction, Mossbauer effect studies, electron spectroscopy for chemical analyses, and determination of chemical structures. Much of the role of chemistry in nuclear energy related programs, such as the production of fissionable materials, reactor chemistry, and the large-scale production of radioisotopes, is attributable to past research supported by the AEC. Two specific examples are the californium-252 production program and Oak Ridge's molten salt reactor program.

Efforts to extend the Periodic Table of the Chemical Elements have been successful. At the Berkeley Radiation Laboratory element 103 (lawrencium) was discovered in 1961, while elements 104 and 105 (tentatively named rutherfordium and hahnium) were discovered in 1969 and 1970, respectively. New element synthesis, through the heavy ion approach, became increasingly difficult with increasing atomic number. New methods of detecting new heavy isotopes and elements were developed. An important discovery made at the Oak Ridge National Laboratory was the identification of transuranium elements by x-ray spectroscopy.

By 1966, a solar neutrino experiment (production of argon-37 from chlorine-37) was being conducted by the Brookhaven National Laboratory 4,900 feet below the earth's surface in the Homestake Mine at Lead, South Dakota. Data for 1967 and 1968 were collected and the background noise of the counting instruments were reduced. Significant improvements in instrumentation led to the first positive evidence for the detection of neutrinos from the sun. The astrophysical theory of neutrinos would suggest that one should have seen some two to seven events a day. In 1970 the argon-37 production rate was found to be  $0.5 \pm 2$  events per day. The neutrino intensity found is at most one-fifth of that predicted by the best theoretical calculations of the sun's behavior. This result calls into question some fundamental and widely accepted concepts in astrophysics.

#### Metallurgy, solid state physics and isotope separation:

Greater availability of transuranium isotopes caused an upswing of work in the metallurgy and solid state physics of these elements. A committee was established by the AEC in 1961 to help coordinate the research conducted in these fields by various AEC divisions. Several important scientific achievements occurred in the metallurgy of plutonium during this period. A method for preparing high-purity metallic plutonium by electrorefining from a molten salt bath was developed at Argonne National Laboratory (ANL) in 1960. Single crystals of plutonium were prepared for the first time in 1967 at ANL. Ductile metallic alpha-plutonium was made at Pacific Northwest Laboratory (PNL) in 1970 by inducing grain refinement through extrusion of high-purity metal.

Following the discovery, announced in 1961, of magnetically hard superconductors, applications in many AEC programs were immediately obvious. Basic research projects were reoriented within the metallurgy and materials program to accelerate progress in the physics and metallurgy of superconductivity and applied efforts were initiated in the high-energy physics and controlled thermonuclear research programs.

In the field of extra nuclear properties of matter, research studies were carried out on a variety of topics, including optical spectroscopy, mass spectrometry, behavior of low-energy ions in matter, magnetic resonance techniques, and low-temperature phenomena.

Electromagnetic separations of stable isotopes and isotopes of the heavy elements were performed at Oak Ridge National Laboratory. In 1970, ORNL completed 25 years of separating and distributing enriched isotopes. Starting in 1945 with 4 calutrons, the program has grown to one which has 34 separators available for use in the separation of stable isotopes. In addition, a doubly-contained facility including eight calutrons, together with associated laboratory and process area, was completed and put into operation for the isotopic separation of the isotopes of heavy elements such as thorium, uranium, plutonium, americium, and curium. Samples were made available for all AEC research programs as well as for member countries represented on international data committees, especially for neutron cross-section measurements.



## University, materials, radiation research:

AEC research projects with educational institutions are generally supported by means of a Special Research Support Agreement. Under this type of arrangement the AEC pays the institution its cost of performing the research, up to a specified amount (referred to as the "support ceiling") in consideration for its performance of specific research activities described in the agreement and in accordance with the provisions of the agreement.

Larger research projects, generally those with an estimated cost in excess of \$250,000 annually, may be financed through a cost-type contract which permits closer AEC surveillance of the work in accordance with appropriate contractual provisions not included in a Special Research Support Agreement.

During the 1960's, the number of scientific man-years supported under the Physical Research Program increased from about 3,200 to some 4,700 per year, while the number of graduate students participating in the program went from around 2,600 to nearly 3,700. Scientific publications resulting from the program increased from some 4,000 annually during the early 1960s to more than 5,400 in 1970.

In 1959 the Federal Council for Science and Technology instituted the Interdisciplinary Materials Research Laboratory (IDL) Program wherein participating agencies provide block research support and assist in the construction of research facilities at selected universities. The AEC, already supporting substantial numbers of research projects on the campuses of the University of Illinois (Champaign-Urbana) and the University of California (Berkeley), agreed to sponsor IDL's at these institutions.

The IDL at Berkeley was formed as part of the Lawrence Radiation Laboratory (LRL). Selected members of the staff of the campus Metallurgy and Ceramics Engineering departments joined with the high temperature chemistry group under Professor Leo Brewer of the campus Chemistry Department and became the Inorganic Materials Research Division of LRL with Brewer as its Director. A research laboratory was completed and occupied at LRL in 1965.

In 1961 Congress authorized the AEC to construct a Materials Research Laboratory on the campus of the University of Illinois. However, Congress declined to appropriate the necessary funds. In 1964, the authorization was rescinded after the Advanced Research Projects Agency of the Department of Defense, as part of its IDL program, provided the University of Illinois with the necessary assurances to go ahead and construct a facility with its own funds on a DOD pay-back basis. A laboratory building was completed in 1966. It is known as the Materials Research Laboratory (MRL). Professor Robert Maurer of the Physics Department has been the Director of the MRL.

For the Notre Dame Radiation Laboratory the decade 1961-1971 represents a period of recognition, consolidation, expansion and trial. A federal appropriation for construction of a Radiation Research Building was made in 1961 and construction formally began on January 15, 1962. The new building was first occupied by the Radiation Laboratory on March 15, 1963. In October 1963, the staff numbered 1000 of whom 62 (i.e., those requiring repeated access to radiation sources and other specialized equipment) were actually housed in the new building. Just as congestion had been divisive, freedom of motion suddenly resulted in a spirit of cohesiveness. Theoretical developments were encouraged and the unity of objective in the experimental groups became more clearly apparent. The major radiation sources were the 10 kCi  $^{60}\text{Co}$  source, the kCi  $^{60}\text{Co}$  underwater source and the new and very flexible 2 Mev Van de Graaff generator. Shortly thereafter a very elaborate mass spectrometer was acquired. Subsequently, the growth and increasing diversity of interests among the senior personnel of the Laboratory resulted in some fractionation of the efforts of the experimental group into smaller groups. These included one on pressure effects and another on luminescence and associated studies.

## Biomedical research programs

### Irradiation of ecosystems:

The Brookhaven ecology forest program was initiated in 1961 as a part of the Brookhaven radiation ecology project. Its purpose was to investigate the nature of the changes following exposure of an oak-pine forest in the temperate zone to low levels of ionizing radiation. The project, designed to run for many years, has been yielding classic information on physiological characteristics of organisms growing under their local natural conditions; the sensitivity of this type of forest to gamma irradiation; the long-term genetic modifications in each component of the system; and a variety of associated phenomena such as the direct and indirect effects of irradiation on insect populations in the litter.

### Marine sciences:

Investigators from the Woods Hole Oceanographic Institution isolated a nitrifying bacterium, Nitrocystis oceanus, from ocean water collected from radioactive tracer studies. Nitrocystis is able to oxidize ammonia to nitrate. Until this discovery the mechanism whereby organic nitrogen is converted back to an inorganic nitrate was unknown. The bacterium has now been cultured from water at all depths down to several thousand feet in all major oceans.

An unexpected observation by radioecologists at Oregon State University promises to revise present ideas about the size of radiation doses to aquatic organisms. Organisms living at depths below the penetration range of cosmic radiations were thought to be exposed only to the radiations from the naturally radioactive isotopes built into their cytoplasm, chiefly potassium-40, the radiation dose from which would equate to about 30 mrad per year. Analyses of fish for the radioactive isotopes lead-210 and polonium-210 disclosed amounts of these isotopes that would raise their annual radiation dose about tenfold. But, since the radioactivity is restricted almost exclusively to the liver, viscera, and bones, no health hazard for man is anticipated.

### Thermal effects studies:

In 1968 the AEC's Division of Biology and Medicine expanded its long-established program on the effects of thermal additions to natural bodies of water. The result is an improved capability for predicting the effects on the local biota of heated waste water from nuclear power plants. Thus, the investigations of the thermal discharges from single nuclear power plants indicate that the effects are confined to a small local area and do not endanger the ecosystems of the recipient bodies of water.

### Effects of radiation on man:

The research protocols of the Atomic Bomb Casualty Commission (ABCC) at Hiroshima and Nagasaki, Japan, have become the model for many other large-scale prospective epidemiological studies. With the cooperation of the Japanese people and government, three major lines of investigation are now functioning smoothly to detect and measure long-term effects of exposure to the mixed radiations from nuclear weapons. By careful physical examinations every other year, a selected group of originally about 10,000 exposed and 10,000 matched non-exposed people are being followed to detect abnormalities and diseases in their incipient stages. An additional approximately 45,000 exposed and 45,000 unexposed are being followed for longevity and cause of death. The third program is a study of the pathologic anatomy of persons in control and exposed groups.

As of 1970, 25 years after exposure, only three effects can be identified with assurance. 1) A characteristic cataract developed on the posterior sub-capsular surface of the lens of the eye in fewer than 100 people within five years of exposure. The cataract is similar to those seen in the small number of early cyclotron workers who thoughtlessly looked directly into the beam. The cataracts are amenable to surgery. 2) The annual incidence rates of leukemia five to nine years after exposure rose six to seven times over those in the control population. The leukemias were histologically identical with those which occur spontaneously among the Japanese. The subsequent rate declined until now it is just a little higher than the rate in the control population which, interestingly, has been gradually decreasing. 3) The incidence of thyroid tumors has begun to be statistically higher in the exposed compared to the control population and there seems to be a positive correlation with radiation dose. The tumors are indistinguishable from the thyroid neoplasms occurring spontaneously.

#### Transuranium Registry:

This special registry was organized in order to maintain close medical contact with workers who have accidentally accumulated an appreciable body burden of the recently man-made transuranium elements, chiefly neptunium, plutonium, americium, and curium, during the course of their employment. Fortunately, contaminating accidents have occurred infrequently and have on the whole been modest to negligible, so that knowledge of the toxicity of these radioelements had to be based on their effects in experimental animals. The resulting experimental data indicate that the toxicity of this group of elements is comparable to that of radium, but it is still necessary to know whether man will react to these radioactive metals like the experimental animals. Since it is unacceptable to use human volunteers for such toxicologic investigations, a registry is the only device available for maintaining the continued contact needed for learning the outcome, if any, of such contamination among humans. The voluntary cooperation of the workers, including releases for autopsy study, has been outstanding.

#### Beneficial applications of L-Dopa:

The discovery that daily doses of the amino acid, L-3,4-dihydroxyphenylalanine or L-Dopa, are of great value in relieving the symptoms of Parkinson's disease was an outgrowth of studies on manganese toxicity in miners by Brookhaven National Laboratory investigators. L-Dopa therapy represents (in 1971) the best effective medical treatment of Parkinsonism and the side effects of the chemicals are tolerable. In addition to its clinical usefulness, L-Dopa has introduced new concepts in the management of neurological disorders affecting the structures at the base of the brain. Nondestructive, sequential studies of the metabolism of radiolabelled L-Dopa and its analogs raise the possibility of uncovering the neurologic basis of Parkinson's disease which affects approximately 500,000 Americans.

#### Beneficial applications of hormone assay:

An in vitro clinical diagnostic procedure for assay of circulating hormones has been developed in which appropriate radioisotopes or antibody reagents labelled with radioisotopes are added to small samples of blood or other tissues taken from patients. This chemical or immunochemical type of radioassay is highly sensitive and specific. In many cases it can be used as a rapid, inexpensive office procedure for estimating the blood level of a number of hormones. The technique is of particular importance as it does not expose the patient to radiation, an advantage that is especially desirable in the case of children and pregnant women in whom irradiation is to be avoided.

### Beneficial applications of californium-252:

A program for evaluating the effectiveness for cancer therapy of neutrons from naturally fissioning californium-252 was begun about three years ago when californium-252 sources were loaned to two medical institutions. The initial studies focussed on the dosimetry and radiobiology of this man-made radioisotope, first in normal malignant cell cultures and then on the skin of swine. To date (1971) 17 specially selected patients with far-advanced carcinoma have received radiation therapy by means of the X- and gamma-rays and neutrons from californium-252 implants; by far most of the tissue dose results from the neutron flux. The californium-252 is sealed in platinum-iridium tubes like those used to contain radium-226 for radium implant therapy.

### Beneficial applications of technetium-99m and the "cow":

In 1960 the "hot atom group" of Brookhaven National Laboratory suggested that technetium-99m ought to be used for diagnostic purposes. However, the six-hour half-life of this radioisotope, a desirable property from the standpoint of low radiation dose to the patient, tended to restrict it to laboratories close to facilities having neutrons to irradiate molybdenum targets. The Brookhaven group solved this transportation impediment by designing the following isotope generator system: the parent radioactive isotope, which is firmly adsorbed onto a resin, decays into the daughter radioisotope not retained on the resin; an appropriate eluant then removes at will the daughter isotope in high degree of purity ready for conversion into a pharmaceutically acceptable form. In the case of technetium-99m the parent radioisotope is the radioisotope molybdenum-99. This kind of generator was given the name "cow" since the eluant percolates down through a vertical tube packed with the resin and the daughter radioisotope is "milked," from the generator. The basic concept is now used to obtain many short-lived radioisotopes.

### Beneficial applications of the Anger camera:

The Anger Camera, named for its developer, Hal Anger, a scientist at the Donner Laboratory in Berkeley, can provide a series of scanning pictures of a total area made a few seconds or minutes apart and so record the kinetics of change of concentration of an injected radioactive isotope in a tissue. In addition, by use of focussing collimators and a refined computer program, a depth dimension can be achieved. In this way a series of tomographic pictures can be taken which give a three-dimensional picture of a tumor as well as indicating the depth of a defect from the surface of the body. Today virtually every major nuclear medicine facility routinely uses this camera in its diagnostic clinics. The scanning instrument, however, retains its position as the mainstay diagnostic tool.

### Beneficial applications of biomedical engineering:

At the Oak Ridge National Laboratory the molecular anatomy (MAN) program in biomedical instrumentation, jointly sponsored by the National Institutes of Health and the AEC, has led to the development of a number of centrifuge systems that have revolutionized several areas of biomedical research and development. These zonal centrifuges are highly effective in separating cell particles, various large biologic molecules, and animal and human viruses in the purest forms attained to the present time (1971). For example, a large 1.7 liter continuous-flow centrifuge is being employed by a number of pharmaceutical houses to isolate the influenza virus that now is used to manufacture the pure influenza vaccine which the world has chosen for prophylactic immunization. The ability of the zonal centrifuge rapidly to isolate small amounts of undamaged specific biomolecular species from large volumes of fluid has made this instrument a necessity for pharmaceutical houses and laboratories preparing pure enzymes, nucleic acids, proteins, and hydrolysis products.

## VII. Los Alamos Meson Physics Facility and 200 Bev Accelerator

### The Los Alamos Meson Physics Facility (LAMPF)

In August 1963, the Los Alamos Scientific Laboratory (LASL) submitted to the AEC a proposal for the construction of a "Los Alamos Meson Physics Facility" (LAMPF), at an estimated cost of \$47,142,000. It was proposed that architect-engineering work be initiated in the first quarter of fiscal 1965. In the project's description it was stated that it would provide for a meson physics facility consisting of a linear accelerator capable of producing a 1 milliamp beam of protons at 800 Mev, a suitable target and experimental area at the output end of the accelerator for conducting an experimental program using mesons, an accelerator tunnel, support areas and utilities. The AEC responded favorably to this proposal.

In its markup of the AEC's 1967 budget, the Bureau of the Budget eliminated \$3 million requested for LAMPF. This was among a number of adverse actions on the AEC budget that I appealed to the President during a visit to his Texas ranch in December 1965. After hearing me and Budget director Charles Schultze debate the issue, the president restored the funds. It was now possible to proceed with the design and construction of LAMPF.

Groundbreaking ceremonies were held at Los Alamos on February 15, 1968, the 25th anniversary of the founding of LASL. I delivered an address at the ceremonies.

### The 200 Bev Accelerator

In May 1963, the AEC, acting on a recommendation by a joint panel of the President's Scientific Advisory Committee and its own General Advisory Committee, authorized the Lawrence Radiation Laboratory, Berkeley, to proceed with an advanced engineering study of a proton accelerator in the unprecedented energy range of 200 Bev (billion electron volts).

As this study proceeded, great interest was evinced in the scientific community. The Joint Committee on Atomic Energy also followed it very closely. On January 25, 1965, I forwarded to President Johnson a report that had been requested by JCAE Vice Chairman Holifield. Entitled "Policy for National Action in the Field of High Energy Physics," the report summarized the status of national and international efforts in this field and included among its proposals construction of the 200 Bev accelerator. In transmitting the report to Holifield, the president commended the AEC and its staff "for their efforts in working out a well-considered program."

Earnest consideration began to be given now to where the accelerator would be located. Bearing in mind its high cost (estimated at \$350 million), it was evident that there could be only one such facility in the United States. It was important, therefore, that it be accessible to all qualified experimentalists. On January 17, 1965, the NAS hosted a meeting of 25 university presidents at which this and related matters were considered. This meeting initiated a train of events that culminated in the formation of the Universities Research Association, which was to be under contract to the AEC to construct and operate the accelerator.

It was soon decided that there should be a national competition to select a site. On March 2, 1965, I wrote to Frederick Seitz, president of the NAS, asking that his organization study the problems associated with selecting a site and listing several general criteria. A month later a site evaluation task group was established within the AEC to conduct a preliminary screening of proposed sites. This effort, covering 126 site proposals involving over 200 potential locations in 46 states, was completed by the end of August. On September 15, the AEC publicly identified 85 site proposal packages that it had transmitted to the NAS for further evaluation. To assist the NAS, the AEC organized eight site visit teams to inspect and gain further specific data on all 85 locations.

Meanwhile, design work had been continuing at LRL. Its continuation was placed in jeopardy when Budget Director Charles Schultze struck our request for \$4 million from the FY 1967 budget. This was one of the matters I took up with the president at his ranch on December 10, 1965. When he ruled in our favor, it represented a turning point in the fortunes of the 200 Bev accelerator. From this point forward, the funding process in the Executive Branch proceeded on a schedule pretty much in tune with the project's requirements.

The report of NAS's Site Evaluation Committee was received on March 21, 1966. It identified six sites as clearly superior to the others. These were at Ann Arbor, Michigan; Brookhaven National Laboratory, New York; Denver, Colorado; Madison, Wisconsin; the Sierra Foothills near Sacramento, California; and South Barrington and Weston, both near Chicago, Illinois.

Following community opposition, South Barrington was soon withdrawn from the competition. On April 11, the AEC announced that a group of AEC officials - headed by me - would inspect each of the six sites. Such visits were indeed made. In addition, the AEC evaluated a number of factors relating to the five proposals. These included construction costs, civil rights and equal opportunity aspects, electric power requirements, air accessibility, proximity to universities, projected growth patterns for these schools, probable university involvement with the facility, and the general effect it might have on the surrounding region.

On December 16, 1966, the AEC announced that it had selected the Weston, Illinois site. Maintaining to the end his stance of leaving this decision entirely to the AEC, despite what must have been some strong political pressures on him to intervene in behalf of one site or another, the president specifically requested that he not be notified in advance of the public announcement.

In April 1967, following the suggestion of Illinois Congressman Frank Annunzio, among others, I announced that the National Accelerator Laboratory would be named in honor of the late Enrico Fermi. On December 1, 1968, a wintry day in Chicago, with approximately 1,000 people in attendance, laboratory director Robert R. Wilson and I broke ground for the project. In my address, I stated: "Symbolically, we could say that the spade that breaks ground on this site today begins our deepest penetration yet into the mysteries of the physical forces that comprise our universe."

In retrospect, it might be said that the success in getting this project launched was due in large part to an early shift of the debate from the question of whether we should build such an accelerator to the question of where we should build it. The cooperation of all concerned in the resulting competition, including the White House, the NAS, many members of Congress, and the AEC, helped to give the process credibility and wide acceptance.

## VIII. The National Transplutonium Production Program

The National Transplutonium Production Program may be said to have had its genesis on October 24, 1957, when I wrote to Atomic Energy Commission Chairman Lewis Strauss about the need for a "very high flux reactor" and for a two-fold program to 1) irradiate  $^{239}\text{Pu}$  in a high flux production-type reactor to produce  $^{244}\text{Cm}$  and 2) irradiate curium in a "very high flux reactor" to produce berkelium, californium, and einsteinium in substantial quantities (milligrams!).

In late 1964 a Transplutonium Program Committee was officially formed as an advisory body to the director of AEC's Division of Research. The same group of scientists had previously served as, first, the "Ad Hoc Committee for Reactor Actinide Production" and, then, as a "Transplutonium Advisory Group" with membership as follows: A. R. Van Dyken (AEC, Chairman), Richard W. Hoff (LRL), Paul R. Fields (ANL), Richard Dodson (BNL), Robert A. Penneman (LASL), T. Raymond Jones (AEC, Vice-Chairman), D. E. Ferguson (ORNL), Albert Ghiorso (LRL), O. Lewin Keller (ORNL), A. Chetham-Strode (ORNL), and Clark H. Ice (SRP). The Committee membership has remained unchanged except that O. Lewin Keller replaced A. Chetham-Strode following the latter's sudden and untimely death on December 23, 1965.

The interest developing in 1963 in the use of  $^{244}\text{Cm}$  and  $^{242}\text{Cm}$  for isotopic heat sources led to a proposal for production of  $^{244}\text{Cm}$  at the Savannah River Plant (SRP) in South Carolina. In May of that year, the AEC approved initiation of a large-scale program to produce  $^{244}\text{Cm}$ ; subsequently, it was decided that a pilot production program should precede any large-scale effort. Accordingly, a pilot program to make about 3 kg of  $^{244}\text{Cm}$  to demonstrate production techniques and provide material for tests was approved by the AEC on September 6, 1963.

Curium production was carried out as a main-line effort at SRP in two stages. The first, designated Curium-I, involved irradiation of  $^{239}\text{Pu}$ -Al alloy material to almost complete burn-up of the  $^{239}\text{Pu}$ . The targets were then chemically processed and the actinides recovered, refabricated as Al alloy, and reirradiated at a high flux, about  $10^{15}$  n/cm<sup>2</sup>/sec, in a second stage designated Curium-II. Curium-I was carried out in 1964 and Curium-II in 1966. The production concept of high flux operation of an SRP reactor for Curium-II was evaluated immediately following Curium-I; chemical processing of the original Curium-I targets took place at SRP in 1965.

Transplutonium Production Program plans originally were that all additional irradiations of  $^{242}\text{Pu}$ ,  $^{243}\text{Am}$  and  $^{244}\text{Cm}$  following their recovery from the early SRP irradiations would be carried out in the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory (ORNL). Advantage was taken, however, of the high flux operation of the SRP reactor in 1965 to accelerate transplutonium production for the research program by continuing the irradiation of a portion of the  $^{242}\text{Pu}$  produced for HFIR feed at SRP.

The high flux irradiation was carried out in 1965 at fluxes in excess of  $2 \times 10^{15}$ . For these irradiations, ORNL contributed 520 g of  $^{242}\text{Pu}$  from the 930 g that had been delivered to ORNL following the two campaigns originally carried out to provide target material for HFIR. The  $^{242}\text{Pu}$  was fabricated into three types of slugs.

Finally, eight SRP slugs were fabricated at SRP, each with about 35 g of  $^{242}\text{Pu}$ . These were also charged at the beginning of the high flux run in early 1965. The high flux run lasted one year through February 1966, and was followed by another run in 1966.

The HFIR was authorized in FY 1961 for construction at ORNL at an estimated construction cost of \$12 million. The actual cost for construction was \$14,718,000. HFIR went critical August 25, 1965. By the end of 1965 it had operated at 50 MW, and in May 1966, approval was given for 100 MW operation. Cycle 2 (operation on the second core) was initiated June 30, 1966 and completed July 31, 1966, reaching a power level of 75 MW. Cycle 3, initiated August 9, 1966 and completed September 4, 1966, achieved a power level of 90 MW. Full reactor design power, 100 MW, was reached with Cycle 4 which was initiated September 9, 1966, and ran through September 30, 1966. Many full power cycles followed. From the very beginning, reactor cycles were averaging better than 2200 megawatt days (MWD), as compared to the original design estimate of 1500 MWD.

Construction of the facility for chemical processing of the transplutonium products of these neutron irradiations, the Transuranium Processing Plant (TRU), was authorized in FY 1963 and construction started in July 1963, and completed on schedule in May 1965. Its cost of construction, \$8,818,000, was only slightly higher than the original estimate. Equipment for initial operation was installed at the beginning of 1966. TRU's first "hot" processing took place in July 1966. During its first year of operation,  $^{244}\text{Cm}$ ,  $^{243}\text{Am}$ ,  $^{249}\text{Bk}$ , and  $^{252}\text{Cf}$  were isolated.

During the second year of operation of TRU, through May 31, 1968, 17 processed targets processed in 1967 yielded around 5 mg of californium. A major campaign to recover, purify and make available multigram amounts of  $^{243}\text{Am}$  and  $^{244}\text{Cm}$  from the original SRP raffinate solution was conducted. Products, including 70 g of curium and 25 g of americium, were shipped to about a dozen customers. This was followed by many more such campaigns and shipments.

In early 1968 three special californium targets were fabricated and irradiated in HFIR to produce einsteinium. A secondary purpose for the irradiations was to refine some of the calculated values of the cross sections in the production chain of isotopes from californium. It was discovered that the capture cross section of  $^{252}\text{Cf}$  is considerably higher than previously supposed, apparently in the range of 40 to 50 barns instead of 7 to 10. About three milligrams of  $^{252}\text{Cf}$  were irradiated in March 1968 and produced approximately 6 micrograms of  $^{253}\text{Es}$ . This was followed by a continuing program of irradiations.

As a result of this National Plutonium Production Program, by the end of the decade, about 3 kg of curium (mainly  $^{244}\text{Cm}$ , containing also a mixture of the heavier isotopes  $^{245}\text{Cm}$ ,  $^{246}\text{Cm}$ ,  $^{247}\text{Cm}$ , and  $^{248}\text{Cm}$ ), about 70 mg of  $^{249}\text{Bk}$  (which is a source of an equal amount of daughter  $^{249}\text{Cf}$ ), about 500 mg of  $^{252}\text{Cf}$ , about 1 mg of  $^{253}\text{Es}$ , and about a picogram of  $^{257}\text{Fm}$  had been produced.



## IX. Civilian nuclear power

In March 1962 President Kennedy asked the AEC to take a "new and hard look at the role of nuclear power in our economy." (Actually, my administrative assistant, Howard Brown, and I had planted the notion of such a study in the White House, hoping that this might increase the president's interest in civilian nuclear power and, thus, give it a higher priority.) The president asked that the study identify the objectives, scope and content of a nuclear power development program in light of the nation's prospective energy needs and resources and of advances in alternative means of power generation.

The year 1962 was an appropriate one for a "new and hard look." By this time 25 experimental or prototype nuclear power reactors had been funded by the government, while 12 others had been funded under cooperative programs with industry. From this work had come substantial advances in nuclear technology and considerable operating experience, sufficient to make the goal of economically competitive nuclear power seem attainable, at least in areas of the country with high conventional fuel costs. Not surprisingly, such progress had stimulated increased industry interest in nuclear power and in the private ownership of nuclear fuel. On the other hand, general economic conditions did not seem to warrant the construction of additional experimental facilities without more definitive program guidance. Guidance was needed particularly to help determine what reactor concepts should be emphasized in the coming period. The plants thus far built had been of several different types, each having its virtues and its champions.

Light water-cooled reactors had demonstrated their reliability, having been used extensively, for example, in nuclear submarines and in the Shippingport Atomic Power Station near Pittsburgh. They were not extremely complex either in construction or operation, and could be built and operated with available technology.

The use of nuclear superheating, to obtain higher thermal efficiencies and steam conditions more compatible with conventional turbogenerators, had been explored, for example, with the 50 Mwt Boiling Nuclear Superheat Power Station [BONUS] in Puerto Rico.

Gas-cooled systems were known to permit relatively high thermal efficiency. Potentially the coolant gas could drive a turbine directly, and this concept, known as the HTGR (High Temperature Gas-Cooled Reactor), showed promise of being able to use thorium fuel, which was in abundant supply.

Through operation of experimental reactors, it was known that liquid metal-cooled reactors could achieve high temperatures and thermal efficiency, permitting low net power costs. In addition, the liquid metal-cooled reactors could be breeder reactors. Their further development could therefore be considered essential to achieve the full benefit of nuclear power.

Heavy water-cooled and moderated reactors had been examined, but had limited support in the U.S., because of the availability of enriched uranium fuel material. (Heavy water reactors could use natural uranium fuel and required larger facilities because they could not produce as much energy per cubic foot of reactor as those using enriched fuel.)

In November 1962, the AEC issued the requested report to the president. It was of major significance to the civilian reactor development program. It set forth program objectives and proposed planning for a national energy production effort--for the president, the Congress, the utilities, the nuclear industry and the general public--all those whose support would be needed to carry out the program.

A major contribution of the report was to establish the national and international need for nuclear electric power and to set forth why there should be a civilian nuclear power program in the U.S. to help meet this need. It did so by first analyzing the availability of alternative fuels for energy production. It then indicated that nuclear energy was technically feasible and economically reasonable for electric power and process heat applications, and that it could extend indefinitely the fuel reserves of the United States through the use of breeder reactors which could utilize available uranium and thorium resources. Other advantages of nuclear power cited were that it would: 1) eliminate geographic variations in power costs, 2) place the U.S. in a position of international leadership, 3) improve the defense posture of the U.S., and 4) reduce air pollution.

At the time of preparation of the 1962 report to the president, it was believed desirable for the most efficient use of nuclear fuel reserves to develop converter reactors that were more advanced than already existing or planned light water reactors. These were expected to be in operation during a transition period prior to construction of the so-called high gain breeders, such as the Liquid Metal-cooled Fast Breeder Reactor (LMFBR).

The advanced converters thought most likely to succeed in bridging the gap were the thorium-fueled high temperature gas-cooled reactor (HTGR), the heavy water moderated organic-cooled reactor (HWOCR), the sodium graphite reactor (Hallam Nuclear Power Facility), and a spectral shift control reactor. In addition, the AEC planned to build an advanced Shippingport-type reactor (seed-blanket) which would be able to demonstrate low gain breeding in a light water reactor. Like the HTGR, this light water breeder reactor (LWBR) and was expected to utilize thorium-uranium-233 fuel.

One of the important trends in atomic energy development in the 1960's was the emergence of economic nuclear power. On March 26, 1964, the Jersey Central Light & Power Co. applied to the AEC for a permit to construct a 515 Mwe nuclear power station at Oyster Creek, near Tom's River, New Jersey. The company had chosen a boiling water reactor, a type for which there was a considerable accumulation of operating experience. While the capacity of the plant was large, other plants then being planned were not much smaller. The plant was to be wholly investor-financed. The most significant aspect of the company's application was its statement that nuclear power has been chosen over alternative (fossil-fueled) generating systems on the basis of economics alone. The plant vendor, General Electric Co., took the bold step of submitting a firm bid for the turn-key construction of this unit.

The Oyster Creek decision was but one dramatic event in a trend which the Commission had signalled in its 1962 report to President Kennedy. The report had predicted that nuclear power was on the verge of being competitive in high-cost power areas in the U.S. and that it had prospects for later expansion on a more widespread geographic basis. The 1962 report forecast a nuclear generating capacity in the U.S. of 5,000 Mwe by 1970, and 40,000 Mwe by 1980. In 1964, following the Oyster Creek announcement, the AEC increased these estimates, predicting that U.S. nuclear generative capacity would be 6,000 to 7,000 Mwe by 1970 and between 60,000 and 90,000 Mwe by 1980. Several years later, when utilities had begun to order reactors with spectacular rapidity, the AEC raised its projections to between 130,000 and 170,000 Mwe by 1980.

Although the Oyster Creek decision did not initiate an immediate large-scale shift to nuclear power. It undoubtedly had some relationship to an increase in contracts awarded for nuclear power plants which began to appear in the latter half of 1965. Westinghouse and other nuclear reactor vendors also became very active. In the three-year period 1966-68, U.S. utilities ordered, without direct government assistance, 67 reactors, the units ranging in size from about 450 Mwe to more than 1,100 Mwe. By the end of 1970, three of these reactors were operable and more than 50 were being built. All but one of these orders were for light water reactors (the exception being an HTGR).

There were several reasons for the rapid growth of nuclear power and the initiative taken by industry. Those utilities which had had experience with nuclear power plants were expressing their confidence by planning for more and larger units. Increasing demands for electric power were causing a new emphasis on expanding generating capacity. Further, the trend in the industry was toward larger plant size, a factor that favored nuclear power plants, which were relatively more economic as plant size increased. Possibly, the growing concern over air pollution was another factor. The most significant factor was undoubtedly economics. Projections indicated that nuclear power, previously thought likely to be competitive only in high fuel costs areas of the country might also be so in areas where fossil fuels were abundant. For example, in 1966, the TVA announced plans to install three large nuclear reactors in the coal-mining area of northern Alabama. Also, in 1970, Louisiana Power and Light Co. ordered a large nuclear plant to be built west of New Orleans, an area of gas production.

By January 1, 1967, there were 13 operative central station nuclear power plants in the U.S. and 36 others under construction or ordered. Development of the various reactor concepts had proceeded more-or-less as planned and proposed; emphasis had begun to be placed on the development of high gain breeder reactors, as recommended in the 1962 report, especially the liquid metal fast breeder reactor.

Later in the year, the AEC prepared a supplement to its 1962 report. Such an updating had been recommended by the Joint Committee on Atomic Energy and by officials in the Executive Branch to take account of developments since 1962, such as the sharply increased rate of addition of nuclear generating capacity, some wide disagreements in estimates of future growth, technical developments in certain advanced reactor fields, and some new estimates of uranium resources.

An important finding of the 1967 supplement was future reactor development would center on the LMFBR. Pursuant to this finding the AEC organized an LMFBR program office at Argonne National Laboratory. Following months of discussions, reviews, and assessments by this office, the AEC, the AEC's national laboratories, the nuclear industry, and the electric utilities, an agreed program emerged.

Important components of this program included the privately-owned SEFOR (Southwest Experimental Fast Oxide Breeder Reactor) at Fayetteville, Arkansas, a 20 Mwt (megawatt thermal) sodium-cooled fast reactor used primarily for safety experiments; the plutonium-fueled Zero Power Plutonium Reactor (ZPPR) at the National Reactor Testing Station (NRTS) in Idaho and its related ZPR reactors at ANL; the Experimental Breeder Reactor No. 2 (EBR-2) at NRTS; and the Fast Flux Test Facility (FTFF) under construction at the AEC's Hanford Works in Washington.

The climax of LMFBR development will be reached when a demonstration plant is constructed and operated on a utility system. In 1969, the AEC, in cooperation with industry, initiated the first of a two-phase approach leading to the construction of the such a plant. This project definition phase (PDP) involved: proposed plant and site definition; project cost estimates; assessment of technical and economic risks; scoping and planning for research and development; quality assurance programs and codes and standards efforts; engineering, procurement, construction training, and operational effects; identification of utility and reactor manufacturer resources; and identification of relationships among architect-engineer, reactor manufacturer, utility and AEC. The three AEC contractors carrying out this first phase were Atomics International, General Electric and Westinghouse.

The second phase, the Definitive Cooperative Arrangement, will arrange for the design, supporting development, tests, construction, and operation of an LFMBR demonstration plant. It will be a cooperative undertaking with participation by the AEC, the electric utility industry, reactor manufacturers, equipment suppliers and others.

During 1971, each of the three PDP contractors indicated its interest in proceeding toward a cooperative arrangement for the construction and operation of a demonstration plant. More than 100 utilities, representing about half of the Nation's electric generating capacity, have expressed their preparedness to participate financially or in other ways. During the year, two utility advisory boards were formed to assist the AEC determining the extent to which the electric utilities might participate and in establishing suitable arrangements. These two boards were the Senior Utility Steering Committee and the Senior Utility Technical Advisory Panel.

A canvass of the Nation's utility industry by the advisory committee members, with the assistance of the Edison Electric Institute, the American Public Power Association, and the National Rural Electric Cooperative Association, indicated that utility support for the first demonstration plant of about \$240 million could be expected. The AEC is now concentrating on the identification of utilities willing to undertake the responsibilities and financial obligations of plant ownership, including the provision of suitable alternate sites. At year end, discussions were continuing with several utility groups which had indicated an interest.

On June 4, 1971, at a climatic meeting of President Nixon's cabinet, including some key members of Congress, I made a presentation proposing a vigorous program for the development of the LMFBR. Following the meeting, the president supported the idea, stating:

"...Our best hope for meeting the Nation's growing demand for economical clean energy lies with the fast breeder reactor. Because of its highly efficient use of nuclear fuel, the breeder reactor could extend the life of our national uranium fuel supply from decades to centuries, with far less impact on the environment than the powerplants which are operating today..."

The president also said that it was important to the Nation that the commercial demonstration of a breeder reactor be completed by 1980.

Initial operation of a demonstration plant is being planned for the late 1970's.

During the 1960's the Power Reactor Development Co. (PRDC) built and operated a fast neutron power plant, the Enrico Fermi Atomic Power Plant (60 Mwt) at Lagoon Beach, near Detroit, Michigan. Detroit Edison Chairman Walker Cisler offered the Fermi reactor to the AEC as a source of fast neutrons for irradiation experiments potentially useful to the fast reactor development program. Due to a long history of antagonism toward Cisler (due to his alleged earlier opposition to governmental development of civilian nuclear power), influential New Mexico Senator Clinton Anderson, a JCAE member, and AEC Commissioner James Ramey opposed the acceptance of this offer. The program was interrupted by a partial fuel meltdown at the plant occurred on October 5, 1966.

AEC's civilian nuclear power efforts have extended into several realms in addition to its main preoccupation with achieving economically competitive production of electricity from nuclear plants. One of these was a program to analyze, develop and demonstrate nuclear reactor systems for desalting sea and other brackish water. The AEC's activities in this field have been closely coordinated with the Office of Saline Water (OSW), Department of the Interior. The Oak Ridge National Laboratory has provided technical support for both OSW and the AEC. Joint studies were completed for many areas both in the U.S. and abroad, and extensive interest has been expressed in this potential use of nuclear power, especially in a large industrial and agro-industrial complex, termed the "Nuplex" by ORNL. However, a large nuclear desalting project, the Bolsa Island Nuclear Power and Desalting Plant, proposed for Southern California, did not materialize.

The AEC has conducted a widespread nuclear reactor safety program. Some of the efforts have had generic application to the siting and safety of all research, test, and power reactors; others have dealt with problems of particular reactor concepts. The results are essential to the design, siting, operation, and licensing of nuclear plants. During the early 1960's, most of the safety work related to water-cooled reactors. Later, some of the the emphasis turned toward the safety of breeder reactors and the effects of operations on the environment.

The disposal of high level radioactive waste remains a problem. In 1970 the AEC announced a significant new policy designed to insure that high-level radioactive waste products are disposed of in a manner that will not damage the environment. Years of research have proven the feasibility of converting liquid radioactive wastes to solid form. This greatly reduces their volume; 100 gallons can be reduced to one cubic foot. However, over the long term, safe storage of the alpha-emitting actinide elements presents a very difficult problem. One possible solution, storage in salt formations, has achieved recent prominence. Between 1965 and 1967 there was a successful demonstration project in a salt mine near Lyons, Kansas. Encouraged by this experience, the AEC, in 1970, tentatively selected a salt formation near Lyons as the site for its first long-term storage of solid high-level and long-lived low-level wastes. This project unfortunately did not materialize. It was opposed vigorously by residents of Kansas. And then, in 1971, measurements showed that there were possible routes for the entry of water into the site.

The decade in civilian power reactor development closed with an outstanding record of accomplishments. There were some disappointments--some of the pioneering demonstration plants had to be closed out earlier than anticipated--but even in these instances knowledge was gained which helped push nuclear progress onward.

At the end of 1971, 130 central station nuclear power plants, representing an aggregate capacity of more than 108,600 net megawatts of electricity (Mwe) were built, under construction or planned in the United States, , as follows: there were 25 operable units (including two licensed for fuel loading and subcritical testing), representing a total capacity of 11,400 Mwe; 52 units (44,500 Mwe) were under construction or being reviewed for operating licenses; 39 units were under AEC review for construction permits, representing 38,400 Mwe of initial capacity; and there were 14 units for which utilities had contracted but not yet filed construction permit applications, representing 14,000 Mwe.

The AEC was involved, in cooperation with the Department of Army, in the development of compact reactor systems suitable for use in remote areas or for unique military purposes. Such reactors actually operated for a time at such places as McMurdo Sound, Fort Greely (Alaska), and Camp Century, Greenland. Later, attempts were made to develop a prototype mobile Military Compact Reactor (MCR) to furnish 3,000 kilowatts of electric power to troops in the field. Technical and funding problems led to the discontinuance of such projects.

In Project Pluto, a joint AEC-Air Force undertaking, a nuclear ramjet engine was to be developed at the Livermore Laboratory for use in strategic missiles, giving them a unique capability for supersonic flight over long distances at low altitudes. Air-cooled high temperature reactors, designated the Tory series, were tested in the early 1960's at the Nevada Test Site. Again, technical and funding difficulties led to the demise of the program.

## X. Raw Materials Program

The original objective of the AEC's raw materials program, and a major AEC concern in the 1950s, was to secure the large amounts of uranium urgently needed for the production of nuclear weapons. The major accomplishments in the 1950s were the acquisition of sufficient uranium to meet the requirements of both defense and non-defense programs and the development of a domestic source of supply.

By contrast, the principal task facing the AEC and the uranium industry in the 1960s was adjusting to the developing oversupply of uranium, which reflected the success of the exploration program and the cutbacks in military requirements. A transition was necessary from a crash AEC procurement program, geared to meeting urgent military needs, to a program whose goal was the establishment of a viable domestic uranium industry capable of supplying, on a commercial basis, the energy resources for the developing civilian nuclear power economy. The transition was complicated by a hiatus of some years between the time when the major portion of the military requirements had been met and the development of the civilian market.

In early 1962, it appeared evident that a large-scale non-defense market for uranium probably would not develop for a number of years after 1966, the established termination date of AEC's procurement program. An AEC surplus was also forecast if the procurement program were to be continued through 1966 at the previously projected rate. Thus, it was desirable to find a means of reducing deliveries to AEC which would at the same time also provide for a continuing uranium industry capable of meeting future civilian and military needs.

To meet these needs, the AEC announced on November 7, 1962, a program under which its uranium procurement would be extended at a reduced level through December 31, 1970. A producer participating in this "stretch-out" program would hold back delivery until 1967 and 1968 of a part of the material under contract for delivery to the AEC before 1967, and AEC in return would buy in 1969 and 1970 an additional quantity equal to the amount deferred and delivered. The deferred material would be bought during the 1967-1968 period at the then-existing contract price of \$8 per pound of  $U_3O_8$ . The equal additional quantity would be bought during 1969 and 1970 at fixed prices under each contract, the prices to be determined by application of a formula to allowable costs of production for the 1963-1968 period subject to a ceiling price of \$6.70 per pound of  $U_3O_8$ . Uranium producers were invited to submit proposals covering the quantity of  $U_3O_8$  in concentrate under their existing contracts with the AEC which they would be willing to defer.

Contracts were renegotiated with 11 companies to defer delivery under this formula of more than 15,000 tons of  $U_3O_8$ , reducing AEC's procurement costs in the 1963-1966 period by \$246 million.

Although a reasonable balance between uranium purchases and requirements had been projected in 1962, even with the added purchases in 1969 and 1970 under the stretch-out program, decisions in 1964 and 1965 to reduce production of nuclear weapons materials resulted in a substantial surplus of uranium. The stretch-out program originally provided a market for about 8,000 tons of  $U_3O_8$  per year during the 1967-1970 period. This was expected to achieve the other stretch-out objective of a continuing industry production base which could be expanded as necessary to supply the long-range commercial market.

The AEC uranium surplus and the earlier-than-anticipated development of the commercial market permitted AEC to reduce its purchases in 1969 and 1970 by negotiation of reductions in, or termination of, deliveries under some of its contracts without endangering the viability of the uranium producing industry. In fact, total industry sales (AEC plus commercial) substantially exceeded the originally anticipated stretch-out level of 8,000 tons of  $U_3O_8$  per year, rising to 9,500 tons in 1967 and to more than 14,000 tons in 1970. Most of the companies who did not stretch out their contracts were also able to make commercial sales to utilities and reactor manufacturers. The renegotiation and termination of contracts reduced AEC's expenditures by \$56 million and reduced its excess uranium accumulation by 4,900 tons.

As a result of these additional reductions in procurement commitments and some shortfalls in deliveries, the four-year stretch-out in production was achieved through the purchase of only an additional 9,135 tons of  $U_3O_8$  at a cost of \$107 million.

A natural outgrowth of private ownership of nuclear fuel (authorized by Congress in the Private Ownership Act of 1964) was the concept of toll enrichment. This involves the delivery of privately-owned uranium to the AEC in government-owned plants and the subsequent return to the customer of a lesser amount of uranium containing a greater concentration of U-235 upon payment of an enrichment services charge.

The private ownership legislation also gave the AEC the authority to enter into long-term contracts for toll enrichment. This provided the basis for a commercial market for natural uranium and permitted the phasing out of government procurement for non-government needs. It ended the government monopoly over uranium and permitted the emergence of a strong and competitive domestic uranium industry capable of satisfying peaceful nuclear energy requirements for years to come.

As a result, the only industrial activity for which operators of nuclear power reactors are now dependent on the AEC is the enrichment of uranium in the fissionable isotope U-235. This is accomplished in large government-owned gaseous diffusion plants using highly classified technology developed under the AEC's military program. Such enrichment may ultimately be provided by U.S. industry as well.

Abroad, the incentive to use toll enrichment was even stronger than in the U.S. because it had been AEC policy to make enriched uranium available for foreign power projects through sale, rather than lease, to foreign governments. Hence, the prospect of toll enrichment afforded foreign nations greater independence in supply of this vital material and more flexibility in managing balance of trade payments or in using natural uranium stocks already available to them. In addition, they have the same economic incentive as domestic users of the enrichment service; that is, the opportunity to seek uranium in commercial markets at lower prices. The assurance of long-term enrichment services favorably influenced the foreign power industry toward selection of enriched uranium reactors and the use of U.S. capabilities for the long-term supply of fuel for these reactors.

Although the Private Ownership Act deferred the actual availability of toll enrichment services until January 1, 1969, its enactment authorized AEC to enter into contracts for such services earlier. By this means, AEC gave assurance to its customers of the long-term availability of enriching services. Meanwhile, the deferral of actual enriching did, of course, allow for some liquidation of AEC natural uranium stocks.



## XI. Gas Centrifuge Program

A constant proliferation danger was that some breakthrough in technology might occur that would bring nuclear weapons more easily within the reach of additional nations. One such possibility was the gas centrifugation process for producing enriched uranium. In this process, the heavier  $^{238}\text{U}$  atoms in uranium hexafluoride gas are spun out by centrifugal force and thus separated from the lighter  $^{235}\text{U}$  atoms, much as milk is separated from cream. The centrifuge was briefly considered as the enrichment method of choice in the early days of the wartime atomic bomb project, but was rejected in favor of the gaseous diffusion method largely because the latter had fewer development problems remaining to be solved at a time when haste was of the essence. It was always recognized, however, that the centrifuge had significant potential economic advantages, particularly for European countries. As compared to gaseous diffusion it would require only a small fraction of the electricity per unit of output. (Electricity was relatively more costly in Europe than in the United States.) In addition, centrifuge plants could operate efficiently on a much smaller scale than diffusion plants, which are intrinsically huge.

In 1953, the AEC began to study centrifuge technology as a possible economic encouragement to the development of civilian nuclear power. Development work was undertaken also in Britain, West Germany, and the Netherlands. The interest of these countries was in producing enriched uranium for power reactors in a way that would be economically attractive and that would lessen dependence on  $^{235}\text{U}$  supply by the United States. In 1959, the AEC concluded that centrifuge technology had advanced to such an extent that units already developed could be used in  $^{235}\text{U}$  enrichment plants and that the power and space requirements for such plants were so modest as to be amenable to clandestine operation. The AEC at once came under competing pressures. On the one hand, U.S. industry wanted the technology made freely available in order to lessen the fuel costs of future civilian power endeavors. On the other hand, there were those who wanted the centrifuge placed under wraps as an antiproliferation measure. It was economics versus security--a classic dilemma of the nuclear age.

The AEC tilted toward the latter view and embarked on steps to limit spread of the technology. In July 1960, it prevailed on the U.K., West German, and Netherlands governments to impose security classifications on their gas centrifuge programs. At the same time, tight security restrictions were imposed on the industrial firms participating in the AEC's own program, and gas centrifuges and their component parts were placed on the Commerce Department's Positive List to prevent export.

By 1964 there were indications, both at home and abroad, of desires to break free from these restrictions. At a meeting of U.S., British, Dutch, and West German representatives early in the year, the latter two argued for a relaxation of the restrictions, ostensibly because the centrifuge process was useful in a variety of peaceful applications in addition to the separation of  $^{235}\text{U}$ . It was only with difficulty that we persuaded them to continue their classification arrangements. U.S. firms working in the field were similarly restive. Thus, when I met with representative of the General Electric Company and the Allied Chemical Company, who were conducting a joint centrifuge venture, they told me of their frustration in having to explain to their boards of directors that, under existing restrictions, there was no indication they could establish a commercial operation even if their development work was successful. Compounding the AEC's difficulty in determining a policy was the realization that, despite our best efforts to restrict it, the gas centrifuge technology might eventually be acquired by other nations.

In April 1964 I wrote to ACDA Director Foster and Secretary of Defense McNamara, among others, seeking guidance "to assure that the [centrifuge] policy we adopt at this time will best serve our national security interests." Specifically, I asked for their views on "the importance to the United States of maximum delay in the acquisition by an Nth power of a capability to produce fissionable materials for atomic weapons use, even in very limited quantities."

Foster's views were strong and unequivocal. He wrote, "I believe that we should continue to resist all pressures to release controls on the dissemination of gas centrifuge technology."

McNamara replied in similar vein. He recognized that we could only retard, not prevent, the technology's growth and diffusion. "Even so," he wrote, "the goal of retardation is a worthwhile one." He recommended that we continue our restrictive policies and endeavor to persuade others with significant centrifuge programs to do the same. He also recommended that, in order to dampen the incentive of countries to develop their own centrifuge technology, "the U.S. should leave no doubt that enriched uranium will be available from this country on attractive terms. . . ."

On October 11, 1964, I also discussed our dilemma with Chairman Holifield of the Joint Committee on Atomic Energy. At first Holifield said he favored AEC continuing to develop the gas centrifuge technology, but doubted that U.S. industry should be allowed to continue this development work. I told him there was some argument in favor of allowing industry to continue under strong security controls, since this would place it in a strong competitive position in the event foreign countries should develop the process. This could actually aid the non-proliferation concept rather than hinder it; it would discourage other countries because their process would not be economically competitive. After I made these points, Holifield seemed to agree that his was a question that deserved further discussion at an executive session of the JCAE.

Such a session was indeed held, but not until March 9, 1967. Four of the five AEC commissioners were present, signifying the importance we attached to the issue. By this time the proliferation scare had worsened considerably, largely due to the Chinese tests and the reaction to them. As a consequence, the AEC had, albeit reluctantly, come round to the point of view expressed by Holifield more than two years earlier: We believed that private work on the gas centrifuge should be cut off, but that the AEC should continue a strong program. All the JCAE members agreed readily, with the exception of Representative Craig Hosmer. He at first argued vigorously against excluding industry, but in the end he also went along.

Another opinion being expressed on this issue was that of the Soviet Union. The Soviets charged that further work on the centrifuge in Western Europe could lead to West German development of nuclear weapons.

The next task was to break the news to industry. On March 14, 1967, the AEC commissioners (again all but one--Commissioner Samuel M. Nabrit was out of town) met with officers of two of the companies involved, W.R. Grace and Company and Electro Nucleonics, Inc., to tell them that we had decided to terminate centrifuge work in private corporations. Electro Nucleonics took it particularly hard. Their representatives tried to persuade us, as a minimum, to support their work. Later in the day I received a letter from them pointing out that our action would result in about a \$10 million loss of stock equity on the open market and hinting that they would hold the AEC responsible. (Subsequently, the AEC helped Electro Nucleonics move from weapons-related work into the biological field, where their experience with and knowledge about the centrifuge found useful applications.)

The results of the AEC's program for the past ten years are classified. However, on the basis of work done so far, there is still not sufficient experience to determine whether the gas centrifuge process can compete in countries like the United States with the proven gaseous diffusion process for the separation of uranium isotopes. There is, however, the possibility that the gas centrifuge process may offer economic competition in the future. The laboratory results obtained since 1960 must be confirmed and the cost, reliability, and life of many components determined before meaningful evaluations can be made.

## XII. Cutback in production of fissionable materials

In his State of the Union Message on January 8, 1964, President Johnson, speaking in reference to a "world without war" and "the control and the eventual abolition of arms," said:

"And it is in this spirit that in this fiscal year we are cutting back our production of enriched uranium by 25 percent. We are shutting down four plutonium piles."

At the time of the president's announcement, the AEC had 13 production reactors in operation and another, the New Production Reactor or "N" reactor (which also would produce electricity) at Richland, Washington, then in final stages of construction. There were eight reactors (not counting "N") at Richland and five reactors at the Savannah River site in South Carolina. The Richland site had expanded from the assigned wartime three reactors to nine. The Savannah River site was a new production complex constructed in the early 1950's. The gaseous diffusion facilities at Oak Ridge, Tennessee, were expanded and the new Paducah, Kentucky, and Portsmouth, Ohio, facilities were added at that time for the production of enriched uranium. Additional advances in reactor and gaseous diffusion technology and production processing and control pushed the capability of the AEC production sites far beyond their original design limits.

By March 1, 1961, long-range requirement studies still seemed to indicate the gaseous diffusion plants at a power level of 4,850 Mwe (reduced from a maximum level) and all of the production reactors were needed for maximum production. It was not until two years later that President Kennedy, in a letter to me of February 2, 1963, asked that the Commission, in conjunction with the Department of Defense, "initiate appropriate action as soon as practicable to adjust production of enriched uranium...in accordance with revised objectives." The primary revisions to the previous production requirements that resulted in the president's letter were the result of the widely publicized decisions of the president to cancel both the Sky Bolt missile and 8-inch artillery shell programs.

By May 1963, the AEC had completed its studies based on the revised objectives. On May 17th, I wrote the president indicating the results of the studies and outlining the AEC's plans for production adjustments by reducing power requirements for the uranium enrichment plants and shutting down some plutonium production capacity.

The AEC production complex in total was further examined to achieve the reductions in the most economical manner. These refinements were necessary in order to continue to take advantage of advances in weapons and production technology and to be able to cancel, with the lowest possible penalty, long-range electric power contracts with various suppliers.

As a follow-up to President Johnson's reduction announcement, the AEC issued a public statement detailing the cutbacks in relation to the total AEC program effort at the affected sites. The cumulative effect spread throughout the feed chain. On January 11, 1964, a second AEC public announcement considered the effects of the production site cutbacks on the uranium feed processing plants which provided the fuel for the facilities being shut down.

The uranium concentrate plants at Weldon Spring, Missouri, and Fernald, Ohio, would continue operation but at reduced levels. The feed material plant at Paducah, Kentucky, which supplied products to the gaseous diffusion plants, would be shut down and placed in standby by June 30, 1964, and the Metropolis, Illinois, plant of Allied Chemical Corporation would not be kept under contract to the AEC beyond the existing expiration date of June 30, 1964.

Of the four reactors to be shut down, three were at Richland and one was at Savannah River. The reductions in power were to be made at all uranium enriching sites, Oak Ridge, Paducah, and Portsmouth.

Five reactors at Richland would remain in operation and the new "N" reactor startup, scheduled for later in the year, would not be affected. At Savannah River, the AEC would continue to operate four reactors. It was also explained at that time that the loss of reprocessing load, through the Hanford reactor shutdowns, would eventually lead to the shutdown of one of the two Hanford fuel reprocessing plants then in operation. Later, at the end of 1966, the Redox chemical processing plant was shut down.

Reactors shut down in keeping with the president's announcement were: the Savannah River "R" reactor, on June 19, 1964; the Richland "DR" reactor, on December 30, 1964; the Richland "H" reactor, on April 21, 1965, and the Richland "F" reactor, on June 25, 1965.

The 25 percent megawatt electrical reduction in power at the gaseous diffusion plants, covered by the presidential announcement became effective July 1, 1964, through reduction of 360 Mwe. at Oak Ridge, 375 Mwe. at Paducah, and 600 Mwe. at Portsmouth. In conjunction with the reduction of power at the Oak Ridge gaseous diffusion plant, one of the process buildings (K-25) was shut down on June 30, 1964. This was the original U-shaped structure built during World War II. Operations in the other process buildings at the other sites were continued but at a reduced level.

In the interim, on April 20, 1964, in accordance with a further decision of the president, I announced additional power reductions totalling 945 megawatts (445 at Oak Ridge, and 500 at Portsmouth) beginning in 1966, with completion in 1968, which would reduce the power and hence production by 40 percent from the previous operating level. In February 1965, under direction of the president and as a result of continuing studies, the AEC announced further cutbacks in enriched uranium production which would, by December 31, 1968, reduce the power level to 2000 Mwe.

This long-range shutdown situation was a time of deep personal concern to all in the AEC, particularly as it affected the employees and communities involved. Hardest hit would be the cities of Oak Ridge and Richland which had been established in World War II by the Manhattan Engineer District. These communities were, by design, in isolated areas and had virtually no support beyond that provided by AEC activity. Additionally, homes and commercial facilities in the communities had recently been sold to individuals. Also, local school and hospital services were turned over to the municipality. Concern for the personal problems the shutdowns caused was magnified by the possibility that the recruiting and maintenance of an adequate staff at the AEC facilities might be severely affected if the living areas were not adequate for plant employees.

Most severely hit was Richland where about 2,000 positions or approximately 24 percent of the then existing employment level of 8,300 would be affected. As severe as this would be there were mitigating factors. The first reactor shutdown was a year away and the other two shutdowns were scheduled for subsequent shutdown at three-month intervals; the full impact would not be felt until fiscal 1967 when certain auxiliary facilities (principally the plutonium separations plant) would be shut down as an after effect of the reactor shutdowns. Additionally, in fiscal 1964 the newest AEC production reactor ("N") would be placed in service and ease the employment situation.

At Savannah River the scheduled reactor shutdown would take effect within six months and reduce the plant employment level by about 500 positions or eight percent of the then existing employment level of 6,500 employees.

Employment in Oak Ridge, Paducah, and Portsmouth would be reduced by some 400 (later increased to 450) employees of a total of 5,100 positions, 180 of 2,600 at Oak Ridge; 150 of 1,367 at Portsmouth and 120 of 1,133 at Paducah.

At the feed material sites Fernald would lose 300 of 2,100 employed and Weldon Spring, 50 of 600. The close-down of the Allied Chemical Corporation plant at Metropolis, Illinois, would, of course, drop its entire staff of 150 employees. The grand total affected by these first announcements, but not necessarily reflected in people to be released--primarily because of the time lags involved and the new "N" facility startup--was 3,450. While the total number was not overwhelming it was staggering to the isolated communities and to the individuals who specialized in nuclear activities. Additionally, those persons close to the situation knew this was just the beginning. More plants would have to be retired from service. Only timing and the specific facilities to be affected were unknown.

That the effects of these shutdowns were foreseen well in advance did not lessen the immediate concern as the shutdowns became an accomplished fact. As early as 1962, when it became apparent from long-range studies that future shutdowns were inevitable, the AEC adopted a policy to cooperate with local communities where AEC operations constituted the major economic force in their efforts to encourage diversification of the economic base of these communities. Many studies were undertaken, and other Federal agencies as well as commercial concerns were made aware of the capabilities of the sites for various activities.

Strengthening this effort became a major concern as the shutdown periods approached. Effective May 6, 1964, the AEC established an Office of Economic Impact and Conversion to coordinate analysis and review of management activities designed to cope with the broad economic impact resulting from program cutbacks.

The initial shutdowns announced by President Johnson were only a prologue to what followed; yet the communities of Oak Ridge and Richland have continued to expand in total population and the quality of the municipal services they are able to offer has remained at a high level. At no time has the AEC's ability to recruit or retain personnel been threatened by the inability of these communities to provide the level of services considered adequate by the highly skilled and trained professional AEC work force. By making the shutdown announcements well in advance, and by carefully controlling hiring rates, the majority of employees were able to find new employment elsewhere, take an early retirement, or be reassigned to another AEC facility as normal attrition reduced the work force.

There was another aspect to the production cutback announcement which had far-reaching consequences. This was in the area of the Cold War and increasing world tensions. As President Johnson indicated in his announcement, the reductions in production capability were made in the interest of world peace. It came as no surprise, therefore, that on April 20, 1964, the Soviet Union announced:

"The moment has come now when it is possible to take steps to reduce the production of fissionable materials for military purposes...and that the Soviet government has decided:

1. To discontinue now the construction of two new, enormous atomic reactors for the production of plutonium;
2. To reduce substantially in the next several years the production of uranium-235 for nuclear weapons; and
3. To allocate more fissionable materials for peaceful uses ...".

While U.S. action to cut back nuclear production was not contingent upon any agreement with the Soviets, part of the intent was to show good faith that vertical nuclear proliferation would not go unchecked, and that perhaps this evidence of good faith would meet with an affirmative response from other nuclear weapons powers.

In contrast to the well-publicized original shutdown announcement, future curtailments in plant operation received little national notice. These shutdowns were conducted in an orderly, spaced manner consistent with maintaining capability to meet long-range military and sharply increasing civilian requirements.

The Commission shut down the uranium concentrate plant at Weldon Spring in October 1966 and eventually returned this facility to the U.S. Army in December 1967.

Other reactor shutdowns followed the first four: the Richland "D" reactor, in June 1967; Richland's "B" reactor, and the Savannah River "L" reactor, in February 1968; the Richland "C" reactor, in April 1969; the Richland "KW" reactor, in February 1970; and the Richland "KE" reactor, in January 1971. This left only the "N" reactor at Richland and three reactors at Savannah River operating.

While some of these reactors are retained in standby condition for production startup in 18 months, it becomes more doubtful with the passing of time that they will be reactivated or that some of them could be satisfactorily operated.

Power reductions at the uranium enrichment plants reduced the total electricity supplied to a 1,900 Mwe. level in July 1969.

In contrast to the continued shutdown of the reactors and their auxiliary facilities, portions of the shutdown diffusion plant began to be restored in March 1970 in connection with preproduction of uranium hexafluoride for use as fuel in civilian nuclear power reactors.

### XIII. Regulation

On March 16, 1961, as one of my first acts as Chairman, I announced the Commission's action to separate its regulatory function from the operational and developmental functions administered by the General Manager. A new position of Director of Regulation, reporting directly to the Commission, was established, vested with the authority to discharge licensing and related regulatory functions other than those where the final decision rested with the hearing examiner or the Commission, or which involved the Commission's authority to approve the issuance of regulations. Subsequently, all AEC staff regulatory activities including those associated with licensing and regulation, compliance and enforcement, and the development of radiation protection standards and regulations were consolidated under the Director of Regulation. The Commission named Harold L. Price, former Director of the Division of Licensing and Regulation, to the new position.

On February 8, 1962, the Governor of Kentucky executed with the Commission in Washington the first agreement whereby a state would assume some regulatory authority in the interest of public health and safety, all of which had been exercised exclusively by the Federal Government. In an address the next day before a joint session of the Kentucky Legislature in Frankfort, I stated:

"There are those who hold, and not without some historical support, that the shifting of power and responsibility from the States to the Federal Government is a never-ending, irreversible process. Here is one significant instance of a noteworthy exception, but I think it would be a mistake to regard this event as a triumph of States' rights. This milestone in Federal-State relations is a triumph of good government in accordance with Jeffersonian principles."

It was in keeping, I noted, with a unique mission of the Atomic Energy Commission--"by an orderly process to fit atomic energy into the traditional, democratic structure of our society."

The transfer of 104 AEC materials licenses to State jurisdiction when the Kentucky agreement became effective on March 26, 1962, signalled the start of an upswing in State radiation control activities that was sustained throughout the decade. Mississippi, California and New York joined Kentucky as Agreement States during 1962, and thereafter two or three agreements were signed each year by Governors with the Commission.

An agreement with Maryland on December 18, 1970, brought to 23 the number of States (Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Nebraska, New Hampshire, New York, North Carolina, North Dakota, Oregon, South Carolina, Tennessee, Texas and Washington) entering into agreements with the AEC for regulating the peaceful uses of the atom. At this date, all but six of the remaining States had enacted enabling legislation and several of these were actively moving toward such agreements. Nearly half of the more than 16,000 atomic materials licenses in the total Federal-State program were being administered by the States.

When the developing regulatory program was separated from the Commission's operational and developmental functions in March 1961, materials licensing and regulation occupied the major portion of the new Director of Regulation's manpower of some 260 personnel. It administered a wide variety of more than 10,000 licenses through the country. But the emergence of the regulatory program as a primary function of the Commission came as the electric utility industry turned increasingly to the nuclear power reactor as a primary source of energy in the mid-1960's.



This turn of events was hardly discernible in 1961. At the beginning of the year, operating licenses and authorizations were in effect for only three power reactors, and 11 others were in various stages of construction. The year saw most of these relatively small nuclear plants under way delayed by problems such as fuel fabrication difficulties, pressure vessel cladding cracks, procurement delays, or construction labor strikes. Utilities as a whole continued to eye the nuclear field with skepticism over the next three years.

As indicated in Section IX, on March 26, 1964, the Jersey Central Power and Light Company jolted the utility industry by applying to the AEC for a permit to construct a 515-Mwe boiling water reactor at its Oyster Creek site in Ocean County, New Jersey, about 35 miles north of Atlantic City. Although it was one of the first two nuclear power plants in the 500-Mwe class to be proposed, the significance of the Oyster Creek plant was that it represented the first decision of a utility to build a nuclear generating station solely on the basis of economics in competition with conventional power facilities.

The Oyster Creek application marked the beginning of a year of intense regulatory activity and continual efforts to maintain pace with a new and remarkably expanding industry. The statistics and predictions at the end of 1964 placed in some perspective the AEC's projected regulatory task of protecting the public health and safety: Installed nuclear electric power from all 12 licensed "central station plants," several of which were small prototypes destined for early retirement, had reached only 1,000 megawatts—a total that would be exceeded by the capacity of many individual units to be undertaken within the decade. Forecasts were projecting up to 20,000 Mwe of installed nuclear power capacity by 1974, and some felt more than half the nation's energy requirements would be furnished by nuclear plants at the end of the century.

Although the stimulus of the Jersey Central action to other utilities was not immediately apparent, the repercussion of a wave of nuclear plant orders hit the regulatory program abruptly during 1966 with the filing of construction permit applications for 16 large power reactors representing a total of 11,500 Mwe. Twin reactor units on single sites were proposed for the first time, and the first reactors in the 1,000-Mwe class were proposed by the Tennessee Valley Authority for its Browns Ferry Station in Alabama. The surge toward nuclear power reached its peak of the decade during 1967 when utilities filed applications with the AEC for the construction of 29 nuclear power units — nine of which were 1,000 Mwe plants — representing a total design output of 24,287 electrical megawatts.

A major reorganization of the regulatory staff took place in early 1964, emphasizing the reactor licensing function. At year end the Director of Regulation, in a progress report to the Commission, noted that "projected workload data, particularly in the reactor licensing area are startling when projected through 1970." It appeared inevitable that this expected growth would have a powerful impact on the regulatory program, and that the time involved in the licensing process would affect the planning schedules of utilities. Of predominant importance in staffing up to meet the workload, however, was the need to recruit professional personnel with outstanding talent for the technical safety evaluation of power reactors of new design and increasing size.

As nuclear power plant applications mounted, the Commission and staff undertook numerous studies and actions to improve and streamline the licensing process on virtually a continuous basis for the remainder of the decade. Internal and external reviews were conducted, including an exhaustive examination by the Regulatory Review Panel of 1965, headed by William Mitchell, former AEC General Counsel. The JCAE, concerned over the implications of increasing nuclear power applications, also conducted, in 1967, the most extensive public hearings on reactor licensing and regulation to be held since passage of the 1954 Act.

In its report to the Commission, the Mitchell Panel stated:

"On the whole, in the few years it has been in existence, the regulatory staff has done a remarkable job in organizing its work and in developing competence in the technology of reactor safety. The Director of Regulation has been successful in recruiting persons of a high level of technical skill and experience and also has been successful in establishing an esprit de corps which is necessary to attract additional competent scientists and engineers. With the increased workload anticipated in the future and the need for an enlarged staff, the matter of quality of the staff is of real importance. The contributions the staff has made to techniques of safety analysis and reactor technology and the opportunity to make further contributions doubtless contribute to developing a climate attractive to professional people. It is necessary that this climate continue into the future. The panel believes that, accordingly, the work of the staff will be the principal component in the discharge of AEC safety responsibilities, and this premise is inherent in and vital to several of the recommendations."

In recommending actions to simplify the regulatory process, the panel noted that, "If the size of the regulatory staff were to grow in direct proportion to the number of reactors, this staff would soon number thousands of individuals."

In a period of rising competition from the expanding nuclear industry for highly qualified technical professional people and continuing austerity in national budgets, the Commission brought total regulatory staff strength to slightly over 500 by the end of 1970.

Some 75 percent of these were professionals in a broad spectrum of disciplines such as physics and various branches of engineering. More than half of these were engaged in the licensing, regulation, and inspection of reactors and other nuclear facilities, and the development of safety standards pertaining to their construction, design and operation. The marked increase in reactor licensing activity also impacted heavily on the workload of the other two review bodies regularly involved in the regulatory process, the Advisory Committee for Reactor Safeguards (ACRS) and atomic safety and licensing boards.

During 1961 the statutory ACRS, a 15-man body of recognized scientists, engineers and other experts in fields important to reactor safety, had found it necessary to conduct only nine full committee meetings and 30 subcommittee meetings on nuclear safety matters. By contrast, the ACRS during 1970 held 12 regular three-day meetings, one special meeting and 109 sessions of subcommittees and ad hoc working groups. It provided reports to the Commission on 25 nuclear facilities and several special subjects, and engaged in a wide range of activities related to safety.

The atomic safety and licensing boards, which were authorized by law in 1962, had handed down initial decisions in only four cases by the end of 1963. During 1970, three-man boards drawn from the Atomic Safety and Licensing Board Panel conducted 17 public hearings on nuclear facility applications in 12 states. The Commission established a permanent chairman and staff to coordinate the Panel's activities in 1967, and in 1970 had increased its membership to 18 qualified technical experts and ten attorneys experienced in administrative procedures.

Milestones in nuclear power plant licensing during 1961-1971 included issuance of operating licenses for the first fast breeder facility (Enrico Fermi plant in Michigan) in 1963, the first high-temperature, gas-cooled reactor plant (Peach Bottom Unit 1 in Pennsylvania) in 1966, the first two facilities with more than 400 Mwe of capacity (San Onofre Unit 1 in California and Connecticut Yankee's Haddam Neck plant in Connecticut) in 1967, and the first plants in the 500-Mwe and 800 Mwe classes (Oyster Creek-1 in New Jersey and Dresden-2 in Illinois, respectively) in 1969.

The licensing of the Oyster Creek facility, originally scheduled for operation in 1967, was delayed for nearly two years when discovery of weld defects in connections to the pressure vessel led to extensive evaluations and repair. The regulatory staff conducted 50 inspections of the plant during this period.

At the end of 1970, the AEC had licensed or authorized the operation of 19 central station nuclear power units with a capacity totaling 6,708 Mwe (includes AEC's nonlicensed Shippingport station in Pennsylvania). In addition, 53 other large reactors representing 44,040 Mwe of capacity were in various stages of construction or awaiting action on operating licenses, and 30 proposed plants aggregating 29,103 Mwe in design capacity were under review for construction permits.

In related actions, the AEC was acting on several hundred operator license applications a year for individuals who manipulate or supervise manipulation of reactor controls. More than 2,000 such licenses were in effect at the end of 1970.

Until 1970, the Commission's regulatory authority under the Atomic Energy Act of 1954, as amended, had been limited essentially to radiological health and safety concerns and common defense and security considerations. The enactment of two Federal laws during 1970 greatly enlarged the AEC's responsibilities concerning environmental matters with increasing impact on licensing activities.

In addition, an amendment to the Atomic Energy Act in December 1970 eliminated the requirement for finding of "practical value" and invoked the "commercial section" (section 103) of the act which made all future license applications for commercial or industrial nuclear facilities subject to antitrust review by the Attorney General and the Commission. The Atomic Energy Act included the requirement for a finding of "practical value" by the AEC before nuclear facilities (such as power reactors and fuel reprocessing plants) could be licensed under the "commercial section" (section 103) of the law. Such licenses had been issued under the research and development section (104b) of the Act. In the past the Commission had considered the matter and concluded each time that the finding could not be made on the basis of cost information limited to the prototype and noncompetitive nuclear power reactors then in operation. From now on licenses are to be issued under section 103.

The wave of public concern over environmental quality that swept the country at the end of the Sixties coincided with the building of nuclear power plants on a large scale, and a spotlight of public attention was focused on atomic energy activities that had not been experienced since the beginning of the program.

A primary focal point was in the health implications of radioactive discharges from nuclear power plants. Among the leaders in the clamor on this issue were two Livermore Laboratory biological scientists, John W. Gofman and W. R. Tamplin. (Gofman did his Ph.D. research with me, 1940-1943, and was co-discoverer with me of the fissionable isotope uranium-233.) They claimed that their analyses indicated that if everybody in the United States were exposed to the allowable amount (170 millirads per year) of radiation this could finally produce 32,000 extra cancer and leukemia deaths plus 150,000 to 1,500,000 extra genetic deaths per year. It was, of course, absurd to assume that everyone in the United States could be exposed to this amount of radiation as the result of operating nuclear power plants. Other analyses, by AEC staff and other biological scientists, have led to the conclusion that these dire predictions are gross exaggerations; some such contrary views suggest that the number of additional cancer cases caused by the operation of nuclear power plants will be so small in number as to be immeasurable.

Another primary focal point was on the potential adverse effects on aquatic life of discharging large quantities of heated condenser cooling water from nuclear plants into the rivers and other bodies of water on which they were located. Such water use is characteristic of all steam-electric generating plants, whether nuclear-fueled or fossil-fueled, but the water-cooled nuclear plants of current design discharged somewhat more waste heat than modern conventional fossil-fueled plants.

The Commission had long been concerned over the potential adverse thermal effects of nuclear power plants and, in fact, was supporting in its development program more extensive research in this field than any other Federal agency. In 1962, the regulatory staff began to routinely obtain comments of the Department of the Interior's Fish and Wildlife Service regarding each application for a construction permit or operating license for a nuclear power plant. These comments, in addition to recommendations concerning radiological matters, recommended actions to minimize the possibility of adverse effects of thermal discharges. The AEC, although having no jurisdiction in the nonradiological area, made it a practice to call the applicant's specific attention to the Fish and Wildlife Service's recommendations on thermal effects and to urge his cooperation with the appropriate agencies.

Although the AEC's position, concurred in by the Department of Justice, was that it had no regulatory authority to consider thermal effects in licensing, this issue was pursued by intervenors in licensing proceedings. Some hearings before atomic safety and licensing boards toward the close of the decade, both at the construction permit and the operating license stages, became arenas of controversy where radiological and other environmental issues were sharply joined. In June 1968, the State of New Hampshire petitioned the Court of Appeals for the First Circuit (Boston, Massachusetts) for review of the Commission's licensing action in the Vermont Yankee Nuclear Power Corporation case with respect to the denial of AEC jurisdiction over thermal effects. In January 1969 the court upheld the Commission's position, and a petition by New Hampshire for review by the U.S. Supreme Court was subsequently denied.

Several bills were introduced in both the 90th and 91st Congresses to give authority to the AEC or other agencies such as the Federal Power Commission to impose conditions regarding thermal effects in nuclear power plant licenses. The Commission, in testimony before Congressional committees in March 1969, supported proposed legislation that would require a certification that the facility to be licensed would not violate appropriate water quality standards, including thermal standards.

The National Environmental Policy Act of 1969 (NEPA), which became law on January 1, 1970, followed by enactment in April of the Water Quality Improvement Act of 1970 (WQIA), thus had a major impact on the AEC regulatory program.

Under NEPA, Federal agencies were required, among other things, to prepare and file with the Council on Environmental Quality a detailed statement on specified environmental considerations regarding each major Federal action "significantly affecting the quality of the human environment." The WQIA amended the Federal Water Pollution Control Act to require certification from the appropriate state, interstate or federal water pollution control agency that there was reasonable assurance that federally licensed activities resulting in discharges to navigable waters of the United States would not violate applicable water quality standards (including thermal standards).

Although NEPA did not specifically refer to licensing activities, the AEC interpreted it to cover the licensing of nuclear facilities - particularly nuclear power plants - as "major Federal actions" affecting the environment. The Commission proceeded promptly to initiate procedures to bring its licensing program into conformity with the new environmental legislation.

The AEC's final policy statement on NEPA, issued on December 4, 1970, also took into account requirements of the WQIA and provided for fuller consideration of the whole range of environmental issues in the licensing of nuclear power plants. In testimony before a House committee regarding progress in implementing NEPA, Russell E. Train, Chairman of the Council on Environmental Quality, characterized the new AEC policy provisions as "very responsive developments" in implementing the Act. (At an annual meeting of the Atomic Industrial Forum and American Nuclear Society in Washington, D.C. in November 1970, Dr. Gordon J. MacDonald of the Council on Environmental Quality, stated: "The AEC has by far the best record of any federal agency in submitting environmental reports under NEPA. The AEC reports are the most complete, the best thought out, and the most sophisticated of any agency.")

As a result of the environmental legislation of 1970, a number of procedural changes were integrated into the AEC licensing process for nuclear power reactors and fuel reprocessing plants, including the provision of conditions in permits and licenses to the effect that licensees will 1) observe all standards and requirements validly imposed under Federal and State law for protection of the environment, and 2) comply with the appropriate water quality certification provisions of the Federal Water Pollution Control Act. Atomic safety and licensing boards also were authorized to consider, under NEPA, nonradiological environmental matters to the extent that a party raises as an issue whether issuance of the permit or license would be likely to result in a significant, adverse effect on the environment.

Similar procedures were provided for other licensing proceedings on proposals significantly affecting the environment, including licenses for: 1) nuclear fuel fabrication plants, scrap recovery facilities, and uranium hexafluoride conversion plants; 2) uranium milling and production of uranium hexafluoride; and 3) commercial radioactive waste disposal by land burial.

On July 23, 1971, the U.S. Court of Appeals for the District of Columbia made an historic ruling directing the AEC to revise, in several respects, its rules on consideration of nonradiological environmental matters in licensing facilities, i.e., directed the AEC to broaden its responsibility. The court held, in the consolidated cases of Calvert Cliffs Coordinating Committee, Inc., et. al., vs. the U.S. Atomic Energy Commission, et. al., that AEC regulations for implementing NEPA in licensing procedures did not comply in several respects with NEPA. The petitioners had also questioned several aspects of the AEC's application of NEPA procedures to Calvert Cliffs Nuclear Power Plant of the Baltimore Gas & Electric Co., a facility near Lusby, Maryland, on the Chesapeake Bay for which a construction permit had been issued six months before enactment of NEPA, and the court agreed. The AEC took several implementing steps immediately following the court's decision.

#### XIV. Radioisotopes Program

In analysis and controls applications, cobalt-60 and cesium-137 encapsulated sources for industrial radiography were the principal products employed in 1960 in terms of quantity. During the decade, there has been increased use of iridium-192 for radiography, low-energy photon sources for X-ray fluorescence, and tritium and promethium-147 for self-luminescent applications.

In nuclear medicine, iodine-131 was the principal product in use in 1960 and continues to be important. However, technetium-99m, which has been approved for similar diagnostic uses, results in decreased radiation exposure of the patient and increased definition of the body organ functions. The technetium-99m agent was developed at Brookhaven National Laboratory (BNL) and first studied for medical applications at Argonne Cancer Research Hospital. Many other products have been studied as diagnostic agents during this period, including iodine-124, copper-67, zinc-69m, gallium-67 and indium-111.

In the process radiation field, cobalt-60 and cesium-137 have continued to be the principal products of interest. Considerable work was carried out using cobalt-60 produced in AEC reactors to develop an efficient and reliably contained cobalt-60 source. Much of the AEC's process radiation development work was based on the use of cobalt-60. However, recent emphasis has been given to the use of cesium-137 for this purpose.

One of the most significant developments in radioisotope processing during the decade was the recovery of megacurie (a million-curies or more) quantities of fission products in the ORNL Fission Products Development Laboratory. During the early 1960's, the plant demonstrated the ability to recover cesium-137, strontium-90, promethium-147, and cerium-144, and technetium-99 (from processed fuel) in quantities in some cases up to many thousands of curies a year. As the decade passed, the output of cesium-137 and strontium-90 for radiation and heat sources grew to million-curie quantities annually. This production activity has provided the only significant large-scale supply of encapsulated fission products for isotopic power and process radiation applications during the decade.

Strontium-90 is the long-life (28 years) fission product of principal interest for terrestrial isotope power use as well as for process radiation applications. Strontium titanate was developed as the isotopic fuel form for application in terrestrial isotopic power (SNAP-7) systems. With thermoelectric conversion, use of such fuel can furnish power for use at remote places on land or sea to transmit information to receiving stations more conveniently located. Such use includes weather stations both in the Arctic and Antarctic regions, and U.S. Coast Guard flashing light buoys. Another use is for underwater acoustic beams. Other radioisotopic power sources were developed to meet a variety of needs.

Cesium-137, in equilibrium with its 2.6-minute barium-137m daughter, is the other long-lived (30 years) high-yield fission product of principal interest produced during nuclear reactor operation. It is produced along with other stable and radioactive cesium isotopes, including the 2.3-year cesium-134. The yield of cesium-134 is such that the mixed cesium-137/134 product will have significant radiation processing applications. As a radiation source, cesium chloride is preferred, principally for: (a) its high specific activity; (b) its thermal and radiation stability; (c) its reasonable compatibility with encapsulating materials; and (d) its ease of production.

Promethium-147 is an intermediate-lived (2.67 years) fission product in sufficient supply for isotopic power consideration. Its relatively low-energy radiation is readily shielded. The promethium-148 (42 days), which is initially present with the promethium-147, has a very energetic gamma which requires about 2 years storage to allow its decay before use. In addition, there are trace amounts of promethium-146 (1.9 years) present with sufficient gamma radiation to require shielding beyond that which is necessary for plutonium-238. Materials studied have demonstrated the feasibility of using promethium oxide at temperatures up to 2,000°C. (3,632°F.)

The short-lived fission products plant at Oak Ridge continued to be the principal supplier of 13 fission products (with half lives from 3 to 65 days) for research, industrial, and medical uses. Typical isotopes prepared in this plant are: barium-140, iodine-131, molybdenum-99, niobium-95, ruthenium-103, strontium-89, xenon-133, yttrium-90, and zirconium-95. With the exception of niobium-95 and yttrium-90, which are recovered from their parents zirconium-95 and strontium-90, these products are produced from irradiated uranium-235 targets.

Cobalt-60 is the most readily prepared reactor product with a reasonably long half-life (5.26 years) and radioactive decay characteristics of major interest. In selected applications, it competes directly with 28-year strontium-90 and 30-year cesium-137. In the past decade, while withdrawing from production of many forms of cobalt-60, the AEC has also carried out tests that show the production feasibility of hundreds of millions of curies of high specific activity cobalt-60 (400-600 curies per gram) for many applications. At the same time, industry has established its own capabilities in test and power reactors to produce most of these product grades in quantities to satisfy the market.

The transuranium product series results from multiple neutron capture in both the nuclear reactor fuel, uranium-235, and the source material uranium-238. The nuclides of principal interest include plutonium-238, curium-242, americium-241, and californium-252 and their applications require the conversion to forms useful in both thermal and radiation applications. In the thermal area the production of plutonium-238, curium-242, and curium-244 represented significant efforts.

Accelerator products have significantly different decay characteristics from isotopes prepared in a reactor since they are neutron-deficient and generally cannot be readily produced by neutron irradiation. These products find their principal use in medical diagnosis, Mössbauer applications and metallurgical studies, as well as several research applications. For many years, the Oak Ridge 86-inch cyclotron has been the principal source of accelerator products. More recently, a group of accelerators with additional capabilities have become available at Brookhaven and the future program will be expanded to include the use of the Los Alamos Meson Physics Facility.

There are about 15 radioisotopes in some 30 chemical forms approved by the AEC for medical use. In 1966, the U.S. Public Health Service surveyed the frequency of the various medical procedures. The results show that iodine-131 represented 70 to 80 percent of the radioisotopes used in the organ function studies or for radiopharmaceutical therapy procedures, while cobalt-60 was the predominant radioisotope used for teletherapy procedures, and radium and strontium-90 for brachytherapy (source implant) procedures. A survey today (1971) would show that the use of technetium-99m may now exceed the use of iodine-131 for scanning procedures, since the use of technetium-99m was just getting underway when the survey was carried out in 1966.



In 1965, the development of the technetium-99m generator for medical diagnostic application brought this technology to the attention of all potential users of radioisotopes. Today, this generator represents an important part of the radioisotopes products industry; technetium-99m generator sales for 1969 were estimated at \$6 million.

During the past decade, much effort has been directed toward establishing neutron activation analysis as an accurate and reliable technique particularly for measuring trace elements in materials. It is now well established technically and is proving to be very valuable in many important applications throughout the world; in medicine, to determine trace metals in tissues; in industry, to analyze products and determine trace compositions; in crime detection, to analyze materials taken as court evidence; and for a variety of tests in geology, oceanography, agriculture, meteorology, public health and other sciences. The technique has recently met several important needs for analyzing foods to determine concentrations of pollutants such as mercury.

Another analytical technique whose range of applicability has been greatly expanded by the advent of radioisotopes is X-ray fluorescence. As a consequence of this AEC initiative, at least six U.S. companies are now marketing radioisotope XRF systems for many analysis and control applications such as ore assaying, metal alloy analysis, and monitoring various solid and liquid chemical processes.

About 1961, work was started at West Virginia University (Morgantown) on the fabrication of wood-plastic composites. The process involves impregnation of wood substrates with a liquid monomer and subsequent irradiation by gamma rays, during which the monomer hardens. The result is a plastic-filled wood with the aesthetic properties of wood and the durable properties of the plastic. The work at West Virginia University, and related work at North Carolina State University (Raleigh) and Research Triangle Institute, provided the technological basis for the production of a new commercial product. In 1964, the American Novawood Corp. (Lynchburg, Va.) was formed for the purpose of commercializing the new wood-plastic material. Since that date, three other companies have begun commercial production of wood-plastic materials. In each case, the principal product is parquet flooring.

An outstanding success has been the adoption of radiation sterilization of medical supplies both by isotopes and by accelerators. Radiation sterilization plants now number more than 20 in countries all around the world, and the trend is accelerating. Both technical and economic advantages are afforded by this process through: (a) elimination of the damaging effect of heat; (b) sterilization in final container; (c) greater reliability; and, (d) elimination of residual sterilization gas.

During the early part of the 1960's, a new application was exploited in the isotopes development program. This was the use of heat resulting from radioisotope decay to produce useful energy. The most promising isotopes with sufficient abundance for research and use were the fission products strontium-90, cerium-144, cesium-137, and promethium-147 and reactor-produced isotopes thulium-170, polonium-210, plutonium-238, curium-242, curium-244, and cobalt-60. Applications of radioisotope heat are directed toward the production of electricity using the Seebeck (thermoelectric) process. This work was most dramatically exemplified by development and demonstration in June 1961 of nuclear power in space and in August 1961 of the world's first radioisotope-powered automatic weather station (see next section, XV).

The Division of Isotopes Development first became interested in the concept of an implantable radioisotopic power source for an artificial heart in May 1964. In the process of considering such a program and through discussions with personnel of the National Heart Institute (now the National Heart and Lung Institute) of the National Institutes of Health, it was apparent that the development of a fully implantable artificial heart was not only extremely complicated undertaking but one in which success could not be projected with any degree of assurance.

## XV. Nuclear power in space

The first use of nuclear power in space took place on June 29, 1961 when a U.S. Navy Transit satellite carrying a small nuclear-electric power source achieved earth orbit. Because of the reliability of that nuclear system, today (1971), more than nine years later and after its more than a billion miles of travel, the signals from that navigational satellite can still be monitored.

The climax of nuclear energy in space in the 1960s was the emplacement on the moon's surface of a small power device called SNAP (Systems for Nuclear Auxiliary Power). This radioisotope thermoelectric generator is the sole source of electrical power for all of the data gathering devices left on the moon by the Apollo 12 astronauts. This plutonium-238 fueled atomic battery, designated SNAP-27, was developed by the AEC for NASA's Apollo Program and has been performing extremely well since its deployment on the moon on November 19, 1969.

The AEC has delivered four additional SNAP-27 systems to the NASA for use on Apollo missions to other areas on the moon's surface, and has recently been requested to build another one. One of these systems was placed on the moon by astronauts of the Apollo 14 mission. Another, was flown by the Apollo 13 mission. Both the AEC and NASA were, of course, deeply disappointed that the objectives of the latter mission were not fulfilled. However, the reentry characteristics of the SNAP-27 were demonstrated on that mission. All data indicate that the capsule in its protective cask returned to earth intact as designed and is resting two to five miles deep in the Pacific Ocean.

The SNAP-27 generator and its plutonium-238 are carried to the moon as separate packages. The generator is transported in a compartment and the fuel, contained in a capsule or metallic tube, is carried in a graphite cask attached to the leg of the lunar module. Upon arrival on the moon, the astronaut removes the fuel capsule and inserts it in the generator and electricity begins to flow. For Apollo 12, when Astronaut Alan Bean inserted the fuel capsule in the generator, 73 watts of electricity were produced and have flowed ever since to the various lunar data gathering devices.

On January 16, 1959, a device that turned heat from radioactivity into electricity was demonstrated publicly, for the first time, on the desk of the President of the United States. President Eisenhower introduced this device to the world fueled by polonium-210, as the first atomic battery.

The unit launched in June 1961, an improved version of this nuclear system, was the size of a grapefruit. It weighed four pounds and produced 2.7 watts of electrical power using plutonium-238 as fuel. This first nuclear device used in space was called SNAP-3A. The Navy Transit satellite, with the SNAP-3A aboard, holds the record as the oldest operating U.S. satellite.

By April 1964, a total of five radioisotope electric generators, another SNAP-3A and three SNAP-9A/s, had been launched. The SNAP-9A was a larger and more advanced model of the SNAP-3 and was developed to supply all the power requirements of other navigational satellites. This improved model also used plutonium-238 fuel. It produced 25 watts of electricity--about ten times more than the earlier SNAP-3A. The first SNAP-9A was launched in September 1963, the second in December 1963, and the third in April 1964. Of the five generators launched to that date, three continue to supply power to their respective satellites. Unfortunately, a satellite failure, unrelated to the nuclear system, terminated the operation of the second SNAP-9A after only eight months in space. The satellite carrying the third SNAP-9A failed to achieve orbit.

Research and development began in late 1965 on a generator designated SNAP-19. The SNAP-19, unlike the SNAP-27, provided for the plutonium-238 fuel capsule as an integral part of the generator, and was developed for use on the NASA weather satellite known as Nimbus III. The first Nimbus satellite, with two SNAP-19 devices aboard, was destroyed during launch in May 1968 when the guidance system of the booster vehicle failed. A second SNAP-19 generator system was delivered to NASA for use on a replacement Nimbus in December 1968 and was launched aboard that satellite in April 1969. Both the satellite and SNAP-19 are still operating successfully. The SNAP-19 is augmenting solar cell power sufficiently to sustain continual operation of all weather monitoring equipment. Without the SNAP-19 some of the equipment would have to have been shut down periodically.

In July 1969, NASA requested the AEC to provide Radioisotope Thermoelectric Generators (RTG's) for two more operational space missions--the Pioneer, which is an unmanned Jupiter fly-by probe to be launched in early 1972 and 1973, and the Viking, an unmanned Mars lander to be launched in 1975. At the Navy's request, the AEC is also developing an RTG for an advanced Transit navigational satellite to be launched in the early seventies.

In 1965, the first zirconium hydride reactor, a 500 watt experimental system, was flown. This reactor system, designated SNAP-10A, was launched from the Vandenberg Air Force Base, California, in April of that year. While in orbit, this system operated at full-power for 43 days before a failure in the satellite's voltage regulator system--not the reactor system--caused a shutdown of the entire satellite. Had this failure not occurred, the chances are that the SNAP-10A would have effectively operated throughout its design lifetime. An exact copy of this orbital unit completed over a year of uninterrupted operation on the ground at the Santa Susana, California test site. This is the longest uninterrupted operation of any nuclear reactor in the world to date.

For the past decade and even before that, the AEC, working jointly with NASA, has been developing the technology for a nuclear rocket system which can do the propulsion jobs in space that will be required for the advanced missions of the future.

The nuclear rocket operates on the same principle as the chemical rocket. However, unlike the huge chemical rockets which must burn tons of fuel and liquid oxygen per second to produce their thrust, the nuclear system uses the heat of a reactor to expand liquid hydrogen into the escaping hydrogen gas that produces the rocket's propulsive force. A rocket's efficiency is measured in terms of what engineers call "specific impulse"; that is, the pounds of thrust per pound of propellant flow per second through the rocket's exhaust nozzle. The nuclear rocket undergoing development will have a specific impulse value at least twice that of the best chemical rockets today.

In recognition of the potential benefits of nuclear propulsion in space, AEC and NASA established, in August 1960, a joint agency office and program for the development of nuclear rocket technology, the Rover program. By that time, some nuclear rocket ground tests had already been conducted by the Los Alamos Scientific Laboratory at the Nevada Test Site (NTS). Later, a portion of NTS was designated the Nuclear Rocket Development Station (NRDS). The Kiwi-A reactors (named for the flightless bird of New Zealand) were tested there at power levels under 100 megawatts to check reactor design methods and to test niobium carbide coatings for protection of carbon against attack by hydrogen.

The first Kiwi-B reactor was tested in December 1961 at a power level of 300 megawatts with gaseous hydrogen supplied to the reactor as the coolant-propellant. A regeneratively-cooled jet nozzle was used on a rocket reactor for the first time in this test. Another test was conducted September 1962 at 900 megawatts. Operation in this test with liquid hydrogen caused no unexpected control or stability problems but structural weaknesses in the reactor core were revealed. These problems were resolved in subsequent Kiwi tests before the series ended in 1964.

With the phase-out of the Kiwi tests, LASL had moved forward with the development of the Phoebus reactors, including the high-powered 4,000 megawatt plant. This program culminated in the power testing of the Phoebus-2A reactor in June and July 1968 at power levels up to 4,200 megawatts, the highest power ever attained by a rocket reactor. Total operating time in two test runs at various power levels was more than one hour. The power density in the reactor actually exceeded that necessary for the NERVA nuclear rocket, which, by 1968, had been redirected to a power plant with a thrust level of 75,000 pounds rather than the 200,000 pounds earlier contemplated.

The primary objective is to build a flyable reactor, a little larger than an office desk, that will produce the 1,500 megawatt power level of the Hoover Dam hydroelectric power plant and achieve this power in a matter of minutes from a cold start. During every minute of its operation, high-speed pumps must force nearly three tons of hydrogen, which has been stored in liquid form at minus 420°F. (below zero), past the reactor's white-hot fuel elements which reach a temperature of 4,000°F.

## XVI. Nuclear weapons tests

The U.S. atmospheric test series, designated Operation DOMINIC, began April 25, 1962, with an air drop in the intermediate-yield range (20 kilotons to 1 megaton) off Christmas Island. (In reporting its own and Soviet tests, the Atomic Energy Commission frequently adopted the practice of reporting yields in size categories rather than as precise numbers. Prior to 1964, the categories and the yield ranges they represented were: low yield, less than 20 kilotons; intermediate, 20 kilotons to 1 megaton; low megaton, 1 to several megatons.)

In all, the series comprised 40 tests, conducted between April 25 and November 4, 1962. It included the firing of 29 nuclear devices dropped from aircraft in the vicinity of Christmas and Johnston islands and five detonations of nuclear devices carried to high altitudes by missiles launched from Johnston Island. Two nuclear weapons system tests were also involved--one in the Christmas Island area and one in the eastern Pacific. These 36 Pacific tests were conducted by a joint AEC-Defense Department task force that, at the peak of its activity, numbered over 19,000 men. In addition to the Pacific tests four small tests were conducted near the surface at the Nevada Test Site.

I witnessed my only nuclear weapons test on a visit to the Pacific test site near the end of June, along with McGeorge Bundy, Arnold Fritsch (my technical assistant) and Dwight Ink (AEC Assistant General Manager). On June 30, on Christmas Island, we went to Observation Point where at 6:20 a.m. we saw an explosion 30 miles south at 5,000 feet, the low megaton yield BLUESTONE event. It was dropped from an airplane. It was necessary to use dark glasses for the first eight seconds. Upon removing them, I found the area brighter than full daylight, an awesome sight.

In accordance with the restrictions imposed by the president, the total yield of the DOMINIC series was held to approximately 20 megatons. The Soviet series in the fall of 1961 had yielded almost ten times as much, including a 50 megaton explosion.

By and large, DOMINIC went well. There were, however, certain difficulties. After we had alerted the scientific community of the world, it was with acute embarrassment that we learned that BLUEGILL had to be destroyed after launching from Johnston Island on June 5 due to a failure of radar tracking. Then on June 20 STARFISH suffered an abort on its Johnston Island launching pad. However, STARFISH went successfully on July 9, lighting the sky all the way from Hawaii to Australia. To our great surprise and dismay, it developed that STARFISH added significantly to the electrons in the Van Allen belts. This result contravened all predictions.

As the series neared its end, I presented a summary evaluation in a letter to the president. A salient portion read:

"The current tests have produced many important successes. They have also yielded some surprises and some failures which confirm that we are indeed experimenting at the frontier of weapons technology. The test successes vindicate, in a large measure, the elaborate computational and certification procedures which were developed during the moratorium [1958-61]. The surprises and failures serve to remind us that our theories and procedures are, at best, only approximate...

Although not a stated objective of our test program, I believe that one of the most significant results is the fact that our laboratories have become revitalized to a major degree. The importance of this reawakening of our defense posture cannot be overstressed."

The United States resumed nuclear weapons testing, initiating the underground NOUGAT series on September 15, 1961 after the Soviets had broken the voluntary U.S.-Soviet moratorium on the testing of nuclear weapons with an atmospheric test on September 1. From that date through December 31, 1970, the AEC has publicly announced a total of 359 United States nuclear tests which have been conducted in the various environments (in the atmosphere, in space, underwater, and underground). Of that total, 25 were Plowshare experiments and six were tests to improve our capability to detect nuclear weapons tests (the Vela program). The rest were weapons-related tests. In addition there were four joint United States - United Kingdom tests.

Since 1963, the AEC has conducted underground nuclear tests at the Nevada Test Site, which is approximately 65 miles northwest of Las Vegas; the Central Nevada area, which is approximately 175 miles north of Las Vegas, Nevada; Amchitka Island in the Aleutian Islands, which is approximately 1,400 miles southeast of Anchorage, Alaska; Farmington, New Mexico; Fallon, Nevada; and Hattiesburg, Mississippi.

The AEC conducts almost all of its underground nuclear tests at the Nevada Test Site. Since the Limited Test Ban Treaty the AEC has conducted these underground detonations at depths that provide reasonable assurance of containing radioactive debris. However, there were occasions when such underground tests, nevertheless, vented radioactivity to the atmosphere. Perhaps the most famous of these is the PIKE event of March 13, 1964. Apparently, a crack had developed as the result of a local weakness in the geological structure. There was much concern from the standpoint of possible violation of the Limited Test Ban Treaty. Airborne radiation monitors and automatic recording instruments were used to measure radioactive levels along the fallout trajectory. The increase of radioactivity in Las Vegas, Boulder City, Yuma, and elsewhere in Arizona, while measurable, was slight and considered not to be hazardous. It was concluded that air masses that might have contained suspect material entered Mexico and then returned to the United States.

The Soviet Union did not make a big issue of the PIKE incident, although a Tass news dispatch and a formal diplomatic note made it clear that they had taken note of it. In all likelihood the Soviets tempered their response because they understood full well that such mishaps might happen in their own program also and they did not want to establish too high a standard of accountability. The Soviet Union also had its problems in this respect. On January 15, 1965, they conducted an underground test of intermediate yield (20 kilotons to a megaton) of which about 10 percent vented, as measured by acoustic signals. It was the largest Soviet underground test yet. High flying U.S. planes picked up small quantities of radioactive material over the northern Pacific Ocean.

As a result of the active U.S. underground nuclear weapons test program, the Nevada Test Site was expanded in 1963 and 1964 by more than 153,000 acres to its present size of about 860,000 acres. However, in 1966 it became apparent to the AEC that additional areas would be needed for the underground testing of devices with yields greater than those which could be safely accommodated at the Nevada Test Site. The higher yield tests were needed to satisfy certain military requirements. After a number of studies, the sparsely populated Central Nevada area and the unpopulated Amchitka Island in the Aleutian chain were chosen. The choices were based on relative development costs, relative absence of logistical and environmental problems, and the low chance of possible off-site damage. These two supplemental test areas, as they are known, have been developed and the Amchitka site is currently in use, while the Central Nevada site has been put in a caretaker status.

Because of technological limitations other than yield, additional localities, such as those near Farmington, New Mexico; Fallon, Nevada; and Hattiesburg, Mississippi, have been used. These possess unique qualities, such as geological formations, hydrologic factors and terrain features, which are necessary for a specific type test. These localities have been used in the peaceful uses of nuclear explosives and the Vela detection program and were intended for one time use. The facilities are small and generally temporary in nature.

In addition to the test areas mentioned above, the AEC and DOD maintain Johnston Atoll in the Pacific Ocean. It has been improved and maintained in the event the Limited Test Ban Treaty is abrogated and testing in presently prohibited environments is necessary.

There have been a number of underground high yield tests. These were publicly announced in advance and this gave rise to a good deal of public concern that the tests would contaminate the water, change water levels, trigger earthquakes and cause structural damage to buildings. A special concern was the question of damage to buildings in Las Vegas. In the case of the BOXCAR event, the largest underground nuclear weapons test to date with an estimated yield of about one megaton, billionaire Howard Hughes, because of concern about the effect on his property in Las Vegas, tried to exert pressure on me and then on President Johnson to cancel or postpone this test. Normal administrative procedures had been followed in securing Presidential approval for this test, but the President wanted to review the matter in view of this protest and other protests. A telephonic justification of the test was made to the White House just an hour before the scheduled execution time. Only when the President was convinced of the necessity of the test and of the adequacy of the safety studies was final approval given. The BOXCAR event was conducted at Pahute Mesa, Nevada, approximately 100 miles north of Las Vegas, on April 26, 1968, with minimal environmental effects.

Although public concern continued to be expressed the subsequent high yield tests proceeded under less dramatic circumstances.

The BENHAM test, with a yield of about one megaton, was conducted at the Nevada Test Site on December 19, 1968. The test was necessary in the development of more advanced nuclear weapons. The device which was buried 4,600 feet deep produced ground motions which were felt at various locations in Las Vegas and Tonopah, Nevada and Salt Lake City. At Hoover Dam, southwest of Las Vegas, the maximum acceleration from the test was less than one percent of those accelerations caused by the largest natural earthquake recorded at the dam in 1963.

The JORUM test was conducted in Nevada on September 16, 1969. This test was a weapons-related event. The device, with a yield of about a megaton, was buried 3,800 feet deep and produced lower seismic activity than BOXCAR and JORUM.

The MILROW test, with a yield of about one megaton, was conducted at Amchitka Island off the coast of Alaska, on October 2, 1969. The specific purpose of the Milrow test was to obtain the required information on both physical and bioenvironmental effects from which a realistic evaluation could be made of the similar effects to be anticipated from a follow-on weapons-related test. The device was detonated at a point 4,000 feet below the surface. Milrow had no major impact on the environment.

The HANDLEY test was conducted at the Nevada Test Site on March 26, 1970. This test, with a yield of more than one megaton, was a weapons-related event. The device was buried 4,000 feet deep and produced no damage to off-site structures.

The Soviets conducted another atmospheric nuclear weapons test series in the summer of 1962, which included a 30 megaton explosion.



## XVII. Plowshare

The first Plowshare (Peaceful Uses of Nuclear Explosions) experiment, to investigate the feasibility of the use of nuclear explosives for excavation purposes, was SEDAN, a 100-kiloton device which was detonated in Nevada on July 6, 1962. It involved excavation of a crater 1,280 feet in diameter and 320 feet deep. (I flew over the crater with President John Kennedy in a visit to the Nevada Test Site on December 8, 1962.) However, further excavation experiments became fraught with difficulty due to the provision of the Limited Test Ban Treaty prohibiting any nuclear explosion that "causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted."

The next excavation experiment, SULKY, of estimated yield only 0.1 kiloton took place on December 18, 1964, at the Nevada Test Site. In order to be sure of not violating the test ban treaty, the AEC buried the device at an overly conservative depth. As a consequence we ended up with a mound instead of a crater. Even so, some radioactivity was detected off-site. The amount was small and quickly dissipated, long before it could reach a national border.

SULKY was not a total loss. We obtained useful information from it. What we had chiefly lost was time. To still the clamor of its opponents and ease the impatience of its friends, Plowshare needed a relatively quick success. We had hoped through the series of experiments of which SULKY was a part to demonstrate nuclear excavation technology convincingly to skeptics in the United States and elsewhere. As 1964 ended we were a long way from having done that.

On April 14, 1965, we conducted a Plowshare experiment called PALANQUIN at the Nevada Test Site. It involved detonation of a 4-kiloton thermonuclear device buried at a depth of 180 feet in an emplacement hole drilled to 615 feet. The purposes were to explore cratering mechanisms in hard dry rock such as might be encountered in Panama, and to investigate emplacement techniques that would reduce the amount of radioactivity released in the atmosphere.

It was our expectation, based on earlier experiments, that a large fraction of the radioactive debris would go down the hole and that very little would reach the atmosphere. Also, following the experience of SULKY, we expected PALANQUIN to create a fully contained mound rather than a crater. (The purposes of PALANQUIN, unlike SULKY, were such that we would have been satisfied with a mound.) Our expectations proved wrong in both respects. The dust cloud from the explosion rose to a height of 8,000 feet, and contained higher-than-expected levels of radioactivity. This air mass moved northward rather slowly, dispersing laterally as it travelled. As I reported to the president, the radioactivity was much less than that following the errant Soviet test of January 15, 1965, and well below any possible health hazard level, even close to the test site. Worryingly, however, the radioactivity was sufficient to be readily detectable by properly equipped aircraft should the cloud drift into Canada. On the afternoon of April 15, the radioactive air mass was located east of Spokane, the next morning over Butte, Montana. To our relief, it appeared then to drift to the southeast. However, the Soviets wrote to us in protest.

After many, many postponements due to concerns over LTBT violations, CABRIOLET, using a 2.7-kiloton explosive, was detonated at a depth of 170 feet in hard, dry rock at the Nevada Test Site on January 26, 1968. It created a crater about 400 feet across and 125 feet deep. The wind was right, blowing away from Mexico, and a snowstorm in northern Nevada apparently brought down much of the debris. The snowstorm was a stroke of good luck! No radioactivity attributable to CABRIOLET was detected by the Canadians.

The successful detonation of CABRIOLET on January 26, 1968, set the stage for the execution of two other cratering experiments during that year. In neither case was there major opposition from within the government. BUGGY went off on March 12. It involved the simultaneous detonation of five low-yield (about 1 kiloton) nuclear explosives in a row. It created a ditch-like crater 860 feet long, 280 feet wide, and 68 feet deep. As with CABRIOLET, the explosion was set off in hard rock, the medium most likely to be encountered in a trans-Isthmian canal. Again there were no problems of radiation crossing the border. (After seeing a film of BUGGY, I commented somewhat testily in my diary: "This and CABRIOLET should have been approved for execution long ago.")

On December 8, 1968, SCHOONER was successfully detonated at the Nevada Test Site, creating a crater 850 feet in diameter and over 240 feet deep. Its purpose was to extend cratering technology in hard rock to encompass higher yields, approaching those that would be required for actual construction of a canal. (SCHOONER's yield was 300 kilotons, as compared to CABRIOLET's 2.7.) It released in the atmosphere the highest levels of radioactivity recorded in the United States since the test ban treaty. The radioactive debris seemed to stay well within U.S. borders, however; there appeared to be no treaty violation. What was our astonishment, then, when on January 21, 1969, the first full day of the Nixon administration, the Soviet chargé d'affaires in Washington delivered an aide-mémoire stating that SCHOONER had caused a "two to fivefold increase in fallout in the regions along the Baltic, Volga, Northern Caucasus, and Crimea." The following day I explained to Nixon's assistant Robert F. Ellsworth that this corresponded to an absurdly small amount of radioactivity. As it developed, we were unable, despite President Nixon's favorable prejudice, to obtain administration approval for even one further cratering experiment.

The demise of nuclear excavation was a heavy blow to the Plowshare program, whose hopes for the future rested so heavily on the foreseen opportunities to perform excavation projects as a service for other nations. I would not wish to leave the impression that the delays or denials of CABRIOLET and other experiments bore sole responsibility for this unhappy denouement. Without doubt, they hastened the outcome, but there were serious objections to nuclear excavation that might well have prevailed in any case.

In 1965, the El Paso Natural Gas Company proposed a cooperative project with the AEC and the Interior Department to examine the phenomena involved in the use of nuclear explosions to recover gas. An experimental explosion, called GASBUGGY, took place on December 12, 1967, on one of the company's leases in New Mexico. It involved a 29-kiloton explosive buried at a depth of 4,240 feet. There had been little difficulty gaining approval for this experiment since the explosion would be fully contained--there was virtually no possibility that escaped radioactivity would cause accusations of a treaty violation.

GASBUGGY seemed highly successful. A rate of production several times greater than that of neighboring wells was achieved, although, because the gas was slightly radioactive, none of it was sold commercially.

A second experiment, equally successful, followed in September 1969. Its purpose was to extend GASBUGGY experience to greater depths and different types of rocks. Named RULISON, this second experiment involved explosion of a nuclear device more than 8,000 feet deep near Grand Valley, Colorado. The industrial sponsor in this case was the Austral Oil Company. Resulting natural gas production was copious. Amounts of radioactivity in the gas were very small but there was some and, again, none of the gas was sold commercially.

The Plowshare program made substantial contributions to basic research, including experiments in the production of transplutonium elements. The high flux of neutrons in nuclear explosions can be utilized for the synthesis of heavy isotopes and many were identified for the first time or further investigated by the use of this technique. (Those identified for the first time, however, came from a nuclear weapons test, not a Plowshare experiment.)

The most dramatic of these experiments was the unexpected discovery of einsteinium (atomic number 99) and fermium (no. 100) in the airborne debris from the first thermonuclear explosion, the "Mike" shot staged in the Pacific on Elugelab Island, Eniwetok Atoll, in November 1952. A large group of scientists from the Berkeley Radiation Laboratory, the Argonne National Laboratory and the Los Alamos Scientific Laboratory participated in these discoveries. In addition to  $^{253}\text{Es}$  and  $^{255}\text{Fm}$ , the first known isotopes of einsteinium and fermium, the isotopes  $^{244}\text{Pu}$ ,  $^{246}\text{Pu}$ ,  $^{246}\text{Am}$ ,  $^{246}\text{Cm}$ ,  $^{247}\text{Cm}$ ,  $^{248}\text{Cm}$ ,  $^{250}\text{Cm}$ ,  $^{249}\text{Bk}$ ,  $^{249}\text{Cf}$ ,  $^{252}\text{Cf}$ ,  $^{253}\text{Cf}$  and  $^{254}\text{Cf}$  were discovered. They were produced by the capture of fission neutrons in the  $^{238}\text{U}$  in the Mike device, followed by a series of successive beta decay processes.

The success of such fast neutron capture reactions for the synthesis and identification of new heavy isotopes led, in the 1960's, to the fabrication of specially tailored nuclear explosive devices, by the Los Alamos Scientific Laboratory, and the Lawrence Livermore Laboratory, for the further production and study of such isotopes. In these underground experiments, performed at the Nevada Test Site, the greatest success was obtained with  $^{238}\text{U}$  targets. The neutron capture products are distributed in the vaporized rock and must be recovered from 300–600 meters below the surface. Only a small fraction of the total production is recovered, although much greater than in the atmospheric Mike explosion, and it usually takes several days after the explosion for the first samples to become available for chemical identification and counting.

Some of the more notable experiments were named Par (conducted by Livermore in October, 1964), Barbel (Los Alamos, October, 1964), Tweed (Livermore, May, 1965), Cyclamen (Los Alamos, May, 1966), Kankakee (Livermore, June, 1966), Vulcan (Livermore, June, 1966), and Hutch (Livermore, July, 1969). Of these, the 13 kiloton (kt) Cyclamen and especially the 20–200 kt Hutch events were by far the most productive. The Cyclamen device produced a flux of 15 moles neutrons/cm<sup>2</sup> and Hutch 40 moles neutrons/cm<sup>2</sup>.

A greater quantity of nuclides with mass number greater than 250 was produced in the Hutch event than in the Mike explosion, in spite of the much larger explosive yield of Mike (10,000 kt). For Cyclamen the production of heavy nuclides was also very impressive--the yields of products with mass number greater than 250 was only one order of magnitude less than for Mike, while the total explosive yield was nearly three orders of magnitude less. The fraction of the total products produced in the device that was recovered was about  $10^{-8}$  for Hutch compared to about  $10^{-12}$  for Mike.

Although no new nuclides or new elements were detected in these underground explosions, significant amounts of some rare and heavy nuclides were produced. More  $^{250}\text{Cm}$  was recovered from Hutch debris than has been produced by neutron irradiations in reactors. The Hutch detonation produced  $6 \times 10^{17}$  atoms of  $^{257}\text{Fm}$ , of which  $6 \times 10^9$  atoms (2.5 picograms) were recovered, which is more than has been produced and recovered by neutron irradiations in reactors. The 80-day  $^{257}\text{Fm}$ , the heaviest and longest-lived isotope of fermium, was discovered in 1964 as the result of a four-year neutron irradiation in the Materials Testing Reactor (MTR) in Idaho.

In total the United States conducted 41 Plowshare explosions. Most were conducted in the years 1962 to 1968. During each of these years there were four or more tests. Thereafter, the program dwindled rapidly. There were only two explosions in 1969, one in 1970, and no more while I was Chairman of the Atomic Energy Commission.

## **XVIII. Controlled thermonuclear research (CTR)**

At the beginning of 1961 the many devices for research on controlled fusion reactions were divided into five different categories: stellarators, mirrors, pinches, Astron, and rotational plasma research. The Model C Stellarator (doughnut-shaped magnetic container with a twisted container carrying current outside the plasma) at the Princeton Plasma Physics Laboratory (Princeton, New Jersey) was then two-thirds completed. The Scylla (a high beta stellarator), forerunner of the Scyllac device, was operating at the Los Alamos Scientific Laboratory (LASL), while at the AEC's Livermore Laboratory, in collaboration with and part of Lawrence Radiation Laboratory in Berkeley, "a rather old mirror machine" (a linear machine) called Table Top was producing plasmas with 25 keV electron plasmas. The Astron facility (plasma confined by a circulatory electron beam), also at Livermore, was nearing the stage where hopefully a step-by-step test of the Astron principle would be possible. At Oak Ridge National Laboratory (ORNL), the DCX-2 facility was being designed to replace DCX-1 (a mirror machine injected with molecular deuterium ions).

However, in the research with these devices, between 1961 and 1965, a veritable host of plasma instabilities was discovered, some experimentally, some theoretically. Each in its turn had to be understood and either eliminated or minimized. Critical experiments and better theory had to be developed. Together they would have to provide a depth of understanding of plasma phenomena that went far beyond anything that anyone had formerly conceived of as necessary. Altogether a good deal of progress in such understanding was made. An important advance was made in the early 1960's by the Soviet physicist M. Joffe, referred to as Joffe bars effect, which made possible increased plasma stability. Gradually the belief emerged that, though troublesome, plasma instabilities did not present an insuperable obstacle to the attainment of adequate plasma confinement.

Another ray of hope came from other places. In October 1963 Professor Donald Kerst at the University of Wisconsin reported encouraging results in a small device called a toroidal octupole (a doughnut-shaped container with circular conductor carrying current outside the plasma). Tihiro Ohkawa at General Atomic reported, in November, preliminary results on a linear octupole. The studies of Kerst and Ohkawa paved the way for an entire new genus of devices, the multipoles; and Dr. Ohkawa's work culminated in 1970, with a demonstration of classical plasma confinement in a large toroidal octupole.

During 1964 and 1965, program emphasis on Controlled Thermonuclear Research (CTR) began to shift from basic plasma research to a more applied form in which the considerable body of knowledge about instabilities was applied to the design of a new generation of confinement systems.

At the request of the JCAE a review panel composed of scientists not connected with the CTR programs at the four (national) laboratories was appointed. The full committee met for the first time on May 25 and 26, 1965. Subsequent to this organizational meeting the panel met at each of the four laboratories during the period late June to mid-July 1965. By late July the first tentative conclusions had been reached and these were forwarded to Dr. Paul McDaniel, Director of Research, on August 4, 1965. The panel met on October 9-10 to consider their final recommendations.

On December 30, 1965, the final report of the Controlled Thermonuclear Research Review Panel was forwarded to the Commission. In its final form the panel report addressed itself directly to the then existing status of research in CTR as well as to future program requirements. On the latter subject the panel was distressed to find that the U.S. contribution to world research in fusion was declining rapidly. It recommended "a doubling of scientists and engineers engaged in CTR under AEC auspices in a period of approximately five years." Furthermore, it recommended that "the AEC take immediate steps toward establishing a national center for plasma studies and nuclear fusion research."

The panel concluded that fusion research in the four major laboratories was in a healthy state and the "CTR (was) rapidly moving from an experimental art into a quantitative science." These recommendations included specific references to various experimental programs and how these could be augmented and improved.

At year end, 1965, a major administrative change took place in the Controlled Thermonuclear Research Program. Amasa Bishop, who had headed the program from 1954 to 1958, returned to take charge again. On February 10, 1966, I sent a revised version of the panel report to Charles Schultze, the director of the Bureau of the Budget. I noted that "the views of the Commission were guided in great measure by the report of the Review Panel on Controlled Thermonuclear Research."

During the months that followed, the proposed policy and action paper was subjected to extensive review both within and without the Commission. Early in March, a subcommittee, headed by Sydney Drell, was commissioned to review the report on behalf of the President's Science Advisory Committee. On March 22, the entire Committee was briefed and by mid-June, when the document was put in final form, the Commission's General Advisory Committee had reviewed it also.

On June 16 and 17, 1966, two staff papers were sent to the Commission. One was a request "to consider the adoption of an AEC policy and action paper on controlled thermonuclear research." The other was to consider the establishment of a CTR advisory committee as proposed in the policy and action paper. This advisory committee was envisioned to consist of approximately eight members: the four directors of the primary CTR programs; the assistant research division director (for controlled thermonuclear research), who would act as chairman; and an additional three or four members of the committee to be selected from among the ranks of the U.S. scientific community.

On June 21, 1966, the Commission adopted the policy and action paper including approval of the CTR advisory committee. In response to the recommendations made in the policy and action paper, an orderly expansion of the CTR program began. An internal program review committee was established in 1966. Officially titled the "CTR Advisory Committee," it became known within the program as the Standing Committee. Within a year, four ad hoc panels were convened to study the LASL Scyllac proposal, Low-Beta Open, and Low-Beta Closed, Systems and the Livermore Astron project. The reports they made provided the necessary sound scientific support for the programmatic decisions that followed.

In the scientific-technical area, the document urged that "a number of large new experimental devices (be built) in order to test recent concepts for improved plasma confinement."

The list of fiscal recommendations included one that urged "a net increase of about 15 percent a year in normal operating funds over the next five years," and another recognized the need for major fabrication funds of from \$3 million to \$4 million annually.

At its third meeting on September 7 and 8, 1966, the Standing Committee approved its panel recommendation on the LASL Scyllac. The motion concluded with the unanimous recommendation that the project "be pursued vigorously, through its incorporation in the FY 68 budget." This led to the inclusion of \$8.5 million in the FY 1968 budget for this facility.

During 1967 the other three ad hoc panels of the Standing Committee were appointed in the following subject areas (and chronologically in the order shown): Low-Beta Toroidal Plasma Research, Low-Beta Open System Research, and the Astron program.

After accepting the Low-Beta Toroidal panel's report, the Standing Committee, on September 7 and 8, 1967, went on to authorize fabrication of a superconducting multipole (FY-1) at Princeton.

The Standing Committee reviewed the Low-Beta Open System panel's report on October 30, 1967, and approved a statement which included the following points:

"We find that the present mirror program is well balanced and that the fusion motivation for mirror research continues strong.

We see a clear need for proceeding with the construction of the Baseball II facility as recommended unanimously by the panel...

We support in principle the target plasma program at ORNL ...

We note with gratification the excellent plasma regime achieved semi-empirically in the 2X experiment. We urge the Lawrence Radiation Laboratory (at Livermore) to exploit this encouraging achievement by increasing the effort devoted to it."

Based on the recommendations of the Astron panel, the report of the Standing Committee in March 1968, was not favorable to the Astron project.

In 1967 the crucial objective of the Low-Beta Toroidal research program was a clear demonstration of substantially improved plasma confinement over that predicted by the Bohm formula. So stated the Panel on Low Beta Toroidal Research; and so did the scientific community believe. In the January 19, 1970 issue of Physical Review Letters, such confinement was unequivocally demonstrated. Not even the journal's sterile prose can disguise the magnitude of the breakthrough by Tihoro Ohkawa and his General Atomic co-workers:

"The confinement of 300 Bohm times is observed...In high-density regimes the loss process is found to be due to classical diffusion."

Not only had there been a demonstration of substantially improved confinement, but in fact classical diffusion of a magnetically confined plasma had been obtained for the first time. (The Bohm formula is an empirically observed scaling law that tells how the diffusion time is increased as the dimensions and the field are increased.)

Another significant development program occurred which would have a marked effect on the U.S. Low-Beta Toroidal Program. At the third IAEA Conference on Plasma Physics and Controlled Thermonuclear Research held in Novosibirsk, USSR, in the summer of 1968, new results on toroidal confinement had been presented. In particular, the Soviets disclosed that in the T-3 and TM-3 Tokamak devices (doughnut-shaped magnetic container with current circulating within the plasma) they had confined hot plasmas (electron temperatures of kilovolts and ion temperatures a fraction thereof) for times on the order of 10 milliseconds, which represented a factor of 50 over that predicted by the Bohm formula. The Tokamak program director, L. Artsimovich, was no newcomer to CTR. he had been developing and refining the Tokamak principle for over a decade. Immediately after Novosibirsk, the CTR office began a searching re-evaluation of the U.S. Low-Beta Toroidal Program.

At the September Standing Committee meeting at Los Alamos, Bishop requested that each laboratory analyze the impact of the Novosibirsk Conference on its program. By April 1969 there seemed to be general agreement that the Soviets had forged significantly ahead in low beta toroidal confinement research. As a result, an Information Paper on CTR was forwarded to the Commission on May 15. In it were detailed the Soviet results as they were then appreciated.

"Hot plasma is now reported to have been confined in the T-3 Tokamak for times of more than 1/50 of a second which corresponds to at least 80 times the Bohm value. In these experiments the ion temperatures are reported to be about 500 eV, the initial plasma density being about  $5 \times 10^{13}/\text{cm}^3$ . If these figures are valid, this combination of factors is by far the best achieved anywhere in the world."

Following the May Information Paper, the Standing Committee met at Albuquerque from June 26 to 28, 1969. The major item on the agenda was what the proper response to the Soviet challenge of tokamaks should be. It was unanimously agreed that at least one tokamak experiment had to be started in fiscal 1970 and a second would be highly desirable. On the basis of the speed with which the experiment could be put on line and on its ready ability to check out Soviet interpretations, the PPPL conversion of Model C to a Symmetrical Tokamak (ST) device and the ORNL ORMAK (Oak Ridge Tokamak) program were approved. Inasmuch as the Committee also had to consider excellent proposals from General Atomic for Doublet-II (toroidal multipole with current circulating within the plasma), from MIT for Alcator (a tokamak), and from the University of Texas for its turbulently heated system, the decision to approve only two devices represented a concession to the fiscal pressures then operative.

Of the three proposals not acted upon at the time, the first deserves special mention. Doublet-II was the extension of an already existing Tokamak-like device called Doublet-I, whose genesis can be traced back to an idea of Ohkawa's in late 1967 to combine the best features of the Tokamak with the best features of the multipole. Ohkawa was clearly the first of the U.S. scientists to appreciate the importance of the tokamak geometry. In his proposal to the AEC dated May 22, 1968, he related his entire design of Doublet-I, then called a plasma current multipole, specifically to the Tokamak and outlined its properties in terms of that concept. By the time of the Albuquerque Standing Committee meeting, Doublet-I had already shown the feasibility of obtaining a geometrically stable Magnetic Hydro Dynamic (MHD) equilibrium in the Doublet geometry and had indicated the possibility of obtaining stable confinement of an intermediate beta plasma. Late in fiscal 1970, the Standing Committee finally agreed that the project should be funded and recommended it to Bishop. Funding began in February 1970. Completion was scheduled for the summer of 1971.

The other two tokamak proposals not originally approved by the Standing Committee fared equally well. As a result of the British verification of the T-3 results in August 1969, there was no longer any doubt that the Soviets had indeed made a major contribution to the CTR program. Virtually overnight, attention focused on how to take advantage of the breakthrough. The MIT and Texas programs were tailor-made for that purpose. The MIT group had fashioned a program that depended on the special high field capability of the Francis Bitter National Magnet Laboratory. They were prepared to investigate the scaling of tokamak behavior to reactor-like magnetic fields, i.e., fields in the 120-150 kG range; while the Texas program had addressed itself to the problem of increasing ion-heating through the use of induced plasma turbulence. Both proposals were reviewed extensively and favorably during the fall of 1969 and the winter of 1970. By late December 1969, the Division of Research had completed its review of Alcator (the MIT device) and on June 6, 1970 the AEC's General Manager was notified of "plans to initiate in fiscal 1970 the fabrication of a high magnetic field toroidal experiment at the Massachusetts Institute of Technology."

The Model C Stellarator was shut down in December 1969 and conversion to a symmetric tokamak (ST) was completed by May 1970. The first series of experiments confirmed the Soviet results on T-3 and provided the confidence needed to push forward with the other systems.

While the Low-Beta Toroidal Program was undergoing redirection, the embodiment of the High-Beta Toroidal effort, Scyllac, was proceeding along well-defined lines. Scyllac had been authorized in fiscal year 1968. However, building construction did not start until late November 1968. Thereafter, with the exception of a one month delay due to labor difficulties, the Scyllac project stayed right on schedule. Initial operation began on March 8, 1971.

Like the High-Beta Toroidal Program, the Mirror Program followed quite closely the Low Beta Open System panel's recommendations. At the Novosibirsk Conference in 1968, the Livermore (Berkeley) group reported near-classical plasma confinement in the 2X device. Additional data, taken during the year that followed, demonstrated the need for larger plasma volume, and deeper well depth.

As a result, the 2X (mirror) device was shut down early in 1970 and conversion to 2X-II was begun. In 2X-II the mirror ratio was to be increased by 50 percent, the plasma volume by a factor of 2, and the classical confinement time by a factor of 10. If the device is found to exhibit only classical losses, the case for stable confinement in mirror reactors will be greatly strengthened. Concurrently, the Baseball I (mirror) device, in which Landau damping was shown to be the controlling element in the plasma buildup process, was being converted to a larger neutral injection system in which several high energy beams can be injected simultaneously. Baseball II, although delayed somewhat by funding stringencies, was expected to be operational in summer 1971.

Thus by 1971 the following devices were operating or near operating: the Scyllac at Los Alamos, the Symmetric Tokamak and FM-1 (Multipole) at Princeton, Baseball II and 2X-II at Livermore (Berkeley), Doublet-II at General Atomic, ORMAK at Oak Ridge, and Alcator at MIT.



## XIX. Nuclear education and training

To illuminate the orders of magnitude of the number of persons assisted, the FY 1969 program has produced the following education and training accomplishments: supported advanced study through 466 fellowships and 155 traineeships, enabled the training of 804 faculty members through summer and academic-year institutes, trained 672 individuals through nuclear courses and provided training opportunities at AEC laboratories ranging from participation in research to short instruction in use of scientific instruments for 1,182 faculty, 2,742 students and 609 others from government and industry. Additionally, close to 200 Puerto Ricans and Latin Americans were trained at the Puerto Rico Nuclear Center.

The program that experienced the greatest expansion in the ten-year period was the University-AEC Laboratory Cooperative Program. In July 1965 the Division of Nuclear Education and Training (DNET) organized a Laboratory Relations Branch to accelerate the Commission's programs of encouraging colleges and universities to make greater use of the unique talents and sophisticated facilities of AEC laboratories for educational purposes. The establishment of this branch enabled the Division to provide several full-time professionals with the opportunity to 1) motivate both AEC laboratories and educational institutions to expand interactions among themselves, 2) improve coordination of laboratory cooperative activities with other agencies and industrial nuclear laboratories, and 3) work with college and university consortia to develop new programs of cooperation with AEC laboratories. This program is administered for the Commission by a number of university consortia throughout the United States. These include Oak Ridge Associated Universities, Argonne Universities Association, Associated Western Universities, the Northwest College and University Association for Science and several others. These cooperative educational programs are developed by committees of the associations, representing a number of nuclear disciplines. The support of faculty and students at AEC laboratories is administered principally by the consortia but may also be administered in some instances through the laboratory providing the research facilities. The laboratory cooperative endeavors comprise principally: faculty and student research participation, faculty-student conferences, laboratory graduate fellowships, honors programs, and engineering practice schools. There are 15 AEC laboratories that participate in some or all of these activities.

Another important educational activity under the Assistance to Schools category is the program of training teachers through summer and academic-year institutes. Most of the training in this category is in the field of radiation science and technology. However, its level has been cut in two over the ten years ending in FY 1971. The major reduction has been in phasing out training of high school science teachers, due to budget stringencies. In the early years of this program the related funding was provided by both the National Science Foundation and the AEC. NSF provided the support for the college and high school teachers attending the institutes and the AEC provided operating support to the host universities conducting the institutes. In recent years the AEC has been providing the total funding required for these institutes, but confined to teachers.

Since 1954 the Commission has provided financial support to colleges and universities for nuclear materials and services related to their instructional programs in the nuclear sciences and engineering. The support for this category has more than doubled over the FY 1960- FY 1970 period. In the last few years, nevertheless, it has been possible to accommodate less than one-half of the requests received. Most of this activity, about 80% of its funds, has been for fabrication and reprocessing of fuel for university reactors, known as fuel cycle assistance. Two dozen reactors on campuses spread widely through the United States are assisted in this way and 15 of them are rated above 1 megawatt. Many of these are increasing in power and usage, thereby resulting in increased fuel and operating costs. A most serious problem facing universities with large research reactors is how to meet the increasing cost of operating these facilities. The universities bear three-quarters of this cost but they depend on the AEC for some financial support for their reactors. For this, fuel cycle assistance is augmented by waiver of use charges for fuel and waiver of reprocessing costs for spent fuel elements. The institutions possessing these larger reactors produce more than 90% of the M.S. level and 97% of the Ph.D. level nuclear engineers. These advanced degree graduates contribute greatly to fulfilling the manpower requirements for the nuclear industry and AEC contractors. These reactors also help to diffuse nuclear phenomena into many scientific disciplines other than nuclear engineering. It is estimated that a typical university research reactor is utilized over 50% by disciplines other than nuclear engineering.

In recognition of the versatility of these reactors, the AEC in 1969 instituted a program of reactor-sharing, whereby institutions with reactors are compensated for costs added by sharing the reactors with nearby colleges and universities. To date there are five such reactor-sharing centers located in California, Texas, Kansas, Georgia and New York. It is the intent of DNET to expand this program in the future to establish at least 20 such centers within the United States.

As part of the Atoms for Peace program of the Eisenhower Administration, the Commission established the Puerto Rico Nuclear Center for the training of Latin American scientists and engineers in nuclear technology. The initial budget for the establishment of the Center was in FY 1958 and that the budget has expanded from \$510,000 in FY 1960 to \$1,340,000 in FY 1970. During this growth a shift took place from emphasis on instruction in radioisotope techniques to graduate degree programs in the physical and life sciences and engineering, all with a nuclear emphasis. The shift was made concurrently with a Commission determination that it was necessary to have a research capability at the Center as a base for graduate education and training, and for an instructional center whose staff would be up to date in techniques. Thus, in addition to DNET's financial support for educational activities at PRNC, the Division of Biology and Medicine instituted in 1962 a life science research program approximating \$600,000 per year, and the Division of Research initiated a physical sciences program running about \$200,000 per year.

It must be apparent that during the period FY 1960- FY 1970 and continuing to date the Commission has made substantial changes in its education and training program. Because of stringent budgets in recent times DNET has terminated its program of training high school science teachers and is concentrating on the training of college faculty, including faculty from junior colleges and technical institutes who will be trained to instruct the technicians urgently needed by the expanding nuclear industry. Increased emphasis is being placed on the traineeship mode of support for graduate study as distinguished from fellowships. Traineeships provide the Commission with a greater voice in choice of graduate curricula and degree level than do fellowships. Likewise, more emphasis is being placed on M.S. level programs than the Ph.D. degree in Nuclear Engineering and Radiation Science and Protection. Some of these changes in emphasis reflect not only the changing picture of government contractor and industrial employment but also concerns of the Office of Management and Budget and the Joint Committee on Atomic Energy resulting from their review of the Commission's education and training budgets.

The 1970 workshop for black institutions at Oak Ridge was broadened from the 1969 format to include faculty from all university disciplines instead of engineering alone. Reports during August 1970 indicated that this workshop also has been quite successful.

The story of nuclear education and training would not be complete without mention of the excellent assistance that has been rendered to educational institutions and the AEC by the American Nuclear Society (ANS), the American Society for Engineering Education (ASEE), and the American Institute of Biological Sciences (AIBS). The Commission has worked hand-in-glove with these organizations almost from the inception of the program for nuclear education and training. The ASEE and the AIBS were particularly helpful in the early part of the 1960's, whereas the contributions made by the ANS have been exercised during the latter five years of the decade. These three organizations' invaluable professional assistance has been principally in the areas of faculty institutes, training aids, manpower surveys, conferences, seminars, and symposia.

In summary, the 1960's may be characterized as the period when the joint venture of AEC and educational institutions to develop instructional capabilities on campus in the nuclear sciences and engineering paid off to the benefit of the government, industry, education and the public. The Commission has invested over \$125 million plus \$20 million worth of loans of nuclear materials and substantial indirect aid through use of its laboratory facilities on behalf of this venture. Similarly, the institutions have more than matched this sum in estimates as high as an additional \$160 million.

## XX. Technical information

As of 1961, the Commission was publishing four quarterly Technical Progress Reviews, journals which covered developments in particular areas of the nuclear energy field of interest to technical and management people. The four were Nuclear Safety, Power Reactor Technology, Reactor Core Materials (renamed Reactor Materials in 1962), and Reactor Fuel Processing, and were prepared by staffs of major laboratories. A fifth journal, Isotopes and Radiation Technology, was added in 1963; and in 1967, the publication schedule for Nuclear Safety was increased from four to six times per year.

In 1966, when it became apparent that chemical reprocessing of nuclear fuel had become routine, Reactor Fuel Processing was merged into Power Reactor Technology. In 1969, Reactor Materials was merged with Power Reactor Technology.

Another means of furnishing scientists with needed information covering the state of knowledge in their fields of interest was provided in 1968, when AEC began publication of its Critical Review Series. (A critical review has been defined as "an article on a specialized field of study in which the scientific objectives within the field are defined, concepts or hypotheses are examined, existing knowledge is evaluated, and new concepts are synthesized.") Five volumes were issued in this series: Sources of Tritium and Its Behavior Upon Release to the Environment; Plume Rise; Atmospheric Transport Processes, Part I; Reactor-Noise Analysis in the Time Domain; and The Analysis of Elemental Boron.

Since its inception, the AEC has received a steady flow of inquiries from the general public, particularly secondary school students and their teachers, regarding various aspects of nuclear science and its applications. By 1963, the volume of such requests had become so heavy that the AEC decided to prepare topical booklets to provide answers to the questions asked most frequently. These could serve as tools for the strengthening of science education. Accordingly, a series of educational booklets was initiated under the title of "Understanding the Atom." Prepared by established science writers, the booklets are made available in limited quantities without charge.

The series proved to be enormously popular from the outset, resulting in repeated reprints and the addition of more titles. Many of the booklets have been translated into foreign languages, and seven which have been produced in Braille are being distributed to blind high school students through the American Printing House for the Blind. The growth of the series may be seen in the following table.

### Understanding the Atom Booklets

| <u>Year</u> | <u>Number of titles<br/>in Print</u> | <u>Number of<br/>Copies Distributed<br/>(Cumulative)</u> |
|-------------|--------------------------------------|--|
| 1962        | 3                                    |  |
| 1963        | 8                                    |  |
| 1964        | 19                                   |  |
| 1965        | 28                                   |  |
| 1966        | 39                                   | 3,328,200  |
| 1967        | 45                                   | 4,779,000  |
| 1968        | 51                                   | 6,524,000  |
| 1969        | 54                                   | 8,047,600  |
| 1970        | 56                                   | 9,456,400  |

The booklet "The Elusive Neutrino," by Jeremy Bernstein, received the 1970 Science Writing Award in Physics and Astronomy sponsored by the American Institute of Physics and the U.S. Steel Foundation.

By 1970 it was felt that there was a need for educational materials on a somewhat less technical level than "Understanding the Atom." Accordingly, under the title of "World of the Atom," a new series of booklets was begun, designed for use by students in upper elementary grades and for basic adult education courses. Five titles were published in this series during its first year.

Among the accomplishments of which I am most proud were the publication of the two histories of the Atomic Energy Commission: Volume I, The New World, 1939/1946 by Richard G. Hewlett and Oscar E. Anderson, Jr. (The Pennsylvania State University Press, 1962), and Volume II, Atomic Shield, 1947/1952 by Richard G. Hewlett and Francis Duncan (The Pennsylvania State University Press, 1969).

During the ten years (1961-70), the AEC organized U.S. participation in 120 IAEA conferences held throughout the world. The U.S. sponsored approximately 3,000 participants who presented 1,500 papers covering a broad spectrum of subject matter. The IAEA conferences which drew the largest U.S. attendance abroad and the greatest number of papers were those on Plasma Physics and Controlled Thermonuclear Research. There were three such conferences held: at Salzburg, Austria, in 1961; Abingdon, U.K., in 1965; and Novosibirsk, USSR, in 1968. Several of the IAEA conferences were held in the United States. Most highly attended was the conference on "Environmental Aspects of Nuclear Power Stations," held at United Nations Headquarters in New York in August 1970 (which I attended).

In addition to the IAEA meetings, there were 152 other conferences supported by the AEC during the ten-year period. Especially noteworthy among these were:

Radiation Research Congresses held in England (1962), Italy (1966), and France (1970).

International Congress on Nuclear Physics, Gatlinburg, Tenn. (1966).

Conference on Constructive Uses of Atomic Energy, Washington, D.C. (1968).

To facilitate access by the scientific community to the world's nuclear literature, the AEC established in 1948 its semimonthly journal Nuclear Science Abstracts (NSA). Trends in nuclear science and technology have been mirrored by the yearly changes in NSA contents. During the 10 years (1961 through 1970), the number of literature items abstracted annually increased from 33,064 to 53,080. A very significant trend reflected in the contents of NSA is the increased tempo of nuclear research and development in foreign countries. Whereas in the early years a heavy preponderance of the literature abstracted in NSA originated in the United States, a crossover occurred during the 1960's, and the U.S. shared of the total dropped below 50 percent.

A notable change, initiated during the decade and still in process, is the computerization of the actual production of Nuclear Science Abstracts.

In 1967, an automatic data processing system with input prepared via paper tape was instituted to increase the speed of input and to facilitate storage of the information for index cumulation and other retrieval purposes. In 1970, an even faster and more efficient system was initiated through which the contents of NSA are inputted through keyboards attached to video display cathode ray tube terminals. These permit the information to be edited and corrected prior to entering the data base. A key feature of the new procedures is that the single keyboarding step used for automatic entry of bibliographic citations also provides information for the titling of microfiche, reproduction copy for catalog cards and weekly accession lists, data for the production of NSA indexes, and a bibliographic data base for further computer manipulation.

In addition, there has been under development since 1966 an International Nuclear Information System (INIS), operated under the aegis of the International Atomic Energy Agency for all its member states. The basic plan of INIS is that each country surveys its own national scientific literature, identifies items on the peaceful uses of nuclear energy which fall within the subject scope of the system, and supplies English-language bibliographic descriptions, abstracts, and subject indexing terms for those items. The IAEA then merges the data received and makes available on magnetic computer tape copies of a complete bibliographic file which each member state can use to supply nuclear information services within its borders. The IAEA also furnishes periodic categorized listings of the items reported to the system and, on request, copies of scientific and technical reports. Following approval by the IAEA's Board of Governors, the INIS became operational in May 1970 with a subject scope limited to reactor technology for the initial "debugging" period. In 1970, submissions were received from about 30 countries, including the U.S. (about 2,400 items) and the USSR.

"This Atomic World," the AEC's nationwide mobile lecture-demonstration program, aims to stimulate high school students' interest in science and increase their understanding of the basic principles and peaceful applications of nuclear energy. During the academic year, the teacher-demonstrator, traveling in a specially-equipped van, visits a different school each day. In a 40-minute assembly program for the entire student body, the teacher covers basic aspects of nuclear science including radioactivity, chain reactions, reactors and their uses, and applications of radioisotopes. Subsequently, s/he conducts more specialized sessions for the school's science classes.

By the end of 1970, more than 19 million students in all 50 states had seen the program. A long-standing goal of the program is to be able to reach every U.S. student at least once during his/her high school career. To reach more students without substantially increasing Federal expenditures for the program, a cooperative method of support was introduced in 1966-67. Under this procedure, AEC supplies the van and its equipment and trains the demonstrator, while a State or local organization employs the demonstrator and handles scheduling. In 1970, 18 of the 21 units were operated in this manner.

AEC has found museums, especially those with active science programs, to be excellent locations for presentations of exhibits and demonstrations on nuclear energy. One of the first of these exhibits was "Radiation and Man" which opened at the Museum of Science and Industry in Chicago, Illinois, in 1963. It utilizes audience participation devices to explore highlights of nuclear science, with particular attention to the effects of radiation on living matter. It also features lecture-demonstrations which explain uses of radiation in research, medicine, and agriculture. In 1964 and 1965, "Radiation and Man" and Atomsville, U.S.A.," a nuclear museum for children ages 7 through 14, were displayed at the New York World's Fair Hall of Science.

Another museum exhibit, "Life Science Radiation Laboratory," features a biology laboratory where actual experiments are carried out with plants, animals, and fish which have been "tagged" with radioisotope tracers. This exhibit has been shown at many U.S. museums.

An important addition to the Commission's traveling museum program is the "Energy" exhibit originally designed under the Office of Education auspices for the Cincinnati Science Center. When that Center was closed in 1970, the exhibit was transferred to AEC. Its three major components, "Electrical Energy", "Radiant Energy", and "Mechanical Energy" have been loaned to the New York Hall of Science, Franklin Institute in Philadelphia, and the Oregon Museum of Science and Industry in Portland, respectively.

The AEC agreed to support the installation of a research reactor and a gamma irradiation facility in a new atomic energy wing being added to the New York Hall of Science.

From 1959 through 1969, the AEC presented a series of month-long nuclear science demonstration expositions in major cities of the world. The program has been terminated because of lack of funds.

A major exhibit demonstrating U.S. achievements in nuclear technology was held in conjunction with the Third Geneva Conference in 1964. It was visited by more than 22,000 persons.

The AEC and the Department of Interior cooperated in a nuclear desalting exhibit at the Levant Fair in Bari, Italy in 1966. Other presentations on desalting were made in 1967 in Milan, Italy, and Sao Paulo, Brazil, and during 1968 in several major cities of Pakistan.

The AEC displayed information on desalting, peaceful nuclear explosives, and other subjects at NUCLEX-66, a nuclear industry exposition at Basel, Switzerland. Other AEC exhibits abroad were presented in connection with the Mexico City Olympic Games in 1968 and at the Paris Air Show in 1969.

## XXI. Civil Defense

As a result of the persistent efforts of Alvin Weinberg and Eugene Wigner, a civil defense research program, supported jointly by AEC and the Office of Civil Defense, was established at the Oak Ridge National Laboratory in 1964. A general national lack of support for civil defense led to the demise of this program.

### AUXILIARY AND PERSONAL ACTIVITIES

My journal includes descriptions of various auxiliary and personal activities.

During this decade I gave some 500 major speeches, including the annual historic "Prelude to Independence" Address at Williamsburg, Virginia, in May 1962; addresses at each of the 11 annual General Conferences of the International Atomic Energy Agency, 1961-71; 18 commencement addresses at universities and colleges; 20 addresses at dedications of university or college laboratories; talks each year at the annual joint meetings of the Atomic Industrial Forum and the American Nuclear Society (1961-71); six talks at the annual International Science and Engineering Fairs; seven talks at the annual Science Talent Search in Washington; three talks at the California Commonwealth Club in San Francisco; and two talks at the National Press Club.

During this period I received a number of awards, including being named "Swedish American of the Year" by the Vasa Order of America (1962), election as a "Kentucky Colonel" by the State of Kentucky (1962), receiving the Franklin Medal of the Franklin Institute (1963), the Charles Lathrop Parsons Award of the American Chemical Society (1964), the First Spirit of St. Louis Award from St. Louis University (1964), the Leif Erikson Award from the Leif Erikson Foundation (1964), the Washington Award from the Western Society of Engineers (1965), the Willard Gibbs Medal of the Chicago Section of the American Chemical Society (1966), the Arches of Science Award of the Pacific Science Center Foundation (1968), the Chemical Pioneer Award of the American Institute of Chemists (1968), the Prometheus Award of the National Electrical Manufacturers Association (1969), the Nuclear Pioneer Award of the Society of Nuclear Medicine (1971), the Oliver Townsend Award of the Atomic Industrial Forum (1971), and the Distinguished Honor Award of the U.S. Department of State (1971). In addition, I was awarded about 40 honorary degrees (including D.Sc., Sc.D., LL.D., D.P.S., D.P.A., D.Eng., and L.H.D. degrees).

I was also elected to membership in the following foreign academies: Argentine National Academy of Sciences (Honorary Member, 1967), Bavarian Academy of Sciences (Corresponding Member, Mathematics-Natural Science, 1968), Royal Academy of Exact, Physical and Natural Sciences, Spain (Academic Foreign Correspondent, 1969), and the USSR Academy of Sciences (Foreign Member, 1971).

Soon after my arrival in Washington I moved into the University Club, which served as my residence until the arrival of my family in late June of 1961. Before they arrived I purchased a house (with four bedrooms, an attic dormitory room and a study which could serve as a guest room) in the Old Chevy Chase or Reno Park area of northwest Washington (3825 Harrison Avenue). A major criterion for the location of the house was proximity, i.e., easy walking distance, to Ben Murch Grammar School (grades kindergarten through six), Alice Deal Junior High School (grades seven through nine), and Woodrow Wilson High School (grades ten through 12). Peter (age 15) was scheduled to start the 10th grade in the fall; Lynne (soon to be 14), the ninth grade; David (12), the seventh grade; Stephen (soon to be 10), the fifth grade; and Eric (to be seven in November), the second grade. Dianne (to be two in November) started kindergarten three years later (after having to pass an entrance examination because she was too young, by a matter of days, to qualify in the regular manner).



Upon graduation from Woodrow Wilson High School in 1964, Peter entered Harvard University to major in history, and graduated in 1968. Lynne followed him, to Radcliffe College in 1965, where, as an anthropology major, she graduated in 1969. David went to the University of California, Davis, as a zoology major in 1967, and Stephen followed him there in 1969 as a psychology major. Thus, my journal includes copies of the letters that I wrote to them after they went off to college. Lynne married William B. Cobb, a Harvard social relations major and classmate of Peter in June 1968 (at the end of her junior year) in a ceremony at the Swedish Embassy in Washington, presided over by Judge Luther Youngdahl. Peter married Jane Rubenstein at the United Nations Chapel in New York in June 1971.

My mother visited us from her home in South Gate, California, one or more times each year until ill health overtook her in 1967, followed by her death in 1968. Much of my correspondence with her is attached to the pages of my journal.

Before any of the kids left home, the eight of us enjoyed our family vacations together--in 1961, short visits in our Pontiac station wagon to Ocean City, Maryland, and the Shenandoah Mountains; in 1962, a visit via air travel to my hometown of Ishpeming, Michigan, the newly opened Century 21 Exposition (World's Fair) in Seattle, Washington (as guests, in recognition of my service on the National Science Planning Board), and our home area of Lafayette, California; in 1963, an automobile trip to New England and eastern Canada, including Quebec; in 1964, an automobile trip to Gatlinburg, Tennessee, and the Smoky Mountains via the Blue Ridge Parkway in the Shenandoah Mountains; and in 1965, an automobile visit to the Pocono Mountains in Pennsylvania and Atlantic City, New Jersey. A favorite spot for short vacation interludes was Skyland Lodge in the Shenandoah Mountains. We also enjoyed a rented cottage on the beach at Virginia Beach, where I visited the family on weekends during their more extended stays. We were a pretty sight, the eight of us packed into our red station wagon with a luggage rack on the top often packed full of equipment and food.

After 1965, Peter and Lynne had their own agendas at summer vacation time and no longer accompanied us. However, the four younger kids continued to do so. In 1966, we flew to Chicago, rented a car to drive to and visit my hometown of Ishpeming; in 1967, we drove to Montreal, Canada, to visit Expo '67 (Peter and Lynne flew up for short visits with us); in 1968, we drove to Florida and toured the state, and visited the Savannah River Laboratory on the way back; in 1969, we flew to Los Angeles to do the sights (Disneyland, Knott's Berry Farm, movie studios, etc.) and Helen and I attended a banquet that President Nixon gave for our astronauts who had landed on the moon the month before; and in 1970, we made an automobile tour of historic and scenic regions in Pennsylvania.

Although I played some golf at the Chevy Chase Country Club (of which we were members), on the whole I neglected my exercise during the first half of our stay in Washington due to the pressures of my work and travel schedule, with the result that I began to feel tired. I then began to hike with some regularity, taking, when the weather permitted, almost daily hikes on the marvelous trails of Rock Creek Park, and sometimes longer hikes on weekends. A favorite hike was to Old Rag Mountain in the Shenandoahs, which became an annual event in which we were joined by members of the AEC staff--on one occasion by as many as 50. Also, at my request, a hiking trail was fashioned at our Germantown headquarters, which later became known as the "Seaborg Trail," and on which I and some of my staff often hiked after lunch, on those days when we were at Germantown.

In 1965, I joined the Board of Trustees of Science Service, and in 1966, upon the retirement of Leonard Carmichael, I became President. Watson Davis also retired as Director at that time and was succeeded by Ted Sherburne. Science Service is devoted to the public understanding of science, sponsors the annual Westinghouse Science Talent Search, the annual International Science and Engineering Fair and is the publisher of Science News. Thus, I began to interview the 40 finalists each year at the annual Science Talent Search in order to help select, as one of a panel of judges, the winners of the scholarships.

I served on the Board of Directors of the National Educational Television and Radio Center (1958-1964 and 1967-1970), the Board of Trustees of the Pacific Science Center Foundation (1962-1971), the Board of Trustees of the American Scandinavian Foundation (1968-1971); became a member in 1969 of the Board of Directors of the newly formed, Washington-based, World Future Society; continued my membership on the Scientific Advisory Board (SAB) of the Welch Foundation and attended their semi-annual meetings in Houston, Texas; and served on the editorial boards of the Journal of Inorganic and Nuclear Chemistry (1954-71) and the Panel of User Consultants of the American Heritage Dictionary (1964-1971).

After having declined to do so on several previous occasions, on the basis of my heavy schedule, I consented in the fall of 1970 to run for president of the American Association for the Advancement of Science (AAAS), this time on the basis that I knew that I would finish my service as AEC Chairman in the summer of 1971. I was elected, am serving as President-Elect now (in 1971), will serve as President in 1972, and as Chairman, in 1973. In this capacity, I began to attend the meetings of the Board of Directors in 1971, when my old friend Athelstan Spilhaus is Chairman and Mina Rees is President.

During this decade I participated in countless press conferences in this country and in almost all of the 60 countries that I visited. Major press conferences occurred at each of the 11 General Conferences of the International Atomic Energy Agency, and the two Geneva Conferences on the Peaceful Uses of Nuclear Energy. I appeared on the NBC news program "Meet the Press" twice (in 1961 and 1971), the ABC news program "Issues and Answers" several times, the NBC "Today" show and many other TV and radio news programs. I was featured in news magazines, including cover stories in both Newsweek (October 1961) and Time (November 1961), a cover story in Business Week (December 1964), and interviews in U.S. News & World Report.

With all of this, I managed to read the scientific journals in my specialty, enabling me to stay abreast of my research field of transuranium elements and nuclear chemistry. I published about two dozen scientific articles, the most notable being a 100-page review article in the 1968 issue of the Annual Review of Nuclear Science entitled "Elements Beyond 100, Present Status and Future Prospects". Thus, I feel, I am returning to the University of California in a position to resume research in my specialty.

## **APPENDIX A**

### **Commissioners**

|   |                  |
|---|------------------|
| <b>Bunting, Mary I.</b><br>Biologist and former president of Radcliffe College                                      | <b>1964-1965</b> |
| <b>Costagliola, Francesco</b><br>Former staff member of the Joint Committee on Atomic Energy                        | <b>1968-1969</b> |
| <b>Haworth, Leland J.</b><br>Physicist and former director of the Brookhaven National Laboratory                    | <b>1961-1963</b> |
| <b>Johnson, Wilfrid E.</b><br>Engineer and former general manager of the Hanford Atomic Works                       | <b>1966-1971</b> |
| <b>Larson, Clarence E.</b><br>Chemist and former general manager of Oak Ridge Operations                            | <b>1969-1971</b> |
| <b>Nabrit, Samuel M.</b><br>Biologist and former president of Texas Southern University                             | <b>1966-1967</b> |
| <b>Olson, Loren K.</b><br>Washington attorney and former general counsel of the Atomic Energy Commission            | <b>1961-1962</b> |
| <b>Palfrey, John G.</b><br>Former professor, Columbia School of Law   | <b>1962-1966</b> |
| <b>Ramey, James T.</b><br>Former executive director of the Joint Committee on Atomic Energy                         | <b>1962-1971</b> |
| <b>Tape, Gerald F.</b><br>Physicist and former president of Associated Universities, Inc.                           | <b>1963-1969</b> |
| <b>Thompson, Theos J.</b><br>Nuclear engineer and former professor, Massachusetts Institute of Technology           | <b>1969-1970</b> |
| <b>Wilson, Robert E.</b><br>Former chairman of Standard Oil of Indiana and member of the General Advisory Committee | <b>1961-1964</b> |

## APPENDIX B

### Members of the General Advisory Committee

|  |           |
|--|-----------|
| Abelson, Philip H.<br>(Director, Geophysical Laboratory, Carnegie Institution, Washington, D.C.)                   | 1961-1962 |
| Benedict, Manson<br>(Professor of Nuclear Engineering, MIT, Cambridge, MA)   | 1961-1967 |
| Bugher, John C.<br>(Director, Puerto Rico Nuclear Center, San Juan, PR)  | 1964-1969 |
| Eliassen, Rolf<br>(Environmental Engineer, Stanford University, Palo Alto, CA)                                     | 1970-1971 |
| Friedman, Herbert<br>(Superintendent, Space Science Division, U.S. Naval Research Laboratory, Washington, D.C.)    | 1968-1971 |
| Froman, Darol<br>(Retired, Espanola, NM)   | 1964-1965 |
| Goldwasser, Edwin L.<br>(Professor of Physics, University of Illinois, Urbana, IL)                                 | 1966-1971 |
| Hafstad, L. R.<br>(Vice President, Research Laboratories, General Motors Corporation, Warren, MI)                  | 1962-1967 |
| Hall, Jane H.<br>(Assistant Director, Los Alamos Scientific Laboratory, Los Alamos, NM)                            | 1966-1971 |
| Lawroski, Stephen<br>(Associate Laboratory Director, Argonne National Laboratory, Argonne, IL)                     | 1964-1969 |
| Libby, Willard F.<br>(Professor of Chemistry, University of California, Los Angeles, CA)                           | 1961      |
| Murphree, Eger V.<br>(President, Esso Research & Engineering Co., Linden, NM)                                      | 1961      |
| Pitzer, Kenneth<br>(Professor of Chemistry, University of California, Berkeley, CA)                                | 1961-1964 |
| Ramsey, Norman F.<br>(Professor of Physics, Harvard University, Cambridge, MA)                                     | 1961-1971 |
| Squires, Lombard<br>(Manager, Atomic Energy Division, E. I. Du Pont de Nemours & Co., Wilmington, DE)              | 1968-1971 |
| Sterner, James H.<br>(Professor of Environmental Health, University of Texas School of Public Health, Houston, TX) | 1971      |
| Vesper, Howard G.<br>(Vice President, Standard Oil Company of California, San Francisco, CA)                       | 1965-1971 |

|   |                  |
|---|------------------|
| <b>Warner, J. C.</b><br>(President, Carnegie Institute of Technology, Pittsburgh, PA)         | <b>1961-1963</b> |
| <b>Webster, William</b><br>(President, New England Electric System, Boston, MA)               | <b>1963-1971</b> |
| <b>Wigner, Eugene P.</b><br>(Palmer Physical Laboratory, Princeton University, Princeton, NJ) | <b>1961-1963</b> |
| <b>Williams, John H.</b><br>(School of Physics, University of Minnesota, Minneapolis, MN)     | <b>1961-1965</b> |

**Scientific Officers**

|  |                  |
|--|------------------|
| <b>Charpie, Robert A.</b><br>(Oak Ridge National Laboratory, Oak Ridge, TN)  | <b>1961-1962</b> |
| <b>Harrison, Melvin A.</b><br>(Lawrence Radiation Laboratory, Livermore, CA) | <b>1968-1971</b> |
| <b>Sewell, Duane C.</b><br>(Lawrence Radiation Laboratory, Livermore, CA)    | <b>1963-1967</b> |

**Secretary**

|                         |                  |
|-------------------------|------------------|
| <b>Anthony A. Tomei</b> | <b>1961-1971</b> |
|-------------------------|------------------|

## APPENDIX C

GLENN T. SEABORG is currently University Professor of Chemistry (the most distinguished title bestowed by the Regents), Professor in the Graduate School of Education, Associate Director of the Lawrence Berkeley Laboratory and Chairman of the Lawrence Hall of Science at the University of California, Berkeley.

He received his A.B. in Chemistry from UCLA in 1934 and his Ph.D. in Chemistry from Berkeley in 1937. He has served on the faculty of the Berkeley campus since 1939 and was Chancellor of that campus 1958-1961. In 1961 Dr. Seaborg was appointed Chairman of the Atomic Energy Commission by President John F. Kennedy. He was subsequently reappointed by both Presidents Johnson and Nixon, serving in that position until 1971.

Winner of the 1951 Nobel Prize in Chemistry (with E. M. McMillan) for his work on the chemistry of the transuranium elements, Glenn Seaborg is one of the discoverers of plutonium (element 94). During World War II he headed the group at the University of Chicago's Metallurgical Laboratory which devised the chemical extraction processes used in the production of plutonium for the Manhattan Project. He and his coworkers have since discovered nine more transuranium elements: americium (element 95), curium (96), berkelium (97), californium (98), einsteinium (99), fermium (100), mendelevium (101), nobelium (102), and element 106. He holds over 40 patents, including those on elements americium and curium (making him the only person ever to hold a patent on a chemical element).

In 1944 Dr. Seaborg formulated the actinide concept of heavy element electronic structure which accurately predicted that the heaviest naturally occurring elements together with synthetic transuranium elements would form a transition series of actinide elements in a manner analogous to the rare earth series of lanthanide elements. This concept, one of the most significant changes in the periodic table since Mendeleev's 19th century design, shows how the transuranium elements fit into the periodic table and thus demonstrates their relationships to other elements.

His co-discoveries include many isotopes which have practical applications in research, medicine and industry (such as iodine-131, technetium-99m, cobalt-57, cobalt-60, iron-55, iron-59, zinc-65, cesium-137, manganese-54, antimony-124, californium-252, americium-241, plutonium-238), as well as the fissile isotopes plutonium-239 and uranium-233.

Dr. Seaborg continues to work as an active research scientist, with a research group in the search for new isotopes and new elements at the upper end of the periodic table, including a search for the "superheavy" elements. The group is also investigating the mechanism of the reactions of heavy ions with heavy element target nuclei. Another aspect of the research program is concerned with the determination of the chemical properties of the heaviest chemical elements.

Seaborg is the author of numerous books—his most recent, Kennedy, Khrushchev and the Test Ban (1981) and Stemming the Tide: Arms Control in the Johnson Years (1987) describe, respectively, the negotiations for the Limited Test Ban Treaty of 1963 and the Nonproliferation Treaty of 1969. He has also authored over 400 scientific articles and guided the graduate studies of more than 60 successful Ph.D. candidates. In addition to the Nobel Prize and a great many other awards for his work in chemistry, science education and community service, Dr. Seaborg has been awarded 50 honorary doctoral degrees.

Among his many interests are international cooperation in science (as President of the International Organization for Chemical Sciences in Development), history of science (documenting the early history of nuclear science), nuclear arms control (advocating a comprehensive test ban treaty), conservation of natural resources and hiking. A member of the National Commission on Excellence in Education which published the much-publicized report A Nation At Risk in 1983 and Chairman of the Lawrence Hall of Science, Dr. Seaborg is recognized as a national spokesman on education, addressing in particular the crisis in mathematics and science education.

Monday, January 20, 1969 - INAUGURATION DAY

We watched the swearing-in ceremony and listened to President Nixon's speech on our television at home. Then Helen, Steve, Eric, Dianne and I went to the Metropolitan Club for lunch. There we saw the Robert LeBarons, the Lewis Strausses and the Paul Nitzes. (I reminded Paul that he and I, along with the Najeeb Halabys, had lunch at the Metropolitan Club eight years ago today following John F. Kennedy's inauguration.)

We all went to the Washington Hotel, where we were guests of the National Coal Association in Suite 520, to watch the Inaugural Parade. Steve Dunn, Bryce O'Brien, Robert Hall and others from NCA were our hosts. We had a very good view of the parade and when President Nixon's car came by it stopped right under our window. The President stood up and waved to the crowd. This gave me a chance to take pictures with my Minox. The parade included the twelve members of President Nixon's Cabinet, the governors of all the states (with a few substitutes for those who couldn't attend), many bands including the Whittier High School Band, and many floats.

After dark Eric, Suki and I took a hike in Rock Creek Park. It had been a cold day--in the 30's--but not too uncomfortable.

Tuesday, January 21, 1969 - Germantown

This was my first day with the Nixon Administration.

I signed a letter to Secretary of Labor George P. Shultz recommending that the AEC-Labor Management Relations Panel (the so-called "Ching Panel" of which Father Brown is now chairman) be continued.

I called Lee DuBridge about the positions of U.S. Representative to the IAEA and U.S. member on the Science Advisory Committee of the IAEA. (Lee said this was his first official call as Science Adviser to the President.) I reiterated a hope I had expressed to him earlier that the Nixon Administration would keep Smyth as U.S. Representative to the IAEA. I told him that when Rabi's appointment to the Science Advisory Committee of the IAEA came up three years ago, there was considerable opposition on the part of the JCAE, which I ignored, but at some personal discomfort. Now the JCAE opposition is at a point where some of them claim they won't stand for his reappointment. I said I frankly don't know how to handle the problem.

I said I am very sure, however, that it would adversely affect White House relations with some of the congressional people if Rabi were reappointed. The problem has to do with his independence, his public statements, etc. DuBridge asked whether the thought would be to have Smyth occupy both posts, and I said yes. I explained that the SAC appointment would be made by the Director General of the IAEA upon the nomination of the Nixon Administration. I said Rabi should be notified immediately that the new Administration wants to review this appointment and won't be ready to make a recommendation in time for the February meeting of the IAEA Board of Governors. Lee said he would put in a call to Rabi and talk to him about this. I explained that these recommendations are made by the State Department, who checks them out with the AEC and with DuBridge's office.

At 12 noon I called DuBridge back to tell him that a cable has just been received from Vienna stating that Eklund decided to postpone the consideration of the matter of the SAC membership from the February to the June meetings. This lets us off the hook for the time being.

I had lunch in the cafeteria with Milt Shaw and Merrill Whitman, including Rubin and Bloom. We discussed the preparation of my forthcoming talk to the EEI in Portland, Oregon, on June 9th or 10th, in which I will use evaluation of cost benefit of breeder reactors as a theme.

The Soviet Embassy gave a note to Ambassador Charles Bohlen protesting the SCHOONER shot as a possible test ban violation on the basis of alleged detection of debris in the Soviet Union. The message was delivered by Soviet Minister Counselor Tcherniakov.

Attached is National Security Study Memorandum 3 initiating a study group to review U.S. military posture and the balance of power.

Wednesday, January 22, 1969 - D.C.

At 10 a.m. I presided at Information Meeting 869 (notes attached) at which the Commission discussed the attempted takeover of United Nuclear by Ashland Oil Company and decided not to take sides in this particular case, but to watch the whole situation of mergers very carefully.

I sent a letter to John Foster saying that the Commission will undertake the development of an improved Spartan warhead as requested by the Department of Defense.

We received a letter from Zwick (BOB) requesting the shutdown of the PPA in FY 1971. We will resist this.



THE WHITE HOUSE  
WASHINGTON

January 21, 1969

UNCL. BY DOE  
1988

National Security Study Memorandum 3

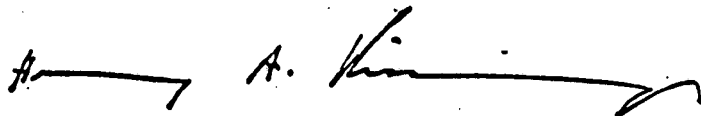
TO:           The Secretary of State  
              The Secretary of Defense  
              The Director of Central Intelligence

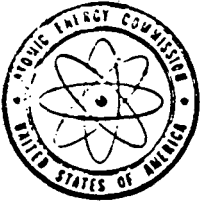
SUBJECT:     U. S. Military Posture and the Balance of Power

The President has directed the preparation of a study reviewing our military posture and the balance of power. The study should consider in detail the security and foreign policy implications of a wide range of alternative budget levels and strategies for strategic and general purpose forces.

To perform this study the President has directed the creation of a steering group to be chaired by the Deputy Secretary of Defense and to include representatives of the Secretary of State, the Chairman, Joint Chiefs of Staff, the Director of Central Intelligence, and the Assistant to the President for National Security Affairs. Staff support for this study will be arranged in consultation between the Deputy Secretary of Defense and the undersigned. Upon request, agencies shall make available personnel to provide staff support. Agencies shall also perform such studies in support of the overall study as may be requested by the Chairman of the Group.

The report of the group shall be forwarded to the NSC Review Group by July 1, 1969.

A. Kin



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 88

COPY-NO. 2  
January 22, 1969

INFORMATION MEETING 869

10:00 a. m., Wednesday, January 22, 1969, Chairman's Conference Room, D. C..

1. January 20 Sports Illustrated Article "The Nukes are in Hot Water"

The Commissioners requested preparation of an article. (PI)

2. January 14 Letter from Gulf General Atomic re Isotope Separation Concept

Mr. Hollingsworth reported a proposed response is in preparation.  
(EAGM-SECY)

3. Special Panel Report re Testing

The Chairman related briefly the discussions he and Commissioner Tape had on January 17 with Dr. Hornig and the latter's agreement to transmit the report to Dr. DuBridge for his attention.

4. Commissioners' Dinner with the Joint Committee on Atomic Energy, February 5, 1969

Scheduled. (AGM-Rubin-SECY)

5. Westinghouse Electric Utility Group Meeting February 18 and 19, 1969 -- "Future Power Forum"

6. Candidates for the Advisory Committee on Reactor Safeguards

To be scheduled for consideration on Friday, January 24. (DR-SECY)

7. USSR Aide Memoire re Schooner

Mr. Labowitz said a record of Acting Secretary of State Charles Bohlen's oral reply to the Soviet representative will be circulated. The Commissioners requested:

- a. Preparation of a response;
- b. A chronology of US-USSR Exchanges;
- c. The AFTAC Report  
(SAD)

8. Commissioner Ramey's Oral Report on His January 21 Discussions with Senator Jackson, Congressman Chet Holifield and Governor Ferré, Puerto Rico

9. AEC 1083/133 - Proposed Reply to Japan Atomic Industrial Forum Invitation

Commissioner Costagliola will represent the Commission. (AGMIA)

10. January 16 Letter from Charles Zwick, Director, BOB, re FY 1970 Budget

Noted. Supplemental fiscal year 1970 budget items will be scheduled for consideration on Friday, January 24. (OC-SECY)

11. January 17 Letter from Alvin Weinberg re  $\ell$ -dopa Treatment

Noted.

12. AEC 11/45 - Fellowship and Traineeship Awards to Graduates of Military Academies

An alternate course of action is approved. (AGMR&D-NET)

13. AEC 1301 - National Research Council Meeting

Approved with a change. (Rosen)

14. AEC 1246/10 - Purchase of United Nuclear Corporation

Preparation of letters to UNC and the Joint Committee are requested. (GC)

15. AEC 1253/50 - CY 1969 Special Analytic Studies

Noted. The letter to the BOB is not to be sent at this time. (AGMPA)

16. Plans for Commissioners' February 13, 1969, Discussion of Major Policy Issues (Operational)

Noted. (SECY)

17. Commissioners' February 25, 1969, Discussion of Major Policy Issues (Regulatory)

Scheduled. (SECY)

18. "The Careless Atom" by Sheldon Novick

The Commissioners requested copies. (PI)

19. Study of AEC Laboratories

The status is to be reviewed. (Rosen-Helfrich)

20. AEC 374/200 - Proposed Letter to John Foster, DOD, re Spartan Missile

Approved with a change. Additionally, the Commissioners requested an oral report. (AGMMA-Rubin) ~~Being reviewed~~ Signed

21. AEC 141/119 - Benham Postshot Briefing

Noted. (AGMMA)

22. Pending Contractual Matters Report No. 292

Noted. (PAR)

23. AEC 459/57 - Spectrum of Alternatives for Ownership and Operation of Uranium Enrichment Facilities

The Commissioners requested:

- a. Additions to the Table on Page 5;
  - b. Preparation of Case III-A and Case III-B;
  - c. An outline of the AEC internal report.
- (AGMP&P)

24. AEC 588/70 - Operator for FFTF; and,  
AEC 588/72 - Supplement to AEC 588/70

Discussed and to be rescheduled. (SECY)

25. Topics for February 10, 11 and 12 GAC Meeting, Oak Ridge (See  
December 11 Preliminary GAC Agenda

Commissioner Tape will discuss briefly: .

a. Special Panel Report

b. Benham Event  
(Rosen-SECY)

26. Mr. W. W. Rostow's January 18, 1969, Memorandum re FY 1970-71  
Nuclear Weapons Stockpile and National Security Action Memorandum  
No. 372 of January 18, 1969, re Nuclear Weapons Deployment Authorization  
for FY 1970 and FY 1971

The Commissioners noted the request from Mr. Carl Walske, Assistant to the Secretary of Defense, Atomic Energy. (AGMMA)

27. AEC 610/152 - Gas Centrifuge

Scheduled for Friday morning, January 24, 1969. (SECY)

W. B. McCool  
Secretary

12:55 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Labowitz\*  
Mr. English\*  
Mr. Kavanagh\*  
Mr. Poor\*  
Mr. Wegner\*  
Mr. Tremmel\*  
Mr. LeGassie\*  
Gen. Giller\*  
Mr. Quinn\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

I talked to Rabi on the phone regarding his continuing on the IAEA Scientific Advisory Committee, and he indicated he wouldn't mind leaving, although he would stay if asked.

At 12:55 p.m. I presided over Executive Session (Adjudicatory) 185 (action summary attached).

I had lunch in the dining room with Russ Poor and Elliot Pierce, along with Bloom and Rubin, to discuss the future of the Mobile Isotope Training program which NET had decided to close out. We decided to keep this and cut down slightly on fellowships instead.

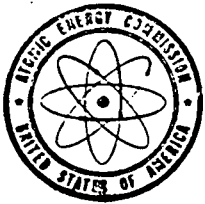
Around 3:30 p.m. Australian Ambassador Sir Keith Waller, accompanied by First Secretary Richard J. Smith and Atomic Energy Attache Michael S. Farrell, came in to see me. Kratzer, Oakley and Rubin were also present. Waller delivered a copy of an aide memoire delivered to the State Department earlier in the day in which the Australian Government had requested U.S. assistance in a Plowshare project (harbor at Cape Keraudren). I made specific reference to the part in which the Nuclear Test Ban Treaty was mentioned and added that there is no precedent in deciding exactly how to proceed in this area. Oakley indicated there is some possibility the proposed Australian project could be conducted even within the wording of the present treaty. It was noted that the project appeared to be of interest to the AEC and it might provide a reasonable substitute for one of the planned tests.

From 6-7 p.m. I met with Robert F. Ellsworth (Assistant to President Nixon), Thomas Whitehead and Daniel W. Hofgren in Room 100 of the Executive Office Building.

I began by saying that I had an item to call to their attention which was not urgent in itself, but the White House should be informed of it because it might leak to the press. I said that the Soviet Minister Counselor Tcherniakov, who is acting Charge d'Affaires in the absence of Ambassador Dobrynin, had handed Ambassador Bohlen an aide memoire on January 21st, concerning a possible violation of the Limited Nuclear Test Ban Treaty in connection with the SCHOONER excavation shot conducted by the U.S. in Nevada on December 8, 1968.

I explained that the matter of interpreting the Test Ban Treaty is a very complex and technical one. I read from the Test Ban Treaty the section from Article I, which says that any nuclear explosion is prohibited "if such explosion causes radioactive debris to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted." I described the history of the interpretation of this clause and the difference of opinion that has existed during the Kennedy and Johnson Administrations by the AEC on the one hand and agencies such as ACDA and State on the other.

I explained that the Soviet allusion in the aide memoire to a "two to fivefold increase in their fallout in the regions along the Baltic, Volga, Northern Caucasus and Crimea" corresponds to an absurdly small amount of radioactivity and one that in my opinion was never intended to represent a violation of the Test Ban Treaty. When Ellsworth asked what the Soviets might be referring to as their point of reference, which they claimed had been increased by a factor of two to five, I said that this is very difficult to define with any precision and that it varies from place to place and from time to time and depends upon the sensitivity of the detection techniques. I said that, if their techniques were similar to ours, involving the passage of large amounts of air through filter papers followed by chemical identification of products, this background probably corresponds to something like 0.1 picocuries per cubic meter. I emphasized that



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

RECL. BY DOE  
NOV 86

January 22, 1969

File

ACTION SUMMARY OF EXECUTIVE SESSION (ADJUDICATORY) 185, WEDNESDAY, JANUARY 22, 1969, 12:55 P.M., CHAIRMAN'S CONFERENCE ROOM, D. C. OFFICE

SECY:WLW

1. Matter of Omaha Public Power District (Fort Calhoun Station, Unit No. 1)  
Docket No. 50-285

The Commission approved the Memorandum and Order dated January 22, 1969.  
(Solicitor/SECY)

2. Matter of Board of Public Instruction of Highlands County, Florida  
Docket No. CR-604 - Compliance Proceeding Under Title VI of the  
Civil Rights Act of 1964

The Commission agreed to permit the Initial Decision to become final on January 27, 1969. (Solicitor/SECY)

3. Matter of Public Service Company of Colorado (Fort St. Vrain Nuclear  
Generating Station), Docket No. 50-267

The Commission requested preparation of a draft Decision for early consideration. (Solicitor/SECY)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola  
Solicitor  
General Counsel



the definition of such a background is a very imprecise concept. In order to give them some idea of the order of magnitude involved, however, I said that one-tenth of a picocurie per cubic meter corresponds in the case of a product with a half-life of about a day to the order of only a few atoms per gallon of air. To put this in perspective, I emphasized that the air in the room in which we were talking, as well as the air anywhere in the world, contains naturally occurring radioactivity such as gaseous radon in concentration of the order of hundreds of picocuries per cubic meter of air.

I said this illustrates the absurdity of interpreting the Test Ban Treaty on the basis of these sensitive limits of detection. I said that the AEC has advocated a more sensible or de minimis interpretation in which the concentration at the borders would have to be at some level that had some meaning with respect to health hazard or at least some sort of reality in order to be considered a violation of the Test Ban Treaty. I emphasized that when I testified before the Senate Foreign Relations Committee in support of the Test Ban Treaty in the summer of 1963, I had assured the members of the Committee that it would be possible to conduct cratering experiments in connection with our Plowshare program under the terms of the Treaty. I said that I, of course, had in mind a realistic interpretation of the Treaty. I said that the Senate Foreign Relations Committee had placed great emphasis on my testimony along these lines and stated, when they voted for the Test Ban Treaty, that it was on the basis that Plowshare tests could be conducted without violating the Treaty. I said that without such assurance on my part I do not think that the Senate Committee would have voted in favor of the Test Ban Treaty. I also said that it wouldn't be possible to conduct the underground weapons tests on the basis of the absurd interpretation of the Treaty advocated by some and that I could state positively that the Senate Foreign Relations Committee would never have ratified a test ban treaty in which it would be necessary to conduct underground tests with such a large risk that the treaty would be violated.

I said that the Soviets have conducted many tests from which we have detected radioactivity outside the limits of the Soviet Union. Ellsworth asked how many such tests had been conducted, and I replied that there were about ten, in which debris was collected, that had been unambiguously or probably attributable to a Soviet test and another fifteen where it was possibly attributable to such tests. I said that some of these were cratering events and in the case of their weapons tests the Soviets were not as conservative as we and apparently saved money by burying their weapons tests in 1966, which we had called to the attention of the Soviets because of the extent of the radioactive debris we had detected outside of the Soviet Union. Ellsworth asked me to identify Soviet tests for which we had detected debris that had been conducted recently, and I said there were unambiguous cases on January 7th and October 21st of 1968; possible cases in April, June, July and September; and two probable cases in November.

I explained that we have a disadvantage vis-a-vis the Soviets because we announce all of our cratering shots days ahead of time, and we also announce all the ventings of our weapons shots. I said this is the only way that we could conduct our program in a country like the United States. I said the Soviets took advantage of these announcements of ventings on many occasions and sent us protests. I pointed out that these protests, those from the Soviet Union to us and the three or so from us to the Soviet Union, were usually technically "oral statements" although they were accompanied by written memoranda. Ellsworth asked whether the aide memoire given to Ambassador Bohlen by Counselor Tcherniakov on January 21st was an oral rather than written protest, and I said this would probably depend on what the Soviets chose to regard it to be. I would say that Tcherniakov had told Bohlen that they did not intend to make it

public. I emphasized, however, that it might nevertheless leak from our side, and in that case the Soviets would be forced to take a public stance with respect to this incident and the Limited Test Ban Treaty. This, I said, makes it imperative that we be ready with a plan of action in case there should be such a leak to the press.

I explained in detail the review procedures we go through for every weapons test and every cratering shot. This involves a description of the test evaluation committee, the underground testing committee, and the several AEC reviews including multiple reviews by the Commissioners themselves of every test. I said that the President is involved in a yearly approval of the test series and a quarterly approval of the test series and additionally is involved personally on the high yield tests, and the cratering shots. Ellsworth asked the limit above which the President is involved on high yield tests, and I said this is somewhat indefinite but perhaps around 800 kilotons. I said that the next high yield test is scheduled for March and is in the range of about 800 kilotons.

I said that it is my opinion that the note was delivered by the Soviets after January 20th as a matter of deliberate policy and they probably chose the opportunity to deliver it to Ambassador Bohlen on a deliberate basis.

I pointed out that there have been attempts over a period of several years to arrange discussions with the Soviets on the interpretation of the Limited Test Ban Treaty with respect to Plowshare excavation experiments. I said that talks with my counterparts in the Soviet Union have always indicated that they would like to get on with such discussions, but there was always difficulty when these policies ascended to higher levels and the arrangements were never actually consummated. I said that we had finally reached the point last summer where it looked as though such talks would be carried out but then Czechoslovakia interfered. I said there have been overtures from the Soviets recently indicating that they would like to get on with the talks but the State Department was not ready to do so in view of the Czech incident. Ellsworth seemed to be out of sympathy with this posture by the State Department. I said it is entirely possible that the Soviets were protesting the SCHOONER event in order to enhance the prospects, from their point of view, of holding such discussions concerning the interpretation of the Limited Test Ban Treaty with respect to Plowshare experiments. I said that the Atomic Energy Commission would very much like to get on with such talks.

I had described in some detail the problem that the Atomic Energy Commission had in obtaining approval for Plowshare excavation experiments in view of the unrealistic strict interpretation of the Test Ban Treaty that had been insisted upon by some. Ellsworth asked who had insisted upon such an interpretation and opposed the Plowshare excavation experiments, and I said it was chiefly ACDA and the State Department. I said I had finally succeeded, however, in convincing President Johnson that we should go ahead with the excavation program and described the success that we had last January with the CABRIOLET shot, in March with the BUGGY experiment and in December with the SCHOONER event. I showed them pictures of these three events and left the pictures with them. I also said there is an important project to build a harbor in Australia that will require an immediate decision by the new Administration, and that I thought this could be conducted within a more reasonable interpretation of the Test Ban Treaty. We would have to go ahead with the experiment on the assumption of our own interpretation because it would not be possible to get any sort of international approval.

Ellsworth asked whether the Canadians had protested. He had in mind the Thomas O'Toole article in the Washington Post on January 9th which I had brought to his attention earlier in our conversation. I said that there have been no official protests from Canada and that apparently the O'Toole story was the result of O'Toole's direct contact with Canadian public health people. I also mentioned in the course of the conversation that the Soviets apparently, at least at the beginning, had a somewhat different interpretation of the Test Ban Treaty than we. They translated the critical clause as "if such explosion causes fallout of radioactive deposits beyond the limits of the territory, etc." This implies that they had in mind something more substantive than simply "one atom at a time" detection. Also, in the course of the conversation, I explained to them that the Soviets might very well have made an identification even at the level of around one-tenth of a picocurie per cubic meter of a tungsten isotope, using very sensitive radiochemical techniques. I described the mixture of fission products that would be produced and subject to identification but indicated that, due to induced radioactivity of tungsten (a component of our nuclear devices), this might give them a particular handle upon which to hang their identification. I said I didn't believe that Tcherniakov had identified anything specifically, and they were in no position to charge a violation of the Test Ban Treaty. I said I would not know whether the Soviets had any specific identification data, but in any case it couldn't be considered a violation of the Test Ban Treaty. I said I believe that the Soviets know this and that they are merely trying to put some money in the bank as they had for so many tests in the past in order to be in a position of strength vis-a-vis the U.S.

I then said I had another item that I would like to call to their attention and that is the problem that has developed with respect to our underground testing of high yield weapons in Nevada. In answer to a question from Ellsworth as to who was giving us the most trouble, I identified the Hughes organization in Las Vegas and the Science and Society group in St. Louis as well as a similar group in New York. I described briefly the so-called hazards that are the subject of concern--venting, ground water contamination, direct seismic effects and follow-on seismic effects induced by the explosion. I said there are apparently no serious problems with the first three of these, but we have experienced follow-on seismic events of the order of 4 to 4.5 on the Richter scale, after high yield tests of the order of 6 to 6.5 on the Richter scale. I said that in view of these problems, real and imagined, Dr. Hornig, with our concurrence, had assembled a panel of specialists, chaired by President Kenneth Pitzer of Stanford University, to look into the matter. This panel met and, somewhat to our surprise, came out with a report that was somewhat alarming. They said they could not rule out the possibility of serious after shocks. Now we are faced with the problem of how to release this report. President Johnson didn't want to release the report at the time of the BENHAM shot in December, and we agreed that this would not have been a good idea because it might have jeopardized the BENHAM shot. The report will have to be released, however, some time in the not too distant future and this is one of the problems that will be facing Mr. Nixon. The Atomic Energy Commission is preparing a larger report, putting the whole thing in a better perspective, with the thought that when its (the AEC's) report is released this might be a good time to include the Pitzer Panel report. I said this is a difficult problem that is bound to reach President Nixon's desk. Ellsworth asked what was troubling Mr. Hughes and I indicated that he was worried about the effect on "his Las Vegas," a term that Ellsworth said described the situation very well. I said there were some reports that Mr. Hughes is almost psychopathic on the matter of his fear of radioactivity and that it would probably be impossible to convince him of the actual facts in this area.

I then said I would like to go on to another item which has some urgency and this is the matter of the shutdown of two plutonium production reactors at Hanford. I described Senator Jackson's contacts with President Johnson on this and my visit and phone calls with Senator Jackson which were at President Johnson's request. I said that President Johnson wouldn't agree to restoring to the Budget the funds for these reactors but he did agree, and this was satisfactory to Senator Jackson, that the AEC might delay implementation of the shutdown. I explained that the AEC couldn't delay implementation for more than about sixty days and still shut down the reactors in time to save the whole sixteen million dollars in FY 1970. I also emphasized that Senator Magnuson and Congresswoman May are very concerned about this matter. I explained the basis upon which the shutdown had been decided, namely that we have more plutonium than we need to meet the Department of Defense's requirements for weapons and even more than we needed to meet an additional contingency that they have outlined. I said that there is a difference of opinion as to the size of the weapons stockpile that is needed and, therefore, the amount of plutonium needed and that Senator Jackson feels that more plutonium is needed. Ellsworth asked if plutonium is produced elsewhere, and I explained that there are production reactors at our Savannah River Plant in South Carolina; that these are newer and more modern than the Hanford reactors and are being devoted more and more to the production of products such as curium and californium which have value in our Space program and other broad applications. Thus, the Savannah River plant is not scheduled to produce much plutonium; if these reactors were shut down it would curtail this promising program and not lead to any appreciable curtailment in the production of plutonium, a product some feel is in oversupply. I also mentioned that Senator Thurmond has written to me expressing his interest in keeping the Savannah River reactors operating; hence, the political problem attendant with shutting down reactors here is not simpler than that connected with the Hanford shutdown. I said that President Nixon would probably be hearing from Senators Jackson and Magnuson on this matter quite soon, and, in any event, we would need a decision within 60 days in order to allow us to shut down the reactors in time to save the sixteen million dollars in FY 1970--in the event that the decision is to go ahead with such a shutdown.

I then told Ellsworth that I have another item, one which I want to discuss with President Nixon alone, or in the presence of anyone that he might want to designate. I said this is a very sensitive weapons matter. Ellsworth said he would arrange this, and he immediately called President Nixon's office to set up an appointment. In connection with this call, he asked how urgent a time scale this appointment called for, and I indicated this is difficult for me to determine because I don't know the President's time scale on policy decisions that are relevant to what I propose to tell him about. I said it has to do with such things as the Nonproliferation Treaty and the future of arms control. On this basis, Ellsworth and I agreed that anytime within the next few days (and I would assume he meant up to about a week) would be satisfactory. Thus, it was concluded that arrangements would be made for me to see the President within such a time framework.

Ellsworth, Hofgren and Whitehead took notes throughout the entire conversation and seemed quite interested and expressed appreciation for my effort in briefing them on what they obviously considered were very important matters.

Thursday, January 23, 1969 - D.C.

I had lunch today at the Roger Smith Hotel with Howard Brown and Julie Rubin; we discussed current problems.

At 2:45 p.m. I met with Mike May in my office and we discussed the following topics:

Funding in FY 1969 and FY 1970 for the Cape Keraudren project. I told May that the first step in determining the feasibility of the funding for this will be to get a go-ahead from the Nixon Administration for this project. I said this is one of the issues we will be raising with them. He said they need an answer before the end of February, and I said we would bear this in mind.

We discussed the aide-memoire received from the Soviet Union regarding the SCHOONER shot and its possible violation of the Test Ban Treaty. We also discussed the British communication, which noted the presence of radioactive debris at their Gibraltar station.

He said he has been thinking about a Comsat-type organization for Plowshare. He gave me a document entitled "A Comsat-like Organization for Plowshare," dated January 20, 1969, which I said I would read in order to become familiar with his ideas. He wants any reactions I might have. He has also given a copy to the other Commissioners and to the staff.

He mentioned the meeting he is participating in tomorrow with Dodd Starbird, Ed Giller, Norris Bradbury, and Commissioner Tape (for a while) to discuss the ABM problem. I brought him up to date on the questions that have been raised by Congressmen bringing the AEC into the middle of the controversy between Congressmen and Starbird. I explained our role in the safety evaluation and the relationship of this to deployment of the weapons.

I told him I am still undecided whether I can speak at the symposium at Livermore on March 6th or 7th, in response to Jack Gofman's invitation, because this may possibly come at the time of our authorization hearings.

Congresswoman Catherine May called and asked me to meet with Glenn Lee and others, as they are requesting, in order to hear their case with respect to the Hanford reactor shutdown.

I attended a farewell reception-buffet for John Conway and his family in Room B-339 of the Rayburn House Office Building. Congressman Holifield, Senator Anderson, Congressman Hosmer and I spoke; John Conway responded. He received cuff links from the JCAE and other friends. A very large crowd, representing an exceptionally impressive cross section of the nuclear field, attended (see picture next page).

Friday, January 24, 1969 - Germantown

I presided at Regulatory Information Meeting 327 at 10 a.m. and Information Meeting 870 at 10:25 a.m. (notes attached).

I received a letter (copy attached) from Bureau of the Budget Director Robert P. Mayo asking that the Commission further cut President Johnson's FY 1970 budget. He recommended redirections, and, where necessary, budgetary additions to meet the highest priority purposes, but any such additions should at a minimum be offset by recommended reductions in lower priority activities.

Craig Hosmer called to tell me he has talked to President Nixon who told him that he intends that I remain as the AEC Chairman.



Farewell Cocktail Party and Reception for John Conway by the JCAE, Room B-339, Rayburn House Office Building; January 23, 1969.

L to R: Dr. Glenn T. Seaborg, Congressman Chet Holifield, Mr. and Mrs. John Conway and children.

I met with Norris Bradbury for about fifteen minutes this morning. I told him I had read the TROLL report and am very much impressed with its importance. I said I have limited its distribution to the Commissioners, General Manager and General Giller and I intend to discuss it with the President and whomever else he might designate. I asked whether he would agree to showing the report to Dr. Michael May (Director, LRL, Livermore) on an extremely restricted basis, and he said he would. I also asked him whether he would consider accepting an AEC commissionership. He told me confidentially that he is thinking of retiring sometime between next June and June of 1970. At my urging, however, he did not reject my suggestion and said he would think it over and let me know.

I later showed Mike May a copy of the TROLL report and asked that he evaluate it, but in so doing, to limit knowledge of its existence to two of his top people. I emphasized it should be held in the highest possible confidence. Mike agreed to do this and said he would let me know the outcome.

I attended a farewell luncheon for Edith M. Grimes, Chief Receptionist, at the Washingtonian Motel. Mike Dematteis was master of ceremonies. John Vinciguerra spoke as did Brian LePlante who read a letter written by Lewis



January 24, 1969

REGULATORY INFORMATION MEETING 327

10:00 a.m., Friday, January 24, 1969, Room A-458, Germantown Headquarters

1. Mr. Price's January 21 Memorandum re Licensing of U.S. Navy to Use a Radioisotope Power Generator in a Subsurface Buoy in the Bahamas

Noted. (DDR)

2. Mr. Beck's January 23 Memorandum re Status and Schedule for Selni Discussions

Noted.

3. Selni Reactor Safety Discussions

4. Proposed Letter to Professor Arnaldo M. Angelini re Trino Vercellese Reactor Modifications

Approved. (Helfrich)

5. Members for the Advisory Committee on Reactor Safeguards

To be rescheduled. An alternate possibility will be checked.  
(Ryan-Rosen-DDR-SECY)

6. January 13 Letter from Roger A Stinchfield, Clerk of Court, New Hampshire, re Submission of Bill

The Commissioners agreed the costs are waived. (GC)

7. AEC 948/10 - Separate Agency Question

Further consideration will depend upon Congressional or Administration interest. (GC)

8. Commissioners' Dinner Meeting with the Joint Committee on Atomic Energy, University Club, February 5, 1969

Scheduled. (Rubin-Congr. -SECY) *Invitations sent*

W. B. McCool  
Secretary

10:25 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

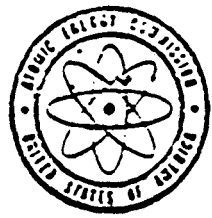
STAFF:

Mr. Beck  
Mr. Hennessey  
Mr. Rubin  
Mr. Wells  
Mr. McCool

DISTRIBUTION:

Commissioners  
Dir/Regulation  
General Manager  
General Counsel  
Secretary





UNITED ST.  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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GLENN T. SEABORG  
Chr USAEC, 1969  
FOLDER-PAGE 97096

COPY NO. \_\_\_\_\_  
January 24, 1969

INFORMATION MEETING 870

UNCL. BY DOE  
NOV 86

10:25 a.m., Friday, January 24, 1969, Room A-458, Germantown Headquart

1. AEC 948/10 - Separate Agency Question

Further consideration will depend upon Congressional or Administration Interest. (GC)

2. Commissioners' Dinner Meeting with the Joint Committee on Atomic Energy, University Club, February 5, 1969

Scheduled. (Rubin-Congr. -SECY) *Invitations sent*

3. Proposed Letter to Professor Arnaldo M. Angelini re Trino Vercellese Reactor Modifications

Approved. (Helfrich)

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4. Commissioners' January 30 Meeting with Governor Ogilvie, 10:00 a.m., D. C. Office

Scheduled. (AGMO-SECY)

5. Tri-City Nuclear Industrial Council January 21 Letter to the Chairman re Hanford Reactor Cutbacks

The Chairman will call Senator Jackson. (Rubin)

CLASSIFICATION CANCELLED  
WITH DELETIONS  
BY AUTHORITY OF DOE/OC

*Binger* 2/10/86  
REVIEWED BY \_\_\_\_\_ DATE

*H. Kopp* 7/11/82

6. January 16 Letter from John O'Leary, Director, Bureau of Mines, re Suggestion to Establish a Standing Interagency Plowshare Board and Enter Into Overall Plowshare Interagency Agreement  
Commissioner Tape will review with staff. (Rosen-PNE)
7. Proposal from Mr. Mike May re Plowshare  
To be circulated. (Rubin)
8. Agenda for the Week of January 27, 1969  
Approved. (SECY)
9. NTS Events (See General Giller's January 23 Memorandum)  
Noted. (AGMMA)
10. AEC 1282/29 - Execution Data for the ~~SECRETED~~ Event  
Approved. (AGMMA)
11. AEC 1037/54 - Draft Letter to USSR re Accelerator Cooperation  
Approved. (R-AGMLA)
12. AEC 1044/22 - Proposed Visit of NAS Seismology Committee to NTS  
Noted. (AGMMA)
13. AEC 1192/68 - NAS Contract  
Noted. (R)
14. Pending Contractual Matters Report No. 293  
Noted. (PAR)
15. Mr. Hollingsworth's Report on Call from Senator Thurmond's Staff re the Savannah River Reactors

16. IAEA Representation

The Commission's position is to be conveyed to the Department of State. (AGMIA)

17. US Consultant for UN Study

The Commission's position is to be conveyed to the Department of State. (AGMIA)

18. Proposed Atomic Energy Commission Report on Treatment of Underground Nuclear Testing Effects

Approved with changes and additions. (AGMMA)

19. Budget Related Items for Possible Discussion with the Incoming Administration (See January 23 Booklet and January 23, 1969, Letter from the Director of the BoB, Mr. Robert P. Mayo, to Chairman Seaborg)

The following are approved:

- a. Weapons Production
- b. Fast Gas Reactor Program
- c. Molten Salt Reactor Project
- d. HILAC Modifications

Staff is to identify alternative sources of funding for consideration at the Commission Meeting on February 5, 1969. (OC)

W. B. McCool  
Secretary

12:40 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Brown  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Erlewine\*  
Mr. Kratzer\*  
Mr. Tesche\*  
Mr. Schoenhaut\*  
Mr. Corso\*

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Commissioners  
General Mazinge  
General Counsel  
Secretary

\*Attendance by Topic (s)

EXECUTIVE OFFICE OF THE PRESIDENT

BUREAU OF THE BUDGET

WASHINGTON, D.C. 20503

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NOV 88

JAN 23 1969

Honorable Glenn T. Seaborg  
Chairman, U. S. Atomic  
Energy Commission  
Washington, D. C. 29545

Dear Mr. Chairman:

Our new Administration must begin promptly to review the 1969 supplemental appropriation requests and the 1970 budget proposals placed before the Congress by the outgoing Administration last week.

This task is urgent and important. We must start now to redirect the Government's activities along the lines of our own objectives, reducing and removing programs where we can. The actions we take now can provide us with room in the 1971 and later budgets to introduce and carry out our own initiatives and proposals, room that would otherwise be seriously preempted by existing program and financial commitments if we are not watchful.

In view of the critical role of fiscal policy restraint in today's inflationary economic outlook and our continuing heavy financial requirements for military operations in Southeast Asia, we -- like our predecessors -- must now plan for

- extension of the income tax surcharge beyond its July 1, 1969 expiration date and
- a budget surplus for 1969 and 1970.

However, a prime objective of our Administration is the removal of the tax surcharge as soon as economic conditions and defense needs will permit. Your review of the 1969 supplemental and 1970 budget requests should therefore be guided by the general policy of holding all obligations, commitments, and expenditures to the essential minimum that is consistent with the continuation of that emergency surtax. More specifically, you should

- examine closely all program expansions and "new starts" proposed by the preceding Administration, and reduce

or eliminate those of lower priority; for example, are there Federal programs or parts of programs which private industry could do just as well (or better) or which could be postponed or eliminated without serious loss in view of today's priorities and demands on the budget?

- evaluate carefully the amounts proposed to meet those objectives you do regard as essential, to see if alternative methods can be devised at lower cost; we must aim to get the most value for every dollar spent and to prevent the waste of every dollar that can be saved.

- be especially alert to proposals which "lock in" commitments that would have to be met in future years; propose alternatives -- including new legislation, if necessary -- to close the "open-end" on items which would make future substantial increases in spending relatively uncontrollable.

- appraise the care with which program and spending plans have been formulated, and avoid committing us to "crash" projects; a temporary deferral of proposals until they have been carefully evaluated and planned can not only save money but can also result in an earlier and more effective accomplishment of objectives.

- recommend redirections and, where necessary, budgetary additions to meet the highest priority purposes, but any such additions should at a minimum be offset by recommended reductions in lower priority activities.

- propose deferral of any major budget request about which you are doubtful or uncertain until you have had the time to get the necessary staff work done and clarify your own position.

- maintain, for the time being, the 1970 budget assumption that the personnel appointment limitations required by Section 201 of P.L. 90-364 will not be effective beyond June 30, 1969; but please send me separately, and as promptly as possible, your views on this matter.

- aim in total for reductions in planned obligations and appropriation requests; most Americans expect us to be more careful and more frugal as well as more concerned, and we should not disappoint them.

You are expected to translate these guidelines into proposals for specific revisions of the budget figures for your

department or agency and to send them (4 copies) to this office in time for them to be received on or before February 24, 1969. Each budget request for which you are suggesting a change should be described briefly with a narrative explanation. The relevant figures should also be supplied, identified with and compared to the specific accounts and figures shown in Part 4 of the 1970 budget, "Analysis of Budget Authority and Outlays by Agency" (pages 173-479). A comparison should also be made with the obligations, reservations, or commitments (in total for each account) as shown in the 1970 budget Appendix. A covering summary table for your entire department or agency should be prepared in the form of the enclosure.

Legislative proposals included in the 1970 budget totals for your agency (but for which the budget request is not yet technically before the Congress) should also be covered in your review and submission.

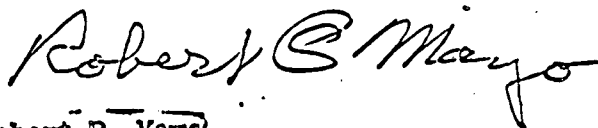
As part of the review of the 1970 budget requests, you should satisfy yourself that your agency can and will live within the 1969 expenditure limits established by the Bureau of the Budget pursuant to Section 202 of the Revenue and Expenditure Control Act of 1968 (P.L. 90-364). Further, you should make every effort to begin program redirections and expenditure reductions during the next five months so that a quick start can be made toward the objectives of our Administration. Hopefully, the new 1969 spending totals will be below the previously established limits. Such spending reductions, however, should be real cuts, and should not be obtained by temporary deferrals which would have to be restored and thereby raise the spending level for fiscal year 1970.

The recommendations you make in response to this letter, like all other budget estimates, are in the nature of advice to the President, and are highly confidential prior to the time the President has acted formally thereon.

I shall communicate your proposals and my recommendations to the President and advise you of his views. At that time I expect to ask you to have formal budget amendments prepared for the President to transmit to the Congress in accordance with law and established procedures and the currently expressed wishes of the Chairman of the House Committee on

Appropriations. In the meantime, following your submission, my staff may contact your budget officer and staff to arrange for discussions of your proposals.

Sincerely,

A handwritten signature in cursive script that reads "Robert P. Mayo". The signature is written in dark ink and is positioned above the typed name.

Robert P. Mayo  
Director

Enclosure



SUMMARY - 1970 BUDGET REVISIONS  
 [Department (or Agency)]  
 (Amounts in thousands)

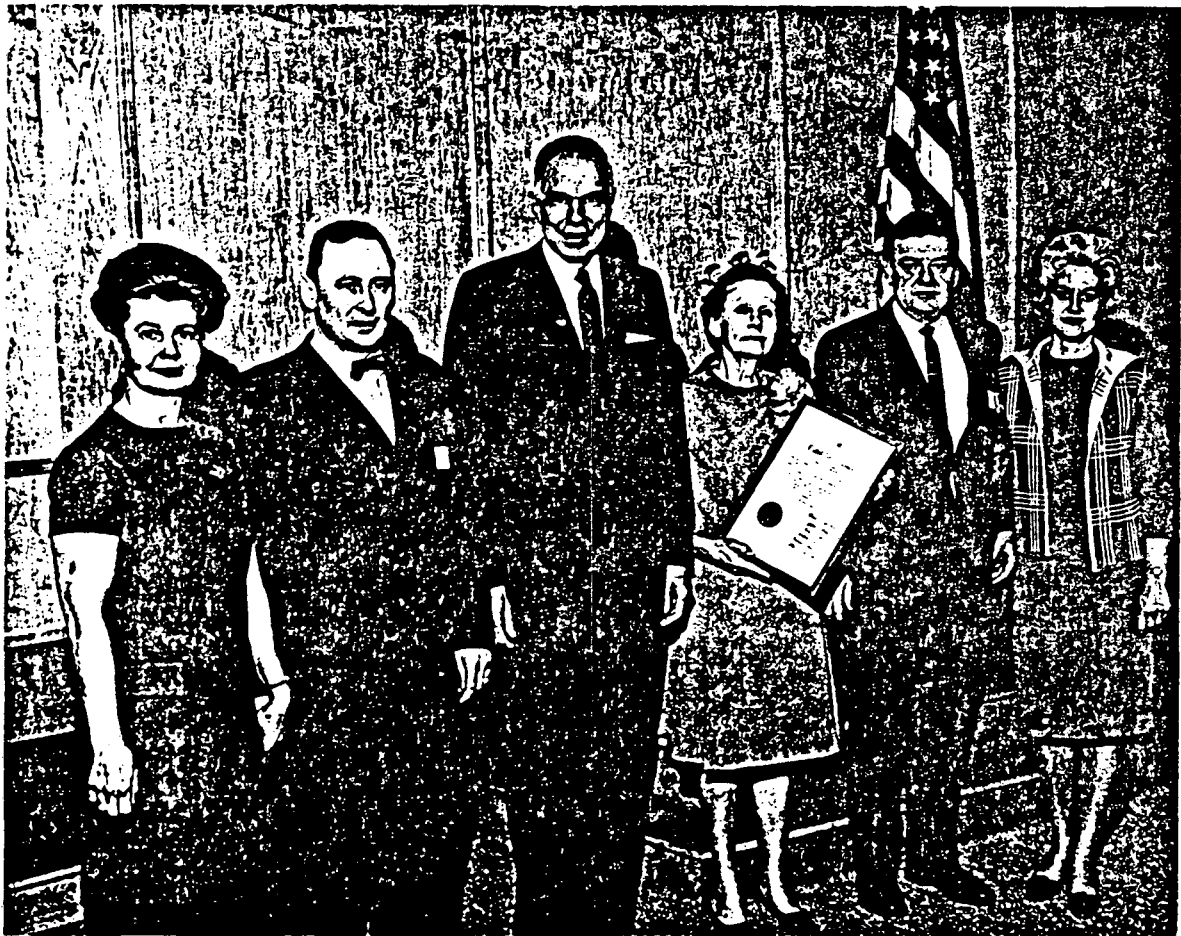
[Date] \_\_\_\_\_

| Bureau (or Service)<br>and account | Pending.<br>1969 Supp. or<br>1970 Budget<br>estimate | Recommended<br>change<br>(+ or -) | Amended<br>estimate |
|------------------------------------|--|-----------------------------------|---------------------|
|------------------------------------|--|-----------------------------------|---------------------|

[In the stub column, list 1969 supplemental items first, followed by 1970 items. For each item, show:

Organizational unit

Budget authority (NOA and LA)  
 Obligations  
 (Commitments or reservations, if these  
 are more relevant than obligations)  
 Outlays (EXP and NL)]



Retirement of Mrs. Edith Grimes, Chief Receptionist, Germantown Auditorium; January 24, 1969.  
L to R: Mr. and Mrs. John Grimes, Dr. Seaborg, Mrs. Edith Grimes, Mr. and Mrs. William Grimes.

Strauss to Mrs. Grimes. I also spoke briefly describing my friendship with Mrs. Grimes since I met her on January 3, 1947 when I arrived for the first meeting of the General Advisory Committee.

At 2:30 p.m. I went to Ed Bloch's office where Dave Shaw, President, and Bill Bush, Vice President, United Nuclear Corporation, and James Dornbacher, Vice President, McDonnell Douglas, were meeting with the General Manager, Ed Bloch and John Erlewine.

Mr. Shaw related some of the history in changing from a single contractor at Richland under GE to the multi-contractor operation and the diversification program. The recent announcements of further reactor shutdowns make it necessary for DUN to reevaluate to what level they can recede and still remain viable. Shaw stated with one or possibly two reactors to operate it might be necessary for DUN to ask the Commission again to select a single contractor for the total plant operation.

Dornbacher noted that all of the parties had gone into the diversification program with a clear understanding of the problem and expressed a view that all parties had lived up to their agreements. They were convinced that it is as feasible and possible for DUN to acquire the necessary talent and work with

other contractors in the operation of FFTF as it is to operate one major segment of the overall plant program. He expressed concern about losing key technical people due to the inability of offering a long-range program that would be attractive unless the operating contract for FFTF was assigned to DUN.

The General Manager noted at this point that there would only be some 0-12 high level technical people involved in the FFTF operation and all parties recognized this point. Shaw and Dornbacher stated that it is important for morale purposes for DUN to have this operating contract even though it might save only a few jobs compared with the total number involved in the recent cutback.

I called Senator Jackson and told him of my talk with Bob Ellsworth yesterday about the deferral of the Hanford reactor shutdown. I said I don't know how much success we will have because we have had word from Mayo to cut our budget even further. Jackson asked if I thought he would honor the 60-day deal; I said I had emphasized it to him and told him that the President would probably be hearing from him (Jackson) about it.

AT 2:45 p.m. I presided over Commission Meeting 2358 (action summary attached).

At 4 p.m. I presided at the Distinguished Service Award Ceremony in the Auditorium. Joseph Hennessey, John Erlewine, and Myron Kratzer received awards. After the presentation of these awards, I presented a Certificate of Appreciation and a gift from the Commissioners (a replica of the AEC Seal) to Mrs. Edith M. Grimes; I spoke about her long, effective and devoted service.

Byron Price (General Manager of the Eugene Water and Electric Board) came into my office for a few minutes to alert me that my name has been submitted for consideration as President of the University of Oregon and that he hopes no request would be made to withdraw this consideration until some formal contact might be made. I thanked him for the information and indicated I would accede to his request but at the same time could not offer too much encouragement as to actual availability for the position with the University of Oregon.

In the evening Helen, Steve, Eric, Dianne and I went bowling at Bowl America Westwood in Bethesda.

#### Saturday, January 25, 1969 - D.C.

I worked until about 3 p.m. I discussed with Tape, Hollingsworth and Abbadessa ways of meeting the FY 1970 budget requirements described in BOB Director Robert Mayo's letter which I received yesterday.

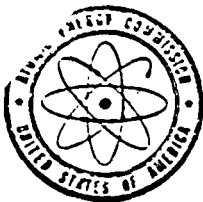
I had lunch at the Pot-O'-Gold with Jerry Tape, Justin Bloom and Jack Rosen.

Steve, Suki and I took a long hike in Rock Creek Park going as far as the Maryland line on the White Horse Trail, returning on the Black Horse Trail.

Helen and I talked to Pete by phone and found that he still is not making any progress on his term papers.

#### Sunday, January 26, 1969

I read AEC papers and worked on my Rosenfield Lectures, as well as the Scientific American article on the Synthetic Elements IV.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

January 24, 1969

Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2358, FRIDAY, JANUARY 24, 1969, 2:45 P.M., ROOM A-410,  
GERMANTOWN, MARYLAND

Commission Business

1. Minutes of Meetings 2331, 2337, 2338, 2339

Approved, as revised, subject to comments by Commissioner Ramey. (SECY)

2. AEC 945/1 - Amendment to Agreement for Cooperation with Iran

Approved. (AGMIA)

3. AEC 352/74 - Proposed Sale of Material to the United Kingdom  
AEC 352/75 - Proposed Sale of U-235 to the United Kingdom

Discussed.

Commissioner Tape will prepare a letter to Sir William Cook.

These papers will be rescheduled. (AGMMA/SECY)

4. AEC 352/76 - Transfer of Materials to the U.K. for R&D

Approved. (AGMMA)

5. AEC 610/152 - Gas Centrifuge

The Commission requested staff analysis of the following:

- a. U.S. access to information;
- b. the relationship of the NPT to the exchange; and,
- c. the criteria proposed by the U.K. in terms of applicable patent law.

(AGM/AGMIA/GC)

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

W. B. McCool  
Secretary

Eric, Suki and I hiked in Rock Creek Park, starting near Pierce Mill and going north on the White Horse Trail to Military Road, then back to our starting place on the Black Horse Trail, continuing on the Black Horse Trail to near the zoo and then back to our car at Pierce Mill.

Monday, January 27, 1969 - D.C.

I called Secretary of State William Rogers regarding the letter he received from Senator William Fulbright, asking whether the test ban treaty might have been violated as a result of radioactivity from the SCHOONER shot. I said this is a very sensitive and highly technical matter and one that has been under almost continuous discussion in the previous Administration. I suggested that we get together to discuss it before he responds to Senator Fulbright. He agreed to this.

At 11 a.m. I watched President Nixon's first press conference on television.

I attended the American Public Power Association luncheon held in the Federal Room of the Statler Hotel. Mr. Hill, who presided, asked me to speak and I gave, extemporaneously, a 20-minute status report on nuclear power. FPC Chairman Lee White also spoke.

Lee DuBridge called to discuss with me the test ban treaty interpretation and the matter of the Hanford reactor shutdown; he has been asked to brief the President on these matters. I gave him a thorough briefing and said, if he is interested in hearing more, I can arrange to have some of our people brief him. I said that he might find an Intelligence briefing useful.

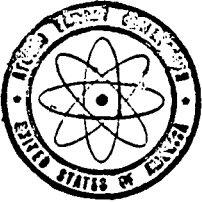
I presided over Commission Meeting 2359 (action summary attached) held at 5:30 p.m. The Commission chose the Battelle Pacific Northwest Laboratory as the operator for the FFTF.

I received a memorandum from President Nixon, dated January 25, 1969, addressed to Heads of Executive Departments and Agencies, asking us to begin a prompt review of the budget requests sent to Congress by the outgoing administration. It asked that we particularly identify activities of low priority which can be reduced or phased down, and perhaps over time, which might be eliminated completely, and to start now to redirect ongoing Federal programs toward this Administration's goals and objectives. (Copy of the memorandum is attached.)

I wrote to Pete sending him an article from Futures written by an historian and bringing Pete up to date on family activities.

Tuesday, January 28, 1969 - D.C.

At 10:30 a.m. Rubin and I met with Robert Gerdes (Chairman of the Board), Shermer L. Sibley (President), and Herman Druse (Assistant to Gerdes) of Pacific Gas & Electric Company. Mr. Gerdes stated the visit was merely to touch base on matters of interest to PG&E. There were some general references to activities of the Sierra Club in connection with the Diablo Canyon site and some internal politics in the Sierra Club involving the executive director. The Sierra Club apparently still plans another polling of its members on the Diablo Canyon site as a prevalent rumor is still circulating that PG&E would abandon the planned first reactor if the site was disapproved for the second reactor. Gerdes stated that the work has already progressed beyond the point of no return on Diablo Canyon I. In answer to a question Sibley stated they would need additional



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

January 28, 1969

Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2359, MONDAY, JANUARY 27, 1969, 5:40 P.M.,  
ROOM 1115, D. C. OFFICE

SECY:LGH

Executive Session

AEC 588/70 - Operation for FFTF

Approved.

The Commission approved the notification sequence as discussed at the meeting, with the proviso that notification of the JCAE, the Congressional delegation, PNL, DUN, and the Tri-City Herald be as simultaneous as possible.

The Commission also agreed the proposed letter to the President of DUN reflect the Commission's desire to confer with them regarding the decision.

(RDT)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

THE WHITE HOUSE  
WASHINGTON

UNCL. BY DOE  
NOV 86

January 25, 1969

MEMORANDUM FOR

HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

As we set the course of the new Administration, a careful and thorough review of the budget must be the first order of business. The American people have a right to expect that their tax dollars will be properly and prudently used. They also have a right to expect that fiscal policy will help to restrain the present excessive rate of price inflation in our economy.

At my request, the Budget Director has asked you to begin promptly a review of the budget requests sent to the Congress by the outgoing administration. This task must receive your personal attention. As you evaluate the programs of your agency in that review, I want each of you particularly to:

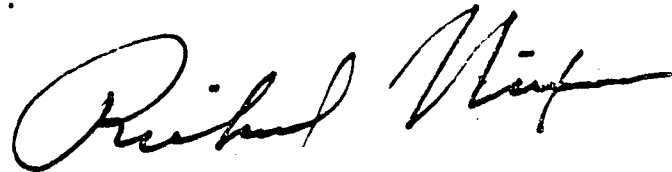
identify activities of low priority which can be reduced or phased down and perhaps, over time, eliminated completely;

start now to redirect ongoing Federal programs toward this Administration's goals and objectives.

We must act promptly along these lines in order to make room for new programs that seem urgent.

For the fiscal year ending June 30, 1969, we must operate under the spending ceilings set in the Revenue and Expenditure Control Act of 1968. Fiscal year 1969 is more than half over, and our flexibility for making changes is limited.

However, we need to begin now to lay the foundation for our future actions. I want you, therefore, to examine in detail the spending plans of your agency through this June and to achieve all the savings that you can -- not by deferrals or stretchouts which will have to be made up later, but by actions that will provide a sound base for future programs we will want to undertake. The Director of the Budget should be informed of your plans within the next 30 days. Our examination of the Government's programs and budget levels in the coming weeks is of central importance to the success of the new Administration in achieving a more efficient and responsive Government. I ask each of you to cooperate fully in this endeavor.

A handwritten signature in cursive script, reading "Richard Nixon". The signature is written in dark ink and is positioned to the right of the main text block.



capacity by 1975 and would have to be making a decision this year on which way to proceed.

Gerdes then reviewed a problem at Monterey involving a "yellow cloud" that has resulted from the addition of two 750 MWe gas fired plants to the existing five 100 MWe plants already at that location. The new plants operate at a higher temperature and due to an inversion in the area and a suspected formation of NO in the stack gas, which cools in the atmosphere and picks up additional oxygen, a yellow cloud forms that is very objectionable from an aesthetic point of view but presents no apparent health problem. There was additional discussion on the problem of substituting oil for gas and combating the public opposition.

Gerdes expressed concern about pending hearings by the Senate Public Works Committee on Water Pollution and he indicated he may have to appear as a witness on the Muskie Bill (59) in his capacity as President of EEI. Gerdes expressed support for local control of water pollution but objected to any requirement for a separate license at the construction and operating stage of a plant. I indicated the Commission at present is supporting the alternate Administration bill because it would involve only one license by the AEC for a nuclear plant following establishment by the Department of Interior of standards for water temperatures and other discharges to rivers. (Note - the Commission later decided to support the Muskie Bill). I offered to arrange for a review of the differences between the two bills (The Muskie Bill requires authorization from state authorities). Following the meeting Bud Schur contacted Druse to arrange for this discussion with the PG&E people.

I met, along with George Gableman, with Jeff Pesses of the UCLA Development Center to discuss possible placement of UCLA students in the AEC intern program this summer.

I had lunch in the dining room with Rubin, Bloom, Schneider and Perkins.

Senator Strom Thurmond called me about the Savannah River Plant, asking whether there is any chance of getting any expansion down there. He said he was down there the first of the year and he saw that they are doing a lot of work there that could solve the cancer problem. I said that there is no omnibus cure for cancer, but Cf-252 could be one avenue. I said that any expansion on this account would be a number of years in the future because it would take that long for the development of the process, provided of course that our efforts meet with success.

He said he hopes we have no plans for reduction at Savannah River, and I said not at the present time. He is anxious not to have any more reactors closed. He is very anxious "to see this plant develop and to see this cancer work get going." He then asked whether plans for permanent operation of the plant would be to continue it as at present. I said it would be my hope that it continue because of the strong promise down there, but, of course, the future will be determined by President Nixon and his advisers, too. He asked whether I have any plans to visit Savannah River in the near future. I said I plan to be there about April 11th. He said if he happened to be in the State at that time he would be glad to join me. He thanked me for my interest in the plant "and the great work that is being done down there under my direction." He said that the people down there at the plant hold me in very high esteem, as do the people in Aiken.

From 3:40 to 4:15 p.m. I had my first appointment with President Nixon with Lee A. DuBridge, Henry A. Kissinger, Robert F. Ellsworth, and H. R. Haldeman present. The President handed me a letter asking me to stay on as the Chairman

of the Atomic Energy Commission. We discussed the TROLL study, the AEC peaceful uses of atomic energy program, the problem of high yield underground nuclear testing, and the shutdown of two reactors at Hanford.

The President asked us to enter his office before his preceding appointment had ended, consisting of a group which included Senator Scoop Jackson, Henry Kissinger, General Andrew Goodpaster, and Bryce Harlow. The President introduced us to these people, and as Senator Jackson was leaving, asked him in a semi-joking way what his recommendation on the SST would be. Jackson replied lightly that he had sort of a conflict of interest there and didn't reply directly, but the President reiterated his interest in the SST.

We sat down on the two couches facing each other, in front of the fireplace which had a crackling fire. I sat on the couch next to the President, while DuBridge, Ellsworth and Kissinger sat on the opposite couch, and Haldeman sat on a chair in between the couches.

The President began by handing me a letter, with an accompanying envelope, saying it was self-explanatory. (This was the letter asking me to stay on as Chairman of the Atomic Energy Commission.) He jokingly said it was a close decision, but that he had the final say.

I began by saying I had a very sensitive matter to discuss with the President and then went on to describe the TROLL study. I discussed its implications, which the President clearly understood, and cautioned all present to treat the information in the highest confidence, which all agreed to do. I said I was asking three people in the Livermore Laboratory to check the conclusions of this study, and that I would let the President know these results when they were forthcoming.

The President then raised the question of Plowshare in the peaceful uses of nuclear explosives and said that this is a subject in which he is very interested. He said he wants this to have a high priority in his Administration; in fact, he said he has a special prejudice for this program--the way all people have special quirks and prejudices--and hopes it can go forward expeditiously. He said he has heard of the Australian project and asked whether I could describe this to him.

The President had a two-page memorandum before him, which he glanced at occasionally as we spoke. (I wouldn't be surprised if this might not have been a memorandum written by Ellsworth covering the conversation I had with Ellsworth, Whitehead and Hofgren last Wednesday, January 22nd.)

I described the project proposed for Keraudren Bay in Northwest Australia, including the fact that it would consist of five nuclear explosives buried a couple hundred feet below the ocean bottom in that region. The purpose would be to build a narrow harbor for ships to enter to receive iron ore from the interior for transport to other ports.

The President asked what would be required to get on with this project, and I said that two things would be required: (1) we would need additional funding for this and related aspects of the Plowshare program, and (2) we would need to adopt a more realistic interpretation of the test ban treaty from the standpoint of radioactive debris than had been adopted in the previous Administration by the State Department and the Arms Control and Disarmament Agency. The interpretation adopted by the previous Administration had been that any amount of radioactivity, no matter how small, might be a violation of the test ban treaty if it were detectable beyond the borders of the country where the

excavation experiment had been performed. I said I had disputed this interpretation, which I referred to as absurd, rather continuously during the last four or five years. I said that I had advocated a more sensible or de minimis interpretation that had something to do with reality and levels that might have some meaning from a health standpoint. I said there were international committees that set standards from the health standpoint which, if we adhered to, would make it possible to carry out the Plowshare program, including the Australian experiment.

I also mentioned that when I testified before the Senate Foreign Relations Committee (testimony which was critical to the ratification of the test ban treaty from the standpoint of a number of Senators like Scoop Jackson and Clint Anderson), I indicated it would be possible to carry out excavation experiments, having in mind a reasonable interpretation and not the atom-by-atom interpretation. I also mentioned that there was a great deal of interest in other countries in Plowshare and, in fact, we promise in article 5 of the Nonproliferation Treaty that we will make Plowshare services available to them; if we had not agreed to do this, there would be a number of countries that would not be interested in adhering to the NPT.

I indicated that the Soviets, without announcing it as policy in so many words, are conducting a program which is more consistent with such a realistic interpretation of the test ban treaty. They had conducted at least ten underground weapons tests or excavation experiments, and possibly as many as 15, 20 or 25, in which debris was readily detectable outside their borders. Apparently the Soviets do not take the trouble to bury their underground shots as deeply or as carefully as we do.

The President said he was interested in the entire Plowshare program and wanted to know what the prospects were for using the Isthmus of Panama. I indicated that the prospects were good. I pointed out that there is an Inter-Oceanic Canal Study Commission, headed by Robert Anderson (Milton Eisenhower and Kenneth Fields are also members), that was studying this with the view of coming up with a recommendation before December, 1970, as to the best method for building such a canal, nuclear or conventional. I said that the Australian experiment would be one step among the many that would be required in order to obtain the information within the time frame required by the Inter-Oceanic Canal Study Commission. I said that it was only within the last year that we had succeeded in getting approval for three important Plowshare excavation experiments, and that these, together with the Australian experiment--or its equivalent--as well as some others, would be needed in order to get the information that the Commission required.

I pointed out that, due to the need for the harbor in Australia, it would be necessary to complete the experiment by 1970. The President asked whether it could be done sooner, and I said it probably could, provided funding and approvals were given in quick order. The President asked that I send him as soon as possible a memorandum indicating the additional funding that would be required for the Plowshare program, including the Australian experiment. The memorandum should contain a description of the Australian experiment and the Plowshare program as related to the Inter-Oceanic Canal Study Commission, including the problems concerning the interpretation of the test ban treaty and our suggestion of how to overcome these.

The President reiterated his interest in the peaceful uses of atomic energy and said he thought this was something that should be accelerated. As he was speaking in broad terms beyond the Plowshare aspect, I asked whether he had in mind power reactor development, and especially breeder development, and he said

he did. He thus expanded his request for information on the peaceful uses of atomic energy on a rather broader scale than just the Plowshare program.

The President said he would like to set up some kind of a briefing session in which he and others might be briefed on the peaceful uses of atomic energy. He recalled in this connection the talk I had given at the Bohemian Grove at the breakfast which he attended (this was the talk at the Owls Nest in July, 1967) and how impressed he was by my description of the great potential in this field. I immediately suggested that he come to our Headquarters in Germantown and meet some of the key staff and be briefed on our program. He said he would like to do this and that the briefing might cover the weapons and national security aspects as well as the peaceful uses aspects of atomic energy. At first he said he might come out in about two months, but then as the conversation continued, he suggested it might be March. When I hinted it might be useful to come even earlier, he said he could possibly do it in February. He asked Haldeman to include the Atomic Energy Commission among the departments and agencies that he was scheduling for visits. He also suggested to Haldeman that Secretary of State Rogers should be included in the briefing at Germantown.

I then said there was another area that I would like to call to his attention, and that was underground testing of high yield weapons. He immediately recognized this as a problem area and glanced at his memorandum, which appeared to treat this subject as well. I described the problem briefly, indicating that I thought the AEC had the safety considerations well in hand. I said we have adopted the posture of being very forthright. I said we are briefing the interested people and keeping them informed, and the President immediately said this was the right thing to do and that he was glad we were handling it this way. He asked what I thought we should do, and I replied I thought we should continue our forthright public posture and also continue to carry out the tests that are needed and not lose our nerve. I said these tests were necessary in order to develop the ABM. It was as simple as that. I told him we were developing another test site in central Nevada and also one in Amchitka in the Aleutian Islands. He smiled and indicated by a gesture that that didn't seem to be the best place in the world for testing, but I indicated we had made a real search for sites and this was the best we could find, and if anyone in the room could come up with a better suggestion, we would be very surprised.

I then went on to describe the situation with respect to the proposed shutdown of two reactors at Hanford. I said that this was contemplated in the Johnson budget; as a result of the interjections of Senator Jackson, however, President Johnson had agreed that the AEC might defer action in starting the shutdowns until President Nixon had an opportunity to review the situation. The President indicated in a somewhat light way that this meant it has been thrown into his lap, which, I conceded, is the case. I said there is a genuine difference of opinion about how much plutonium is needed, that there are some who think that the continued production of these two Hanford reactors is required. I said that, in any case, due to the economic impact on the Hanford area, it might be better to have a more orderly slowdown in production and not shut down these two reactors until we have found some compensating factors. I mentioned that five out of nine reactors have been shut down at Hanford in the past four years.

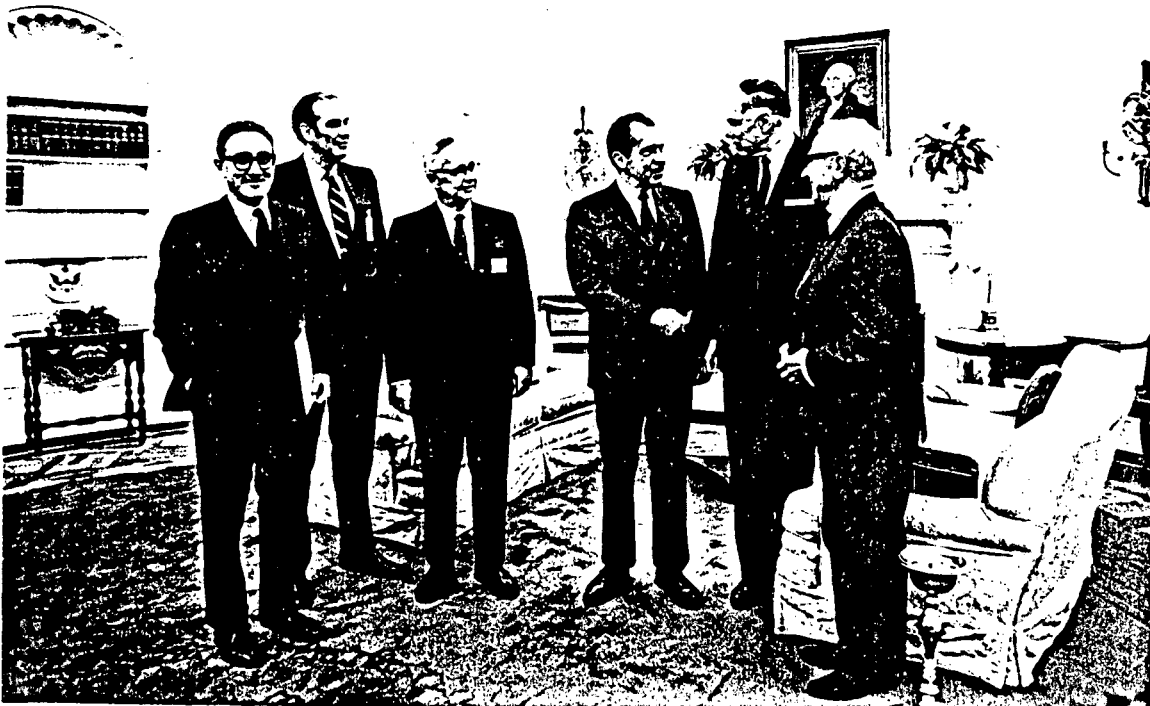
Somebody raised the question whether I should see the press; although I indicated it would probably be best if I left in low key without doing this, the President immediately suggested that he would prefer that I meet with the press--that he was making such meetings a part of his mode of operation. He suggested I might indicate that he had asked me to stay on as Chairman, that we had discussed a number of items, especially the peaceful uses of atomic energy. He suggested I indicate his interest in this field, mentioning especially the

Plowshare program and the Australian harbor experiment and the power program, such as the breeder reactors. He also suggested I mention that he was going to visit the AEC at Germantown soon in order to be briefed further about the AEC's program.

As the meeting broke up, the President suggested that a photographer come in to take some pictures for the historical record, which was done (see picture below). The President and I recalled our meeting long ago--in January, 1948--at Chattanooga, when we were both in the group of the Ten Outstanding Young Men of 1947, chosen by the U.S. Junior Chamber of Commerce. I said I had a photograph of us in that context and asked whether he would autograph it, and he said he would be glad to do so. I also said I had a picture of him with my kids, taken in June, 1960, and he indicated very cordially that he would be glad to autograph this also.

After my appointment with the President, Ellsworth took me to the Press Room, where we met Ron Ziegler. We waited for a few minutes outside while Interior Secretary Walter Hickel was finishing his press conference; when he came out, I met him. Ziegler then took me to the packed Press Room to a microphone.

I began by saying that I had just finished meeting with the President and that the President has asked me to tell the press about our conversation. I said we had talked about some national security matters and then had gone on to discuss the AEC's program for the peaceful uses of atomic energy. I said the President had expressed a great interest in this program and that he had especially singled out Plowshare and the power reactor breeder program. I said he has asked that these programs receive adequate attention and be accelerated by the AEC. I said he had mentioned a special interest in the use of nuclear explosives for the building of a harbor in Australia. I also said that the President indicated he intended to visit the AEC in its Germantown



The White House; January 28, 1969.

L to R: Henry A. Kissinger, Robert F. Ellsworth, Patrick E. Haggerty (Chairman, Texas Instruments Co.), President Richard M. Nixon, Seaborg, Lee A. DuBridge. 039

Headquarters sometime in February to receive a more thorough briefing on the AEC's program (transcript attached).

My initial statement was followed by questions. A number of these concerned the Australian project. I described the nature of the project. I said that the cost might be, very roughly, \$10 million, although this is rather vague and could be interpreted as being in the broader context of a larger program. I did indicate that the U.S. share might be that of furnishing the explosives and their emplacement, and perhaps something more, roughly equivalent to the cost of an experiment that would otherwise be conducted in the U.S. I said that the Australian experiment would be the equivalent of such an other experiment and would be part of the program required in order to get the necessary information for the Inter-Oceanic Canal Study Commission for their report, which is due in 1970.

Continuing answering questions, I said I thought the Australian experiment could be conducted within the requirements of the test ban treaty. This question was asked twice.

In answer to a question I was asked, whether the President had asked me to continue as Chairman of the AEC, I indicated that he had. I was asked how long my term is, and I indicated that I voluntarily accepted a short term, which expires in June, 1970. I indicated that my term as Commissioner was determined by law, and that my designation as Chairman was a separate matter, done by the President.

Upon returning to the office, I presided at 4:45 p.m. at Information Meeting 871 (notes attached), where I reported on my meeting with President Nixon.

#### Wednesday, January 29, 1969 - Grinnell, Iowa

I left D.C. National airport at 7:55 a.m. on American Flight No. 389 arriving in Chicago at 8:45 a.m. where I was met by Fred Mattmueller of the Chicago Operations Office. Because of the indefinite delay of my scheduled flight, United No. 477, I left Chicago on United Flight No. 783, leaving at 10:45 a.m., arriving in Des Moines at 11:40 a.m. I was met at the airport by Professor Benjamin Graham of the Biology Department, Grinnell College, and students Ken Labowitz (Al Labowitz's son), Al Heimann, Cliff Froelich and Phil Hooper (whom I had met with his father in Nashville in March, 1967, as I was enroute to Louisville with Steve and Dave). We had a very precarious trip to Grinnell College due to icy roads. We arrived at Grinnell House (the former home of Grinnell College presidents) at 2 p.m., an hour behind schedule. I had lunch there with Graham, Labowitz, Heimann, Froelich, Hooper, Professors Roger Hansen (Physics Department), Joseph Danforth (Chemistry Department), Bernard Mergen and Mr. Peter Bowman.

After lunch I called my office and learned that President Nixon had invited Helen and me to the White House tomorrow evening to view the Apollo-8 film.

I next went to the Hall of Science for an informal coffee hour and question and answer session with a group of about 25 chemistry, physics and biology students.

I then went back to my room in Grinnell House and prepared for dinner. I attended a cocktail hour there where I met President and Mrs. Glenn Leggett and many of the Grinnell faculty including Professors Gene Wubbels, Donald Macalady

NEWS CONFERENCE #19

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AT THE WHITE HOUSE

WITH GLENN T. SEABORG, CHAIRMAN,  
ATOMIC ENERGY COMMISSION; AND  
RON ZIEGLER, PRESS SECRETARY

4:25 P.M. EST

JANUARY 28, 1969

TUESDAY

MR. ZIEGLER: We have another guest for the 4 o'clock briefing today.

Dr. Seaborg, Chairman of the Atomic Energy Commission has just completed a meeting with the President. He has a few statements to make.

Ladies and gentlemen, Dr. Seaborg.

DR. SEABORG: I just met with the President and he asked me to come by and talk to you. We discussed the problems of the Atomic Energy Commission in general, including national security areas and especially the area of the peaceful uses of atomic energy.

The President expressed a great interest -- and he asked me particularly to tell you this -- in the peaceful uses of atomic energy. He particularly identified Plowshare, the area of the peaceful uses of nuclear explosives, as an area in which he had a special interest. He also mentioned such areas as the development of breeder reactors and the civilian nuclear power program.

I think that is the gist of my conversation with the President.

Q Did you talk to him at all about the possible use of nuclear energy in the building of the new canal?

DR. SEABORG: Yes. He inquired especially about that and the Australia project that has been brought forth in the last few days. He expressed an interest in those projects and asked that I do everything that I could to accelerate those projects and to bring them along at the fastest possible rate.

Q What is the Australian project?

DR. SEABORG: The Australian project is a project to build a harbor in northwest Australia at Keraudren Bay. This would use a roll of five nuclear explosives to build a narrow harbor there in order to give access to the interior where there are certain minerals that need to be brought out.

Q Are you satisfied now that the studies show that use of nuclear explosives would be economically feasible?

DR. SEABORG: Yes, I think so. But we have more tests to make in order to make this definite. This cooperative

experiment with Australia would be one test on the way towards demonstrating the feasibility of building a sea level canal across the isthmus.

Q Have we agreed to do the Australian project?

DR. SEABORG: We have agreed to do a study regarding its feasibility. The Australian project has a certain degree of urgency about it because they need to have the access to this ore by 1970, so if we go ahead we will have to go very fast.

Q Can these projects move without violating the Nuclear Test Treaty?

DR. SEABORG: Yes, I think so.

Q Was there any discussion with Mr. Nixon about the canal across South America?

DR. SEABORG: Yes, the President expressed great interest and hoped we would be able to make all the tests necessary to make this feasible. As you know, there is an Inter-Oceanic Canal Commission, under the chairmanship of Robert Anderson that includes among its members Milton Eisenhower and Kenneth Field, that is studying the whole question of the feasibility and the relative merits of conventional methods against nuclear methods.

In order for us to give them the data they need in order to make this evaluation, the Atomic Energy Commission has a program of excavation shots. One of them would be such a shot, the detonation of a rock of such nuclear explosives of the type that is required to build this harbor in Australia. So that would be part of the preparation for the building of the isthmian canal.

Q Can you tell us more about the national security aspects of your discussions?

DR. SEABORG: I cannot. I am sorry.

Q Did you discuss the control of nuclear weapons or methods of detecting nuclear blasts, et cetera?

DR. SEABORG: No, not as such.

Q When will the Australian feasibility study begin and how long will it take?

DR. SEABORG: I think the Australian feasibility study is beginning, essentially, immediately. You might say it is underway right now. I don't know how long it will take. I hope it will be possible to finish it in a couple of months.

Q Did the President ask you to remain on, and, if so, are you staying on?

DR. SEABORG: The President has asked me to stay on and I am staying on.

MORE



Q When does your term expire?

DR. SEABORG: My term expires June 30, 1970. I asked for the short term, you will recall, when I was reconfirmed last June.

Q And he asked you today to stay on?

DR. SEABORG: Yes.

Q Beyond this date?

DR. SEABORG: No. He just asked me to stay on. No dates were discussed.

Q Dr. Seaborg, would you please give us specifically some of the other projects and peaceful uses that you and Mr. Nixon discussed?

DR. SEABORG: In the time that I was with the President, besides speaking generally on the whole field of peaceful uses of nuclear energy and identifying it in that matter, he specifically identified Plowshare and nuclear reactors, particularly the nuclear breeder reactor.

Q Can you be more specific?

DR. SEABORG: Just what I said.

Q Did you discuss the Nuclear Nonproliferation Treaty?

DR. SEABORG: No.

Q There was talk last year that AEC might get rid of its gaseous diffusion plants. Did you talk about that?

DR. SEABORG: No.

Q When would you expect the first detonation in this Australian project?

DR. SEABORG: It would all be done at the same time. I hope if we go forward it would be before the end of 1970. That is the time scale which the Australians feel they must move in.

Q What is the United States' role in this?

DR. SEABORG: We would furnish the explosives and probably help in the funding to an extent that it would be equivalent to conducting a test of this sort for our own purposes; namely, to determine the feasibility of the isthmian canal for ourselves.

Q Therefore, if we do not go forward with this for Australia, what will they do?

MORE

DR. SEABORG: They will be forced to use more expensive conventional excavation methods.

Q Explosives?

DR. SEABORG: They would use explosives to some extent, and dredging and so forth.

Q How much would that cost?

DR. SEABORG: I don't know, off-hand; in the order of \$10 million or something like that.

Q Has the President yet been briefed by the Atomic Energy Commission about our military nuclear capabilities?

DR. SEABORG: I should have mentioned that earlier. The President said he plans to visit us at our headquarters in Germantown in order to be briefed on all aspects; the military capabilities, the peaceful uses and the entire range of our program. He would like to do this when he can get around to it, possibly as early as February, although he did not want to set a date at this time.

Q Would the Australian project be the first-time use of nuclear explosives for this purpose?

DR. SEABORG: It would be the first practical experiment. It would be a combined experiment and at the same time usefully excavate a harbor in Australia. It would be the first useful excavation experiment. We have done underground nuclear engineering that was, for example, the gas buggy shot a year ago when we detonated in New Mexico an explosive to see whether we could fracture the tight gas-bearing formations underground in order to increase the flow rate so that otherwise deposits of gas could be economically mined.

Q That is the date your term as Chairman on the Commission expires or is it the same thing?

DR. SEABORG: It is the same thing, I suppose. It is my term as a Commissioner. By law you are designated as a member of the Atomic Energy Commission. The President designates you as Chairman.

Q Has the Soviet Union conducted successfully excavation experiments in that area?

DR. SEABORG: We don't know. We are not exchanging information in that area.

Q What kind of minerals are involved in the Australian harbor, and is there an American company involved?

DR. SEABORG: Yes, the Sentinell Mining Company.

Q Underground minerals?

MORE

DR. SEABORG: In the underground nuclear engineering experiments in the Plowshare program, a number of companies are involved. We are doing all of that in collaboration with industry.

Q I mean the harbor, would that be underground detonations?

DR. SEABORG: It would break the surface of the earth. The explosive would be buried a couple of hundred feet below the bottom of the ocean, the shoreline at that point. Then five of them in a row would be detonated to give a narrow harbor.

Q Would it be necessary to touch base with the other signers of the Test Ban Treaty? Would you have to negotiate at all on this?

DR. SEABORG: I don't think we have reached any conclusion on that as yet.

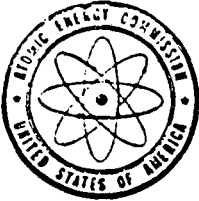
Q How long did the Chairman spend with the President?

MR. ZIEGLER: About 35 minutes.

THE PRESS: Thank you.

END

AT 4:40 P.M. EST



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 2  
January 28, 1969

INFORMATION MEETING 871

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NOV 88

4:45 p. m., Tuesday, January 28, 1969, Chairman's Conference Room, D. C.

EXECUTIVE SESSION

1. President Nixon's Designation of Dr. Seaborg as Chairman of the Commission
2. Chairman's Meeting with President Nixon This Afternoon

The Chairman reported briefly on his meeting with the President this afternoon and requested priority staff preparation for a briefing of the President in Germantown. Additionally, a Plowshare program analysis for discussion with the Administration is requested.  
(AGM-PNE)

3. Richland City Officials Early Visit with Congressmen re Hanford Reactor Shutdown

The Chairman will call Senator Jackson. (Rubin)

\*\*\*\*\*

4. January 17 Memorandum from Paul Nitze, DOD, re Draft Presidential Memorandum on Nuclear Weapons and Materials

In staff review. The Commissioners will discuss this matter with Secretary of Defense Laird. (AGMMA-Rubin-SECY)

5. January 25 Memorandum from the President re Review of Budget Requests Sent to the Congress by the Johnson Administration

Noted: (OC)

6. Executive Session - Personnel Item (General Manager's January 23 Memorandum)

Approved. (PER)

W. B. McCool  
Secretary

5:35 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Rubin  
Mr. McCool  
Mr. Kull \*  
Mr. Hennessey\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Partial Attendance

and Jack Swensen (Chemistry Department Chairman). Most of the group had a buffet dinner there.

Following this I went to Roberts Theater, where I delivered to a full house my first Rosenfield Lecture entitled "The International Atom - A New Appraisal; Part I, The Past and the Promise." After the lecture a group of students gathered on the stage and asked me questions for about 15-20 minutes.

I then went back to Grinnell House where I spent the night.

Thursday, January 30, 1969 - Grinnell, Iowa

Professors Neal Milver and Raymond Horton (Political Science) came by Grinnell House and together we walked over to the College Forum where I had breakfast with about twenty-five social science students and faculty. We had a question and answer session during breakfast and for about an additional hour after breakfast. I then went back to Grinnell House to pack my things. A student, Don Marquandt, came by to walk with me to Roberts Theater. I met briefly with Otto Knauth of the Des Moines Register. I delivered my second Rosenfield Lecture entitled, "The International Atom - A New Appraisal; Part II, In Keeping the Peaceful Atom Peaceful."

Following this I rode in the college station wagon to Des Moines with Bowman and students Beth Frankel, Marquandt, and Tony Wheeler. Charles Seller, assistant to President Leggett, had checked on flight schedules, etc. for me.

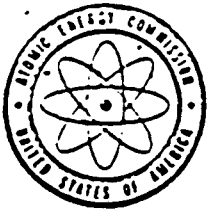
I flew to Chicago on United Flight No. 256, leaving at 1:30 p.m. and arriving at 2:30 p.m. In the Chicago O'Hare Airport I met Bryce O'Brien of the National Coal Association (who was on the same flight to Washington) and had a nice chat with him on NCA problems and AEC-NCA relations. I flew to Washington on United Flight No. 322, leaving about 3:10 p.m. and arriving at Dulles Airport about 6 p.m.

Helen and I went to the White House, arriving about 9:20 p.m. to attend a showing of an Apollo-8 film. The guests assembled in the Blue Room for coffee while awaiting the completion of the dinner that President and Mrs. Nixon were hosting for the Apollo-8 astronauts and their wives. Following their dinner, President and Mrs. Nixon, Mr. and Mrs. Borman, Mr. and Mrs. Lovell and Mr. and Mrs. Anders came into the Blue Room. Helen and I had an opportunity to talk to each of them. Also present were representatives of Congress, including Senator Clinton Anderson and Congressmen George Miller, Richard Fulton and George Mahon, Defense Secretary and Mrs. Mel Laird, the Ed Welches, the Ed Wenks, the Tom Paines, the Ken Belieus and the DuBridges. We all went into the White House movie projection room where Borman narrated while the Apollo-8 movie was shown; Anders and Lovell narrated while slides of the Apollo-8 missions were shown. A question and answer period followed.

Friday, January 31, 1969 - D. C.

I wrote a letter to Lewis Strauss thanking him for his telegram of January 29th congratulating me on my continuance as AEC Chairman.

At 10:40 a.m. I presided at Information Meeting 872 (notes attached) where we discussed, among other things, our forthcoming meeting with Tri-City Council Representatives concerning the reactor shutdown at Hanford and possible candidates for the ACRS.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D. C.

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January 31, 1969

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INFORMATION MEETING 872

10:40 a.m., Friday, January 31, 1969, Chairman's Conference Room, D. C.

1. January 30 Letter to Dr. J. Laurence Kulp re SNAP-29 Program

We will schedule an early meeting. (SECY)

2. Execution Data Reports

Commissioner Tape requested earlier submission. (AGMMA)

3. Commissioner Costagliola's Report on His Discussion Yesterday with Mr. Bauser, JCAE, re Waste Disposal Hearing

4. Commissioner Costagliola's Report on His Visit to Savannah River and Pinellas Area Office

5. Commissioners' Meeting with Tri-City Council Representatives, 2:00 p.m., Thursday, February 6, 1969, Room 1115, D. C. Office

Scheduled. (SECY)

6. Candidates for the Advisory Committee on Reactor Safeguards

To be scheduled upon Commissioner Ramey's return. (SECY)

CLASSIFICATION CANCELLED  
WITH DELETIONS  
BY AUTHORITY OF DOE/OC

*Bauser 2/10/69*  
*J. Ramey 7/11/86*

7. John Foster's, Director of Defense Research and Engineering, DOD,  
Call to Commissioner Tape re the ABM
8. Agenda for the Week of February 6, 1969  
Approved. (SECY)
9. Topics for Commissioners' February 6 Meeting with the Advisory  
Committee on Reactor Safeguards (See Secretary's January 30 Draft  
Agenda)  
Approved. (SECY)
10. AEC 972/20 - Joint Committee Comments on AEC History, Volume II  
Noted. (SECY)
11. NTS Events (See General Giller's January 30 Memorandum)  
Noted. (AGMMA)
12. AEC 811/224 - Draft Response to Diplomatic Note Concerning Cape  
Keraudren Project  
The Commissioners are to be kept informed on Interdepartmental  
discussion of this matter. (AGMLA)
13. AEC 973/105 - Appointment of IAEA Director General  
Approved. (AGMLA)
14. AEC 23/81 - COCOM Embargo List: Proposed AEC Position on Revision  
Approved subject to Commissioner Ramey's concurrence.  
(AGMLA-Ryan-SECY)
15. AEC 544/91 - Summary of the Uranium Miner Problem  
Letters to Secretary of Labor Schultz and Secretary of Health, Education,  
and Welfare Finch are requested. (AGMO)
16. AEC 1143/80 - Wahluke Slope: Alternate Agricultural Use for Livestock  
Grazing  
Approved. (AGMO)



17. AEC 1246/11 - Ashland Oil and Refining Company Proposal to Acquire the Stock of United Nuclear

Approved with changes. (GC)

18. AEC 1282/33 - Execution Data for the ~~Event~~ Event

Approved. (AGMMA)

19. Spartan Backup Program

Staff may proceed subject to Commissioner Ramey's concurrence. (AGMMA-Ryan-SECY)

20. Decision on the Warhead for the Anti-Ballistic Missile

A review is requested and Commissioner Ramey is to be informed. (AGMMA-Ryan-SECY)

21. UPI Release Today on the AEC Annual Report

Mr. Brown will alert White House staff. (AGM)

22. AEC 568/120 - Discovery of Radio Transmitter at AEC Facility

Noted. (S)

23. Pending Contractual Matters Report No. 294

Noted. (PAR)

24. AEC 359/81 - Proposed Letter re Prohibition Against AEC Enrichment of Foreign Uranium Intended for Domestic Use

Noted subject to Commissioner Ramey's comments. (RM-Ryan-SECY)

25. AEC 459/60 - Proposed Letter to Senator Javits re Ownership and Management of Enrichment Plants

Noted subject to Commissioner Ramey's comments. (AGMP&P-Congr. -Ryan-SECY)

26. General Manager's Report on Staff Meeting with Mr. Charles Harrington, DUN

27. Commissioner Johnson's Meeting with Mayor Fred Clagett of Richland,  
Washington

Staff follow-up is requested. (AECA)

28. Navy Release re USS Scorpion

W. B. McCool  
Secretary

12:15 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Abbadessa\*  
Mr. Rubin  
Mr. Ryan  
Mr. Kull  
Mr. McCool  
Mr. Bengelsdorf\*  
Mr. Erlewine\*  
Mr. Brown\*  
Gen. Giller\*

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General Counsel  
Secretary

\*Attendance by Topic (s)

Commissioner Tape and I met with the Council of Presidents of URA at their annual meeting held at the National Academy of Sciences. I gave a brief status report on the 200 Bev Accelerator, amplified by Tape, and a question and answer period followed. Pusey, Goheen, Meyerson, Stever (Chairman), Harnwell, Hovde, Carl York and Pitzer were among those present. Tape and I had lunch with the group.

In the afternoon I met with Mrs. Estela A. Jesvitas and Miss Monalisa Ramos, Philippine teachers who just completed training at Oak Ridge for work in the AEC Atoms in Action exhibit which will be held in Manila (see picture below).



Visit of Philippine teachers who trained at Oak Ridge to teach at the Science Demonstration Center of the Atoms in Action Exhibit to be held in Manila.  
L to R: Chester Gray (DTI), Miss Monalisa Q. Ramos, Mrs. Estela A. Jesvitas, Dr. Glenn T. Seaborg.

I helped draft an affirmative reply to the Australian request for a joint U.S.-Australian study of the Cape Keraudren Plowshare project. The State Department is dragging its feet on a reply but a query from Australia to President Nixon accelerated the reply. Apparently my meeting with President Nixon on Tuesday was instrumental in his insisting on an expeditious reply.

I sent a letter to the Nobel Committee in Norway supporting the nomination of Dr. Henry Seligman for the Nobel Peace Prize.

Saturday, February 1, 1969 - D.C.

I worked on the letter to President Nixon, giving our suggestions to accelerate progress in the peaceful uses of nuclear energy (especially Plowshare), in response to his request at the time of our meeting last Tuesday.

At 1 p.m., I had lunch in the White House Mess with Lee DuBridge; we discussed a number of items, as follows: A possible replacement for Tape as Commissioner when he leaves his position sometime in April or May. We discussed such names as Norman Ramsey, John Wheeler, and Harold Agnew and agreed that we would consider further names and come up with a definite recommendation for the President. He will also discuss this with some PSAC members. We agreed that it is very important to have the name of a willing candidate in time for timely action by the President. I said I have talked to Norris Bradbury, but he has indicated that he does not wish to be considered for the position.

Lee said the President had suggested to the Secretary of State in his presence that an Assistant Secretary of State for Science be appointed. Lee said he was considering recommending such candidates as Frank Long or Herb York and indicated that he would welcome suggestions. He also said he is considering candidates to be Deputy Director of ACDA, and was considering York in this connection, too.

He said that at the Cabinet meeting last Wednesday, at which the NPT was considered, the President indicated it might be easier for non-nuclear weapons nations to produce nuclear weapons than had previously been thought to be the case. He said the President called on him to amplify this, and he replied in a very general way that there were some indications that suggested that this job was less difficult than had been anticipated. In connection with the TROLL report, I suggested that perhaps I should advise the Director of CIA and the Secretaries of State and Defense of its content; DuBridge indicated he would suggest this to the President.

We discussed the disposition of the Pitzer Panel report, and I indicated that the AEC was preparing a broader report covering the hazards of underground testing of large yield nuclear weapons and that we would suggest that the Pitzer Panel report be issued as part of this larger report. DuBridge seemed to think well of this idea.

We discussed the matter of attendance at National Security Council meetings. He said the President has directed that Kissinger invite him to attend whenever the agenda includes items of interest to him. DuBridge indicated he will suggest to Kissinger that I might also be included on this basis.

I mentioned the items AEC might include in its supplementary FY 1970 budget, in response to Budget Director Mayo's letter of January 23, 1969. I mentioned the improved HILAC and the increased effort on the molten salt breeder and the high temperature gas cooled reactor as possible additions, to be more than offset by the deletion of other items in the non-weapons field. I said that in the policy area we would identify items concerning weapons production, new DOD weapons requirements, test readiness, Plowshare, and the two production reactors identified for shutdown at Hanford.

I mentioned the desire of Science Service that the 40 Science Talent Search

winner's visit with the President sometime during their stay in Washington between February 27 and March 3 and said I would write a letter to the President with such a request.

We made arrangements for him to lunch with the Commissioners next week.

I took a hike in Rock Creek Park with Steve and Suki, starting at Pierce Mill and going to Fort De Russy and back.

I worked on my article about a scientist's frustrations for the National Catholic Reporter.

#### Sunday, February 2, 1969

I wrote my foreword for the book "The CHEM Study Story."

I took a hike with Eric, his friend Scott Luria, and Suki in Rock Creek Park, starting at Pierce Mill, going south and out of the Park to the Zoo and back to our starting place.

I worked on my speech "A Funny Thing Happened on the Way to the Laboratory."

#### Monday, February 3, 1969 - Germantown

Commissioner Tape and I and the staff met with Dr. Panofsky to hear his case for a revised storage ring project at SLAC which, of lower energy than the more comprehensive proposal, could be built faster and with less money. Panofsky made an effective and emotional plea for this project. Our problem is that we have more projects than we can fund, and we are already stretching to the limit our ability to get additional funding in a FY 1970 supplemental budget request to the Nixon Administration.

From 10-11 a.m. I presided over Information Meeting 873 (notes attached).

Commissioners Tape, Johnson, Costagliola and I met with Fred Worman of the Los Alamos Scientific Laboratory and Richard Sense, Project Archaeologist for Holmes and Narver, who are making investigations at Amchitka and other AEC sites such as Nevada on preserving archaeological treasures. They described their work and said they are well satisfied with the financial support and cooperation they are receiving from the AEC. They will brief the Department of Interior tomorrow.

I had lunch in the cafeteria with Frank Costagliola and Julie Rubin.

I worked on the letter to President Nixon that he requested during my meeting with him last Tuesday.

#### Tuesday, February 4, 1969 - Bethesda and D.C.

I spent the morning at the Bethesda office. After conferring with staff on a number of items, I presided at 9:45 a.m. at Regulatory Meeting 271 (Action Summary attached). At this meeting, Milt Shaw briefed us on the potential



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WASHINGTON, D.C. 20545

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COPY NO. 5  
February 3, 1969

INFORMATION MEETING 873

10:00 a. m., Monday, February 3, 1969, Room A-458, Germantown

1. January 27 Letter from Robert Wilson, NAL, re Progress Report on Activities and Request for Funds

A reply is in preparation. (AGMO)

2. AEC 1131/9 - Cooperative Arrangement with Los Angeles Department of Water and Power - Present Contract Situation

Staff may proceed subject to Commissioner Ramey's comments.  
(GC-Ryan-SECY)

3. AEC 544/92 - Federal Power Commission Draft Report, "Problems in Disposal of Waste Heat from Electric Plants"

Approved subject to Commissioner Ramey's comments.  
(AGMO-Ryan-SECY)

4. AEC Citation Ceremony Plans

Approved. (SECY)

5. Letter to the President re Accelerating Further Development of Peaceful Uses of Nuclear Energy

Revisions are requested and a draft is to be circulated today for Commissioner Ramey's comments and signature tomorrow.  
(AGM-Rubin-Ryan-SECY)

6. Agenda Changes for the Week of February 3, 1969

W. B. McCool  
Secretary

11:00 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

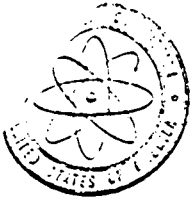
Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Rubin  
Mr. Ryan  
Mr. Kull  
Mr. McCool  
Mr. Erlewine\*  
Mr. Reich\*

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General Counsel  
Secretary

\*Attendance by Topic (s)





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

February 5, 1969

Approved \_\_\_\_\_

HLP / REH

Date \_\_\_\_\_

H. L. Price, Director of Regulation  
R. E. Hollingsworth, General Manager

ACTION SUMMARY OF REGULATORY MEETING 271, TUESDAY, FEBRUARY 4, 1969, 9:45 A.M.,  
ROOM P-422, BETHESDA, MARYLAND

SECY:RBM

Commission Business

1. Minutes of Regulatory Meeting 270

Approved, as revised, subject to comments by Commissioner Ramey. (SECY)

2. Letter to Senator Muskie on Postponement of Hearing

The Commission approved transmittal subject to BOB advice. (OCR/OGC)

3. Briefing on Light Water Reactors

The Commission:

(a) Requested preparation of an analysis of the government's role  
in light water reactors; and (RDT)

(b) Requested preparation of a letter advising management officials  
of utilities of the cost and reliability problems associated with  
light water reactors and probable delays in resolving these problems. (ADR)

4. AEC 1299/2 - Proposed Legislation to Permit AEC to Charge Federal Agencies  
Licensee Fees for Power Reactors

Discussed.

The Commission requested discussion with TVA. (GC)

To be rescheduled. (SECY)

5. AEC-R 2/70 - Proposed Amendments to Parts 50 and 115 to Permit Placing of  
Foundations & Other Related Work Prior to Issuance of Construction Permit

Approved. (DRS)

H. L. Price  
R. E. Hollingsworth  
Reg. Mtg. 271

-2-

February 5, 1969

6. AEC-R 2/71 - Proposed Amendments to Parts 2 and 50 - Backfitting of Facilities; Elimination of Provisional Construction Permits and Provisional Operating Licenses

Discussed.

The Commissioners:

- (a) Requested the list of questions from the ACRS be submitted to Commissioners Ramey and Johnson prior to their February 5 meeting with the Chairman, ACRS; and
- (b) Requested preparation of internal criteria on instructions for implementing the proposed backfitting policy. (ADRA)

To be rescheduled. (SECY)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

impending problems with the water-cooled reactors scheduled to come on line in the early 1970's. Their large size, an untried area, and the large number, thus affecting our country's power supply in a serious way, makes it imperative that we do everything we can to insure their timely availability.

At 11:20 a.m., I presided over Regulatory Information Meeting 328 (notes attached).

I had lunch in Harold Price's conference room with Price, Dick Doan, Marvin Mann, Chris Henderson, Cliff Beck and Justin Bloom.

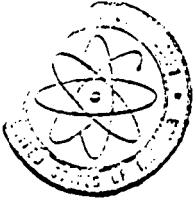
I sent a letter to Senator Muskie requesting a postponement in our testimony on his thermal pollution control bill in view of Secretary Hickel's request for postponement of his testimony.

I presided over the ceremony awarding the AEC Citation to Manson Benedict and Norman Hilberry at the National Academy of Sciences. Helen attended, as did Mrs. Benedict, Mrs. Tape, Mrs. Johnson and Mrs. Costagliola. Congressman



AEC Citation Award Ceremony, National Academy of Sciences; February 4, 1969. L to R: Commissioner Johnson, Chairman Seaborg, Commissioners Ramey, Costagliola, Dr. Manson Benedict, Dr. Norman Hilberry, Commissioner Tape, R. E. Hollingsworth.

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545



February 4, 1969

REGULATORY INFORMATION MEETING 328

11:20 a.m., Tuesday, February 4, 1969, Room P-422, Bethesda, Maryland

1. Members for the Advisory Committee on Reactor Safeguards

Additional information was requested. Commissioners Ramey and Johnson will discuss with Chairman, ACRS on February 5, 1969. (ADRA/SECY)

2. Mr. Price's January 28 Memorandum re Initial Decision in Zion Proceeding

Noted. (ADRA)

3. Site Review of the Dow Chemical Company Midland Plant

4. Fast Breeder Plant for New York

To be discussed at February 5, 1969 Information Meeting. (SECY)

W. B. McCool  
Secretary

11:40 a.m.

PRESENT:

COMMISSIONERS

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF

Mr. Price  
Mr. Beck  
Mr. Hennessey  
Mr. Wells  
Mr. Yore  
Mr. Rowden  
Mr. Schur  
Mr. Henderson  
Mr. Mann  
Mr. Morris  
Mr. Doan

Mr. Rubin  
Mr. Bloom  
Mr. Rosen  
Mr. Helfrich  
Mr. Griffin  
Mr. McCool

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Dir. Regulation  
General Manager  
General Counsel  
Secretary

Hosmer, as well as many former AEC officials and friends of Benedict and Hilberry attended. In my introductory remarks, I spoke briefly about Hilberry and Benedict; then Commissioner Johnson made the presentation to Benedict, and this was followed by Commissioner Ramey making the presentation to Hilberry. I introduced about 25 of the distinguished people present including Theos Thompson. In so doing, I made reference to Theos Thompson's participation in the January 1, 1941 Rose Bowl game with his team, the University of Nebraska, against Stanford University. This was followed by a reception in the Great Hall, where the Commissioners and wives and Dr. and Mrs. Benedict and Dr. Hilberry formed a reception line.

Wednesday, February 5, 1969 - D.C.

Fred Tesche, the new Deputy Director of the Division of Military Application, discussed with the Commissioners at Information Meeting 874 (notes attached) the issues involved in the mounting resistance to the placing of ABM sites near cities. We also learned about, and approved, the plan of Standard Oil of New Jersey to have work on nuclear fuel performed at Battelle Pacific Northwest Laboratory.

I called Budget Director Mayo regarding his forthcoming appointment with Glenn Lee and associates on the proposed reactor shutdown at Hanford. I filled him in on the background of this problem and told him the shutdown had been deferred with the consent of President Johnson as the result of a request to him by Senator Jackson. I said the new Administration would, of course, have the problem of making the reassessment; and, in order to save the sixteen million, we would need the decision about the middle of March. I suggested that DOD might be asked to speed up the study of their requirements to see if they have changed. I said I thought Laird's study would not be soon enough to come to any conclusion on his time scale. He agreed with this.

At 10:30 a.m. I presided over Information Meeting 874 (notes attached).

I had lunch with Rubin and Bloom in the dining room.

The Commission (meeting 2361, action summary attached) struggled with the problem of meeting FY 1969 expenditure limitations imposed by Congress; this will require drastic directions to be issued to our contractors. We agreed on a letter to go to the BOB, in answer to Mayo's letter of January 23, to reevaluate and cut our FY 1970 budget. We are adding \$2.65 million for the HILAC rebuilding, \$4 million for the molten salt reactor, \$2 million for the HTGR with more than offsetting cuts, and identifying about \$100 million of additions as policy issues.

I sent the letter to President Nixon (copy attached) requested by him during our meeting last Tuesday, describing our requested additional FY 1970 funding for peaceful uses of nuclear energy (especially Plowshare).

President Nixon issued a statement today endorsing the NPT.

I attended a reception given by Secretary of State Rogers (whom I met) in honor of the foreign participants in the 10th meeting of the Panel on Science and Technology, House Committee on Science and Astronautics, in the Jefferson Room, Department of State.



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COPY NO. 2  
February 5, 1969

INFORMATION MEETING 874

10:30 a.m., Wednesday, February 5, 1969, Chairman's Conference Room, D. C.

1. AEC Gift to President Nixon
2. Commissioners' Dinner with the Joint Committee on Atomic Energy this Evening
3. Australian Nuclear Excavation Proposal
4. Nuclear Safety Aspects of the Sentinel System

Staff may proceed with the Committee discussions. The Commissioners are to be kept informed. (AGMMA)

5. AEC 1143/81 - Talking Paper for Meeting with Glenn Lee

Noted. (AGMO)

6. Richland Diversification

Staff may proceed. (AGMO)

7. AEC 1143/82 - Commissioner Johnson's January 30, 1969, Meeting with City of Richland Officials

Noted. (AGMO)

8. AEC 412/61 - Proposed Letter to Monsanto re EEO

Staff will discuss with Monsanto Officials and report back to the Commission. (AGMO)

9. AEC 181/141 - Special Contractor Selection Considerations

Staff may proceed subject to Commissioner Ramey's comments.  
(DC-Ryan-SECY)

10. Commissioners' Meeting with Mr. Robert Wilson, NAL

To be scheduled. (AGMO-SECY)

11. AEC 459/58 - Solicitation of Industry Comments on Uranium

Approved with revisions. (AGMP&P)

12. AEC 459/62 - JCAE Hearings on Diffusion Plant Disposition

Approved subject to a date check with the Joint Committee. (AGMP&P-Congr.)

13. Senator Jackson's Request for Analysis of Hanford Reactor Shutdown

Mr. Quinn reported staff is cooperating with JCAE staff in preparation of the analysis.

14. Associated Press Statement re President Nixon's Request to the Senate to Ratify the NPT

15. AEC 610/153 - UK Gas Centrifuge Cooperation

An informal discussion with Joint Committee members will be scheduled. A talking paper is requested. (AGM)

16. AEC 459/61 - Alternative for Ownership and Operation of Uranium Enrichment Facilities

Noted. (AGMP&P)

W. B. McCool  
Secretary

12:25 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Ryan\*  
Mr. Friedman\*\*  
Mr. Bengelsdorf\*\*  
Gen. Giller\*\*  
Mr. Tesche\*\*  
Mr. Erlewine\*\*  
Mr. Kavanagh\*\*  
Mr. Quinn\*\*

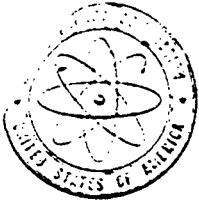
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Secretary

\*Partial Attendance

\*\*Attendance by Topic (s)





UNITED STATES  
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 WASHINGTON, D.C. 20545

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 NOV 8

February 6, 1969

Approved REH

R. E. Hollingsworth, General Manager

Date \_\_\_\_\_

ACTION SUMMARY OF MEETING 2361, WEDNESDAY, FEBRUARY 5, 1969, 2:45 P.M.,  
 ROOM 1115, D. C. OFFICE.

SECY:JFB

Commission Business

1. Response to Queries re: DUN Press Release

Approved. (AGMO)

2. AEC 116/66 - Official Announcement of Certain Event Yields Useful in Seismic Studies

Discussed.

To be further considered by the Commission with Mr. May, LRL, on February 6, 1969. (C/AGMMA/SECY)

3. AEC 1283/40 - FY 1970 Budget

a. Approved, with revisions, the draft letter containing FY 1970 budget proposals to the Director, BOB, emphasizing the following policy issues and program areas:

|                                    | <u>In Millions</u> |
|------------------------------------|--------------------|
| 1. High Altitude Test Program..... | \$21.7             |
| 2. Plowshare Program.....          | 20.2               |
| 3. DOD Weapons Requirements.....   | 15.0               |
| 4. Hanford Reactor Program.....    | 12.2               |

b. Requested mention be made in the letter to the BOB of the Israeli Desalting Project;

c. Requested the Malibu Project be footnoted in the letter to note that this project is being reviewed with the possibility that it might be terminated; and

d. Requested the letter note the Commission will be communicating separately on U-235 production requirements.

(OC)

February 6, 1969

4. Meeting with Congressman Robison

The Chairman requested briefing materials on thermal pollution be prepared for Congressman Robison's visit on February 11, 1969. (GC/ADRA)

5. AEC 720/200 - Revision of Use Charge

Discussed.

Rescheduled for February 14, 1969. (SECY)

6. AEC 1111/12 - Contract for Operation of Liquid Metal Engineering Center

Approved. (DC)

7. Executive Session Items

a. New York State Reactor Site

A staff check is requested. (AGMR)

b. Puerto Rico Energy Center

A letter of confirmation re recent discussions will be sent to Governor Ferré of Puerto Rico. (RDT/DDR)

Chairman Seaborg, on his upcoming visit, will try to meet with Governor Ferré. (Rubin)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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FEB 5 1969

The President  
The White House

Dear Mr. President:

I am writing in response to your request for a recommendation of means to accelerate the further development of peaceful uses of nuclear energy. I shall focus first on the peaceful uses of nuclear explosives - the Plowshare program - and then on some other areas of great potential importance.

Of the numerous possible Plowshare excavation projects throughout the world, by far the most ambitious and best known is the sea-level transisthmian canal. To develop nuclear excavation technology and to permit the Atlantic-Pacific Interoceanic Canal Study Commission, established by P.L. 88-609, to determine its feasibility, the AEC needs to complete a minimum program of cratering experiments before December 1, 1970. Three such experiments were conducted in 1968, but additional experiments are required. One new exciting project that could provide essential experimental data, thereby replacing a planned U. S. experiment (GALLEY) and furthermore serving a useful purpose, is the proposed Australian harbor project (Cape Keraudren in Western Australia). We are prepared to proceed expeditiously with the joint feasibility study of that project.

In the Plowshare underground engineering area, we are working in close cooperation with industry, and several U. S. companies are prepared to contribute a major part of the cost required to carry out joint experiments in natural gas production and storage and in copper and shale oil recovery. Industry is urging AEC to accelerate its development of the special nuclear explosives for such applications.

To accomplish the excavation and explosive development program, the AEC will need additional new obligational authority of about \$20 million in its Fiscal Year 1970 budget, corresponding to additional expenditures of about \$15 million. In fact, we will not be able to meet the schedule of the Canal Study Commission or undertake the Australian harbor project if these funds are not provided.

The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Underwater permits all underground nuclear explosions, except those which cause "radioactive debris to be present outside the territorial limits" of the nation concerned. Accordingly, the treaty presents no obstacle to underground engineering projects since they are designed to fully contain the radioactivity. It does present a potential obstacle to underground nuclear explosions for excavation experiments and projects such as the Australian harbor and the sea-level canal where a very small amount of radioactivity must be released to the atmosphere. An overly restrictive interpretation of the treaty would foreclose these excavation experiments and projects. There has been a tendency on the part of some in the United States Government to interpret "radioactive debris to be present" if it is detectable with the most sensitive means available to modern science - a moving target since we are steadily increasing our sensitivity of detection to a fantastic degree. Literally, on a "one-atom-at-a-time" basis, we now have reached the point where from nuclear explosions we can detect a concentration of radioactivity as small as one atom in a room full of air. The USSR has not followed a narrow interpretation of the treaty in the conduct of its underground nuclear explosion programs. Narrowly interpreted, the Soviets could be said to have caused "radioactive debris to be present" outside Soviet territory about 25 times since the treaty came into effect.

The Commission consistently has maintained that there is room and precedent for reasonable and defensible interpretations of the treaty that would permit future excavation experiments. For example, most radiation protection guides, including those of the International Atomic Energy Agency, the International Commission on Radiation Protection, the USSR, and the U. S., contain definitions of concentrations of radioactivity below

which the radioactivity is considered to be "not present" insofar as such guides are concerned. This phrase, "not present," is the inverse of the phrase "to be present" in the treaty. Significantly, the health guide definition of "not present" has been applied by the U. S. to reactor operation under the Antarctic Treaty without objection by the other parties, including the Soviets. We believe that the adoption of such a reasonable standard would permit the Australian harbor project to go forward; however, confirmation of this judgment should await the results of the joint U. S. - Australian feasibility study.

In the long term, amendment or other formal arrangement under the treaty, by agreement with a majority of the treaty parties, including the Soviets, will be needed for projects such as the sea-level canal; however, this will be a time-consuming and difficult undertaking.

We recommend proceeding with excavation experiments and projects, including those mentioned above, to develop nuclear excavation technology on the basis of a suitable and reasonable treaty interpretation. In parallel, and looking ahead to the long-range question of an amendment or other formal arrangement, we endorse, as a first step, having technical talks on Plowshare with the Soviets - talks in which they have expressed a willingness to engage. Our information on Soviet activities indicates a strong and continuing program in the peaceful uses of nuclear explosives.

There also are a number of other exciting developments in our programs for peaceful applications of nuclear energy which in our judgment will merit your attention in the coming months. These include the development and demonstration of nuclear electric power stations which breed more fuel than they consume (the breeder reactors); the prospects of vast nuclear electric agricultural and industrial complexes, including the large-scale desalting of sea water (for example, a Mid-east project proposed by General Eisenhower); and the development of reliable, long-lived artificial hearts powered by radioisotopes. We believe that additional progress in these programs can be made by the adjustments in the revised FY 1970

The President

- 4 -

budget we shortly shall submit in response to Budget Director Mayo's request of January 23, 1969; however, to realize fully the promise of these programs, it will be necessary to provide for further acceleration in future budgets.

Respectfully,

(Signed) Glenn T. Seaborg

Glenn T. Seaborg  
Chairman

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Chairman Seaborg 2A & 3A  
Commissioner Ramey 4A  
Commissioner Tape 5A  
Commissioner Johnson 6A  
Commissioner Costagliola 7A



Reception in honor of Foreign Participants to the Tenth Meeting of the Panel on Science and Technology of the House Committee on Science and Technology of the House Committee on Science and Astronautics, Thomas Jefferson Room, Department of State; February 5, 1969.

L to R: Secretary of State William P. Rogers and Glenn T. Seaborg.

With my fellow Commissioners I hosted our annual dinner for the members and staff of the Joint Committee on Atomic Energy at the University Club. Senators Aiken, Anderson, Bennett, Curtis, Gore and Pastore and Representatives Aspinall, Holifield, Hosmer, Ed Edmondson (new member from Oklahoma), McCulloch and Price attended. I spoke briefly, followed by Holifield, Hosmer, Aiken, Anderson and Bennett. In talking to me at the reception before the dinner, Pastore and Holifield said that opposition to ABM deployment is becoming very serious.

Thursday, February 6, 1969 - D.C.

President Nixon held his second news conference today on television and announced his trip to Europe at the end of the month; it was well done.

Just before lunch the Commissioners met with Dr. Michael May, Director of Livermore Laboratory.

I greeted our new girl in the file room, Dorothy (Amy) Wiening, who will partially replace Jeanette Hamilton who will start to work part time. I also bid goodbye to Jeanne Brown, who is leaving to accept a better position in the Bureau of Roads and greeted Eloise Richardson who is taking her place.

The Commissioners, General Manager, Bloch, Brown, Kavanagh, McDaniel, Abbadessa and Rubin had lunch in our dining room with Lee DuBridge to get acquainted and discuss mutual areas of interest. We discussed 1. the proposed Hanford reactor shutdown, 2. the restoration of \$10,000,000 to NSF yesterday, 3. AEC's directive yesterday to our contractors to drastically curtail spending to meet our ceiling, 4. the role of the AEC laboratories, 5. problems in high yield testing, 6. our response to Mayo's letter of January 23 on the budget and 7. budget problems in the AEC support of research.

At 2 p.m. the Commissioners and staff met with Glenn Lee, Sam Volpentest and Don Pugnetti of Richland; Byron Corcoran of Senator Jackson's office; Carl Downing of Senator Magnuson's office; and John Knievel of Congresswoman May's office, to hear Lee's reaction to the plan to shut down two reactors at Hanford. We explained the background and reasons.

At 3 p.m. the Commissioners and Harold Price met with the ACRS. We discussed the proposed changes in back fitting policy and elimination of "provisional" licenses for power reactors. (Action Summary of meeting attached.)

The Commissioners agreed that I might approach John Wheeler to see if he would be willing to accept a commissionership--to replace Tape when he leaves in April.

I presided over a short Information Meeting (875) at 4:30 p.m. (notes attached).

Friday, February 7, 1969 - Germantown - San Juan, Puerto Rico

After spending an hour at the Germantown office, I went to the Baltimore Airport, caught Pan American Flight No. 215, which left at 11 a.m., and arrived in San Juan, Puerto Rico, at 3:15 p.m. Helen took a parallel flight from Baltimore--Eastern Flight No. 947, which left at about 10:40 a.m., and arrived in San Juan about 3 p.m. We were met by Dr. J. P. Morgan, Manager of the Puerto Rico Area Office, U.S. Atomic Energy Commission.

At the airport I was approached by Harold J. Lidin of the Associated Press, who inquired as to the reason for my visit to Puerto Rico. I mentioned my planned attendance at the meeting of the Board of Directors of National Educational Television, my visit to the AEC's Puerto Rico Nuclear Center at Rio Piedras, and my visit with Governor Luis Ferre regarding a joint U.S. Federal Government-Puerto Rico Commonwealth study of a nuclear energy complex that might be built in Puerto Rico in the late 1970's.





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

Approved \_\_\_\_\_  
HLP  
Date \_\_\_\_\_

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L. Price, Director of Regulation

ACTION SUMMARY OF COMMISSIONERS' MEETING WITH THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, THURSDAY, FEBRUARY 6, 1969, 3:10 P.M., ROOM 1045, D. C. OFFICE

SECY:MLB

Proposed Amendments to 10 CFR Parts 2 and 50

Commissioner Ramey briefly summarized the history of Commission interest in backfitting and related matters which led staff to recommend proposed amendments to 10 CFR Parts 2 and 50 to:

- a. provide for backfitting of production and utilization facilities only when staff could meet the burden of showing that the backfitting would provide appreciable, additional protection which is required for the public health and safety or the common defense and security;
- b. eliminate the provisional construction permit; and
- c. eliminate the provisional operating license.

Commissioner Ramey noted staff had been developing these proposed amendments since the summer of 1968, and the Commission believed it desirable to publish them in the near future for industry and public comment.

Various ACRS members presented their individual views on the proposed amendments, following which the Commissioners, Mr. Price and ACRS members discussed the proposals.

Chairman Seaborg noted the proposed amendments to: (1) clarify the Commission's policy with respect to backfitting and (2) eliminate the issuance of provisional construction permits and provisional operating licenses were not necessarily related and might be better processed through separate amendments. Commissioner Ramey agreed, noting the proposed backfitting amendment related more to changes "across the board" than the construction permit and operating license amendments, which might be selectively applied to an on-line or a first-of-a-kind plant. The Chairman noted Regulatory staff and ACRS discussions on the proposed amendments would provide informal advice to the Commission.

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson



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COPY NO. 12  
February 6, 1969

INFORMATION MEETING 875

4:30 p.m., Thursday, February 6, 1969, Chairman's Conference Room, D. C.

1. AEC 141/121 - Hughes Organization Inquiry

The General Manager's recommendation is approved. (AGM-AGMMA)

2. AEC 1282/34 - Execution Data for Cypress Event

Approved. (AGMMA)

3. NTS Events (See General Giller's February 4 Memorandum)

Noted. (AGMMA)

4. Agenda for the Week of February 10, 1969

Approved. (SECY)

5. Staff Papers on Safety Rules

Mr. Brown said these should be issued shortly. (AGM-SECY)

6. AEC 47/61 - Proposed PNR Contract with Babcock and Wilcox for  
Naval Reactors Cores

Approved. (DC)

7. AEC 292/8 - Nominees for Appointment to Advisory Committee for  
Biology and Medicine

Approved. (BM-Rubin)

8. AEC 719/73 - Evaluation of Potential for Radiation Pasteurization of  
Fresh Red Meat

The Joint Committee will be provided the evaluation without a letter  
of transmittal. (ID-Congr.)

9. AEC 580/289 - AEC Contingency Stockpile

The Joint Committee may be provided a staff analysis derived from  
the content of AEC 580/289. (AGMP&P)

10. Mr. Harris' February 4 Memorandum re Material for Use in Congressional  
Record (See also Mr. Harris' January 28 Memorandum re Recent Critical  
Articles on AEC)

Noted. (PI-Congr.)

11. Pending Contractual Matters Report No. 295

Noted. (PAR)

12. Possible Leak of Information

A staff check is requested. (INS)

W. B. McCool  
Secretary

5:15 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Gen. Giller\*  
Mr. Miller, NVOO\*  
Mr. Quinn\*  
Mr. Voigt\*

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\*Attendance by Topic (s)

Morgan drove us to the office of the Governor of Puerto Rico in La Fortaleza in old San Juan. Frank Irizarry, Technical Aide to the Governor, and Professor Charles H. Stevens of the Sloan School of International Studies and Business of MIT, who is on leave from MIT to be Chairman of the Governor's Steering Committee for the Development of Government Programs, met us in the waiting room where we conversed briefly.

About 4:45 p.m. Helen and I, and Dr. Morgan, Mr. Irizarry and Professor Stevens were escorted into Governor Ferre's office. After introducing Professor Stevens, the Governor explained that he, as a member of the corporation of MIT, had been hearing for some time about the studies that were being conducted by the Sloan School of Management on the development of government programs. When he was elected governor, he said, the first thing he did was to contact the president of MIT and request his assistance in putting the studies into practice. The Committee's work will be divided into four task forces: (1) economic strategy, (2) public management, (3) human resources, and (4) environmental development. The Nuclear Energy Center work will fall within the realm of the Environmental Development task force.

The Governor told me that he had received my letter (January 31, copy attached) but has not had a chance to answer it. He spoke of how interested he is in the Energy Center Study. I stated that the AEC is also interested in Puerto Rico's installing a nuclear power plant and in assisting to assure that the project goes smoothly. The Governor replied that this is something that also interests him very much. Puerto Rico, however, is isolated and they have to be concerned about the possibility of losing the services of a large generating plant. He mentioned that he had suggested in his meeting with Commissioner Ramey on January 31, 1969, that perhaps if they built the 560 MW nuclear plant they should also build a 200 MW fossil plant to provide back-up. It was brought out that the 560 MW plant in 1975 would follow three (fossil fueled) 460 MW units already planned for 1972, 1973 and 1974; so it would not represent a large step-up in size. The Governor said he recognized this. I suggested that with the three preceding large fossil units the Authority would already have the back-up they desire for the nuclear unit.

I also mentioned that I understood that the PRWRA study showed that building nuclear plants beginning in 1975 was the most economical route to follow. The Governor replied that he is aware that this is the case. He then stated that he would like to see a nuclear plant built, for he wants Puerto Rico to be a leader in the application of new technology. The decision, however, would be left to the Water Resources Authority. It appeared from this that he will not interfere with them and will abide by whatever decision the Authority and its Governing Board make. I emphasized the reliability of such a nuclear power plant in view of the hundred or more nuclear power plants that would be in operation in the United States by that time, and said the U.S. Atomic Energy Commission would stand ready to cooperate in every way.

I was favorably impressed with Governor Ferre. He has a technical background and is a graduate of MIT.

After our conference in the Governor's office, which he had sandwiched in between appointments, Governor Ferre guided us on a personal tour of La Fortaleza (Palacio de Santa Catalina). He showed us the rooms, dating from the earliest period of construction, from 1533 to 1540. Many of the rooms are still standing and in good condition. We saw the two towers, which are the



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

JAN 31 1973

Honorable Luis Ferre  
Governor of Puerto Rico  
La Fortaleza  
San Juan, Puerto Rico

Dear Governor Ferre:

The Commission has followed with deep interest the consideration which your Authority is giving to possible installation of a commercial nuclear power plant in Puerto Rico. My colleagues and I would like to take this opportunity to comment on the importance which we attach to this project both as to the contribution it should make to Puerto Rico itself and to the complementary relationship which such a commercial nuclear power station would have with the Puerto Rico Nuclear Center. Commissioners Ramey and Johnson, who are following this matter closely, have also suggested that we give you the Commission's view on certain questions which they understand have been raised in the Authority. These relate to AEC licensing considerations and the time required for construction of a commercial nuclear facility.

Puerto Rico's needs for electrical power have, as is common throughout the U.S., two all-important requirements: reliability of supply and minimization of cost. In order to provide the foundation upon which American industry can supply nuclear installations for commercial purposes, to meet these requirements, the Commission has expended some \$2 billion in research and development. This effort has included projects giving a wide range of results, and has provided us with a solid experimental basis for our commercial nuclear power technology. We are gratified by the success of the program thus far, a measure of which is the purchase of commercial nuclear type facilities by American customers now totaling over 70 million kilowatts.

The total number of plants includes a substantial number of plants of the size under consideration for installation in Puerto Rico as well as many plants of similar type but even larger size. Two plants of approximately 500 MW rating are already in routine and successful operation in the United States. Therefore, the body of actual experience which will exist by the time that a nuclear facility would be operating under your time schedule would make your plant one of the best understood operations in modern technology, a meaningful assurance to utility management. In 1975, when your reactor is scheduled for completion, almost 100 reactor units will already have been placed in service in the U.S.

We also see a close relationship between the installation of a nuclear power plant in Puerto Rico and the energy center study on which we are pleased to be cooperating with you. The introduction of nuclear power into Puerto Rico would pave the way for the subsequent application of nuclear energy in industrial complexes of the type which will be considered in our cooperative energy center study. Finally, we believe the early installation of a nuclear power plant in Puerto Rico would serve to take advantage of the extensive experience which your Water Resources Authority has already gained through the operation of the Bonus plant and, particularly, to take advantage of the highly competent operating personnel who have been trained during the Bonus operation. The dispersion of these skilled people to non-nuclear activities would represent an unfortunate loss of experience that would take some time and effort to replace.

At the celebration of the Tenth Anniversary of the Puerto Rico Nuclear Center last year there was broad emphasis on the role of atomic energy in solving Latin American problems in the areas of food and nutrition, public health and medicine and energy resources. In our view, the work which AEC is pleased to support at the Center would be strongly complemented by an independent decision of the Authority to utilize the latest and best in American technology, which is inherent in nuclear power facilities offered by U.S.

industry. I must add that conversely, if a nuclear power project in Puerto Rico meets the tests of economic competition, and is not adopted, we would feel that U.S. efforts to bring its benefits of U.S. technology to Latin American countries would also be visibly set back.

With respect to the time required for construction and initial operation of a nuclear power plant, including appropriate allowances for regulatory approval and licensing, we would like to reflect our recent experience. This should be a guide to the situation prevailing over the time period of importance to you. We would expect that, with sound project management on the part of the reactor owner and supplier and choice of a proven type nuclear facility, the average period for regulatory review and issuance of a construction permit would approximate 12 months. On the matter of the total time required for regulatory review, licensing, construction and initial operation of a U.S. commercial nuclear power plant, we would anticipate that a 72 month overall schedule would be more than adequate to bring the nuclear plant on the line.

I am asking Commissioner Ramey to deliver this letter to you personally and to provide you with any further information you might wish on the reasoning underlying our conviction that early application of nuclear power in Puerto Rico merits special consideration.

We are pleased to take this opportunity to acquaint you with our views and wish to offer to you and the Authority any further information or service which we can appropriately supply.

Sincerely,

*[Signature]*

Chairman



distinctive characteristic of La Fortaleza, the bed in which Senator John F. Kennedy slept during his visit in the 1950's, the State Dining Room, the Governor's living quarters, the hall of mirrors, and the clock showing the time of 4:30--the hour when the last Spanish Governor left La Fortaleza. We then said goodbye to the Governor, whom we are to see again this evening at the N.E.T. dinner.

Professor Stevens showed us the beautiful garden, which apparently also dates back to the earliest days and then showed us the headquarters to be occupied by the Steering Committee. He advised us that the Committee will include Santiago Vasquez, Secretary of Public Works, and the only government official of that level on the task force; Frank Irizarry, Technical Aide to the Governor and member of the University of Puerto Rico faculty; Antonio Ferre, the Governor's son and a former Chairman of the Puerto Rico Council of Higher Education under which the University of Puerto Rico operates; plus additional government officials, making a total of 8 or 9 people. It was emphasized that this Committee will not compete with the planning of the various Commonwealth Departments and Authorities. Professor Stevens said that Professor Charles Miller of MIT, who is President Nixon's advisor on urban transportation, will be in charge of the Environmental Development task force.

On our way out Helen and I were introduced to Antonio Luis Ferre. The Governor's son is a very impressive young man. In addition to being Chairman of the Council of Higher Education, he has been head of Ferre Enterprises, which include among others the Puerto Rico Cement Company and the Puerto Rico Iron Works.

Following our visit to La Fortaleza, which was concluded about 5:45 p.m., Dr. Morgan drove us to the Puerto Rico Nuclear Center (PRNC), where we were met by Dr. Henry Gomberg, Director of PRNC; Dr. Amador Cobas, the Deputy Director; and Mr. Fred Rushford, Technical Assistant to the Director. In the short time available, Dr. Gomberg reviewed the program and relationship of the Nuclear Center with the University and the Medical School. We had an overview of the addition being constructed to the PRNC, and we were shown the building plans, which were described to us in some detail.

Following this, Dr. Morgan drove Helen and me to the Flamboyant Hotel where we checked in and prepared for the reception and dinner of N.E.T.

At the reception I met and was interviewed by Ralph Ober of El Mundo on the Puerto Rico nuclear energy study and on my conversation with Governor Ferre regarding the possible construction in Puerto Rico of a 560 MW nuclear power station, to be operational by 1975.

At the dinner Helen and I sat at a table with President and Mrs. Kingman Brewster of Yale University and Roger Baldwin (former and long-time head of the American Civil Liberties Union). Jack Delano (head of the Educational television station WIPR, Channel 6, in San Juan) presided at the dinner. There were short remarks by Governor Ferre, by a gentleman who heads the Puerto Rico Department of Education, and by Everett Case (Chairman of N.E.T. Board of Directors).

Helen and I spent the night at the Flamboyant Hotel.

Dianne flew to Boston today to spend the weekend in Cambridge with Lynne and Bill.

Saturday, February 8, 1969 - San Juan

Helen and I had breakfast in our room. I then joined the others to go to Station WIPR-ETV, Hostas Avenue, Hato Rey, for the meeting of the N.E.T. Board of Directors.

Present at the meeting were Everett N. Case, Kingman Brewster, Jr., Norman Cousins, Richard E. Cross, Patricia Roberts Harris, Sidney P. Marland, Jr., Burke Marshall, Peter C. Peterson, Edward A. Scrader, William Schuman, Herman B. Wells, John F. White (President), and key staff of N.E.T.

Before lunch I took a little walk with Patricia Harris around the neighborhood of Station WIPR. At lunch I sat at a table with Harris, Cousins, Horton, Brewster, Bowen, Marshall and Kobin.

During the afternoon session there was considerable discussion of the demands by John W. Reavis, Jr., that N.E.T. programming be more liberal, and the demands by a Mr. Pietrie that the programming be more conservative. It was agreed that members of the program Committee would meet individually and informally with Mr. Reavis, who had come to Puerto Rico from New York to be present during the Board of Directors meeting and whose presence was very evident in the lobby of the Flamboyant Hotel. I talked with him briefly and assured him we would study his suggestions.

During the day Helen participated in the Ladies' Program. They did some sightseeing in the morning, had lunch at El Convento, and visited old San Juan in the afternoon.

After the meeting of the Board we went by bus to the home of Jack Delano, where we met the ladies. There was a very informal reception, followed by a buffet supper, with the guests sitting at small tables in the garden. Jaime Benitez (Chancellor of the University of Puerto Rico) and Dr. and Mrs. Everett Case sat at a table with Helen and I. I thanked Benitez for the financial help he had arranged for the students from South America who spend some time at the Puerto Rico Nuclear Center.

We returned to the Flamboyant Hotel by bus. Helen and I took a walk through the resort hotel area before retiring.

Sunday, February 9, 1969 - San Juan, D.C.

Helen and I had breakfast in our room. We then accompanied many other members of the group on a bus tour, which included a visit to the El Yunque Rain Forest and Luquillo Beach. We then went to the El Conquistador Hotel at Fajardo for lunch. Dr. and Mrs. Gomberg met us there. They had been sailing in their sailboat and came by to help arrange our transportation back to the airport.

Helen and I rode to the airport with one of the PRNC drivers. She flew back on Pan American Flight No. 216, leaving San Juan about 5:15 p.m. and arriving in Baltimore about 8:00 p.m. I flew back on Pan American Flight No. 248, leaving San Juan about 5:15 p.m. and arriving at Dulles about 8:45 p.m. All flights were somewhat late due to the heavy snowstorm that had hit the Eastern section of the U.S. Saturday night and Sunday. Our greatest relief, however,

was that our planes had not been hijacked to Cuba. (An Eastern flight, from San Juan to Miami, was hijacked the following morning--Monday, February 10.)

Dianne was prevented by the snowstorm from leaving Boston as planned.

Monday, February 10, 1969 - Germantown

Elliot Richardson, Under Secretary of State, called me from Brookline, Massachusetts, where he was snowed in. He said he met last Friday with Gerard Smith, Adrian Fisher and Bill Macomber who are concerned that unless Senator Aiken's worries in connection with the NPT are met, ratification of the treaty may be jeopardized. If Aiken is not satisfied, he can very well influence ten or eleven senators. He read me two paragraphs from a communication they were preparing to send to me in the hope I would be able to reassure the Senator in some appropriate form, perhaps by letter. I said I would consult my staff. I told him one of the problems is that this will be read by the other side; so we have to be careful not to discourage those who are on the fence.

I said I am very much aware of Aiken's concern about the treaty and mentioned some remarks he (Aiken) made at a dinner we attended last week to the effect that there would not be an NPT if his concerns were not satisfied. We discussed the reimbursement issue in connection with Article V (concerning peaceful nuclear explosives), and I explained that we are to exclude R&D costs and be reimbursed by the countries on the cost of materials and fabrication. He said that Aiken must be afraid that in order to provide these nuclear explosive devices more cheaply, substantially all the costs would be classified as R&D and the U.S. would end up paying the bill for them. He said the function of the language he mentioned is to let them know we mean what we say and that is that they will pay the full cost of manufacturing. I said we would have to be careful not to scare off countries like Brazil, India, etc. He said the NPT hearings are scheduled for February 18th and that I would probably be asked to testify.

I met with Howard Brown, Bill Slaton, C. Manley and Jack Burchard to go over the material that we are going to use in my briefing of President Nixon during his forthcoming visit to AEC headquarters at Germantown.

Around noon I called John Wheeler to ask him confidentially whether he would entertain an offer to be a member of the Commission if it were offered to him. He said he was honored that we would even consider it. He had to consider the same question some years ago, however, and at that time he decided in the negative because he felt he was engaged in other things at the Palmer Physical Laboratory in Princeton which were so exciting that he just didn't wish to leave. He said he still feels the same and therefore there would be no point in keeping me in suspense for, say, three days, because he would still come to the same conclusion. I accepted this but said that, if he should have second thoughts within the next three days, I would appreciate his letting me know.

I had lunch in the cafeteria with John Vinciguerra, Julie Rubin and Justin Bloom. Vinciguerra described to us the study he has been making, at the request of the Bureau of the Budget, on changes in the operating procedure and organization in the National Science Foundation.

I sent a letter to Budget Director Mayo (copy attached) in response to his letter of January 23 asking for revisions to our FY 1970 budget. This is as previously agreed by the Commission.

After lunch I met with former Commissioner Loren K. Olson and Charles Mandeville of Michigan Technological University (Houghton) at the request of Mr. Olson. Mr. Olson first noted that his brother Bob works with Dr. Mandeville in the Physics Department at MTU. Bob Olson talked to Drs. McDaniel and Kolstad last December about a proposal submitted to the Division of Research by MTU which was designed to help build up the Physics Department there. Apparently the proposal was rejected. Dr. Mandeville reminded me that MTU is 87 miles from Ishpeming, Michigan, my birthplace. It now has 4,500 students and is coeducational. I mentioned that Melvin Calvin was a graduate of MTU. Mandeville stated that he has been at MTU since the fall of 1967 as head of the Physics Department. He has 14 Ph.D.'s and 8 M.S.'s in his department. No outside contracts have been obtained, except two grants for \$15,000 and \$40,000 from NSF in the field of geophysics. AEC does support one or two people in chemistry, however (Dr. Leifer).

The University has given Mandeville \$80,000 for equipment to be used in low energy physics experiments. In addition, about five years ago the University received an equipment grant in the form of a neutron generator, which is now being used to study residual activities in lower atomic number elements after  $(n,2n)$ ,  $(n,p)$ , and  $(n,He)$  reactions. The Physics Department also has a laboratory for the application of vacuum ultraviolet irradiation to surface state and solid state physics. Besides Mandeville, there are two other low energy nuclear physicists, Dr. Potinis, Associate Professor (originally from the University of Kansas with Dr. Mandeville) and Gary Agin, Assistant Professor, a specialist in electronics and computer technology. Dr. Mandeville is planning to add two more staff members, one a specialist in theoretical solid state physics and the other a geophysicist. The President of MTU is Dr. Raymond L. Smith, a Ph.D. metallurgist. The University has four Ph.D. programs in metallurgy, geology, engineering mechanics, and chemistry, but no present doctoral program in physics. I asked if the University is state supported and the response was that it is as part of the state university system.

In turning to the issue of the proposal submitted to the AEC, Mandeville stated that he had requested funds in the amount of \$38,000. Olson commented that he is under the impression, from my public remarks, that the AEC desires to build up technical competence in smaller schools but that MTU has met with a "stone wall" in talking with McDaniel and Kolstad. I commented that essentially no new research projects are being undertaken because of the budgetary limitations under which the AEC has to operate. Mandeville noted that the MTU professors are paid in "hard money" (i.e., state funds) during the nine-month school year and thus do not rely on outside contractual support. There are presently 140 physics majors in the undergraduate school. I did not give any strong indication that I would be able to reverse the previous position taken by the Division of Research in respect to the MTU proposal.

I called Walt Rostow at the University of Texas to alert him to the fact that there is an error in President Johnson's article in the February, 1969 issue of Reader's Digest. The article states, "The United States today has a nuclear firepower that works out to the equivalent of about 30,000 tons of TNT



UNITED STATES No. 1  
 ATOMIC ENERGY COMMISSION  
 WASHINGTON, D.C. 20545

FEB 10 1969

Honorable Robert P. Mayo  
 Director, Bureau of the Budget

Dear Mr. Mayo:

This is in response to your letter of January 23, 1969, requesting a review of the fiscal year 1969 supplemental appropriation requests and the 1970 budget proposals placed before the Congress by the outgoing Administration. Your letter also requested our views with respect to the personnel appointment limitation required by Section 201 of Public Law 90-364. With respect to the latter request, we have already transmitted our views to you.

In keeping with your request, the Commission undertook a comprehensive thorough-going review of our program activities and associated dollar requirements planned for fiscal year 1970. The budget modifications resulting from that review are set forth in the enclosure in the format prescribed by your letter. In summary, we are submitting budget estimates for increases in New Obligational Authority as follows:

(In Thousands)

|  |             |
|--|-------------|
| High Temperature Gas Reactor Development.....                    | \$ 2,000    |
| Molten Salt Breeder Reactor Development.....                     | 3,000       |
| Associated Increases in Goods and<br>Services on Order.....      | 1,700       |
| Modification to Heavy Ion Linear<br>Accelerator at Berkeley..... | 2,650       |
|  | <hr/>       |
| Total increases (NOA).....                                       | \$ 9,350    |
|  | <hr/> <hr/> |

The proposed increases are more than offset by program decreases as follows:

(In Thousands)

|  |             |
|--|-------------|
| Special Nuclear Materials.....                               | \$ 2,400    |
| Associated Reductions in Goods<br>and Services on Order..... | 800         |
| Terminate MWD.....   | 13,800      |
| Reduce Funding for 200 Bev.....                              | 6,000       |
|  | <hr/>       |
| Total decreases (NOA).....                                   | \$23,000*   |
|  | <hr/> <hr/> |

\* The Commission is also studying the possibility of terminating the Malibu Project. If this can be successfully accomplished, an additional NOA reduction of \$8.0 million would be effected.

In addition, because of increased weapons fabrication costs, we are submitting an estimate to increase weapons production by \$30.4 million in New Obligational Authority. We are proposing this increase outside the context of the review called for in your letter of January 23, 1969, since to identify decreases to offset this item would require undesirable reductions in other portions of the weapons program and would also require such a severe curtailment of our civilian activities as to be, in our judgment, inconsistent with the objectives of this Administration in fostering the peaceful uses of nuclear energy.

In order to place the above proposed amendments to the FY 1970 budget currently before Congress in the proper context, several general observations must be made. Our current FY 1970 budget is in every sense of the word extremely tight. It was formulated in the economic environment about which you are rightfully concerned, with full recognition of the need to exercise extreme fiscal restraint in view of the inflationary economic outlook. It is also important to realize that the programs and activities financed by our FY 1970 budget are essentially national in objectives and scope, e.g., development and production activities in support of national defense, development of the peaceful uses of nuclear energy, and support of basic research in the physical and life sciences.

We would also like to bring to your particular attention a number of policy issues which should be resolved and which would have an impact on the FY 1970 budget for the Atomic Energy Commission.

1. The FY 1970 budget for the production of plutonium and other products of nuclear production reactors assumes the shutdown of one reactor (C reactor) at Richland and the alternating operation of two other reactors (K reactors) at that site. It was agreed, however, in order not to foreclose review by the present Administration, action to effect these shutdowns would be deferred until the present Administration had an opportunity to study this matter and reach its own conclusions. To effect the magnitude of reductions contemplated by the current FY 1970 budget it will be necessary to initiate these reactor shutdowns by mid-March this year. While we believe a reasonable case can be made for maintaining full operation of these reactors, we are particularly concerned with being forced into sequential operation of the K reactors. Since they are our most efficient plutonium producers, curtailment could leave us in a somewhat marginal position to meet contingent or currently unanticipated needs. Further, a collateral problem would be the effect on the Richland community. Through careful planning and extraordinary effort, we have been successful to date in an orderly transition of the community from one completely dependent on Government-supported operations to one with an ever-increasing private investment economic base. As you know, the reaction in the community is that the proposed reactor cutback is too abrupt and extensive, and thus this action has seriously undermined the confidence of both the residents and private industry to the point that the success of our diversification effort might be in jeopardy. The full operation of both the K reactors would require an increase to our budget of \$12.2 million including \$1.5 million for additional tank capacity to store reactor waste products. We urge that prompt and favorable consideration be given to such an increase.
2. Another policy issue concerns the character of the program for readiness to conduct full-scale weapons tests in the environments (atmosphere, high altitude, and water) currently prohibited by the limited test ban treaty. The national nuclear test readiness program, a joint AEC-DOD undertaking, is part of the safeguards program assured to the U. S. Senate in connection with the ratification of the limited test ban treaty. This joint readiness program was reviewed, reoriented, and approved during the summer of 1968. Due to the current emphasis on missile warfare,

especially ABM, the review recognized the prime importance of developing a capability to test nuclear warheads in a high altitude environment as well as maintaining an air drop test capability in order for the test program to be responsive to the nuclear test ban safeguards and changing technology. Necessary funds were included in the AEC's FY 1970 budget to meet this requirement of attaining the new capability by January 1972. The previous Administration deleted the funds on the basis that our readiness test posture was a major policy issue to be decided by the incoming Administration. We understand the DOD has continued to fund for the reoriented readiness program. The AEC requires a budget increase of \$21.7 million in FY 1970 to maintain the approved joint program and meet the readiness date of January 1, 1972. We strongly urge this increase be approved.

3. Because of the severe budget stringency conditions which dictated the contents of our FY 1970 budget, we were forced to curtail our Plowshare program, a development program to exploit nuclear explosives for peaceful purposes. As a consequence the budget does not provide for the excavation experiments which would be necessary to evaluate the feasibility of this technology for the construction of a transisthmus canal in time to be incorporated by the presently planned reporting date of the Interoceanic Canal Study Commission. The absence of these experiments also effectively forecloses the possibility of conducting the harbor excavation with nuclear explosives recently proposed by the Australian Government. We believe that we should conduct sufficient development work for this technology to be considered by the Interoceanic Canal Study Commission, which would also put us in a position to conduct the Australian Harbor Excavation. An additional \$20.2 million would be required in FY 1970.
4. Finally, we understand that the DOD is considering the incorporation of prescribed action links on the Mark-61 bomb to be fabricated in FY 1970 (\$7.5 million). It is also considering an emergency capability for the WALLEYE Missile (\$7.5 million). Since our budget makes no provision for such production loads, in the event either or both of these items results in a firm requirement, our budget would have to be amended accordingly.

We should also note that the budget now before the Congress proposes a program of cooperation with the Israelis in the development of technology for the desalting of water. While no determinations have as yet been made with respect to the energy sources to be used in the



decalting plant we are convinced that the most promising approach involves the use of nuclear reactors. In the event a decision is made to use nuclear technology, assistance of about \$10 - \$15 million for development of technology such as that involved in hooking the reactor to the decalting plant would be required.

We would also note that the Commission will be communicating separately its views on the nuclear fuel demands of the growing civilian power industry and the course we should pursue in increasing U-235 production capability to meet these demands.

The Commission would be most appreciative of an opportunity to meet with you and to discuss further our program and budget requirements.

Sincerely,

(Signed) Glenn T. Seaborg

Chairman

Enclosure:  
Budget Modifications

Distribution: (w/unc. enc.)  
Addressee - 1A, 2A  
Chairman - 3A, 4A ←  
Commissioner Ramey - 5A  
Commissioner Tape - 6A  
Commissioner Johnson - 7A  
Commissioner Costagliola - 8A  
Secretariat - 9A, 10A  
General Counsel - 11A  
General Manager - 12A, 13A  
Controller - 14A  
ACBudgets - 15A  
Mr. Starr - 16A  
File - 17A  
Chron - 18A

ANALYSIS OF BUDGET AUTHORITY AND OUTLAYS  
(In Thousands of Dollars)

U. S. ATOMIC ENERGY COMMISSION

| <u>Account and functional code</u>   |              | <u>1968<br/>Enacted</u> | <u>1969<br/>Estimate</u> | <u>1970<br/>Estimate</u> | <u>Increase or<br/>Decrease (-)</u> |
|--------------------------------------|--------------|-------------------------|--------------------------|--------------------------|-------------------------------------|
| <u>FEDERAL FUNDS</u>                 |              |                         |                          |                          |                                     |
| <u>General and special funds:</u>    |              |                         |                          |                          |                                     |
| Operating Expenses..058              | NOA          | 2,139,992               | 2,109,270                | 2,037,500                | -71,770                             |
|                                      | Revised NOA  | -                       | -                        | 2,057,600                | -51,670                             |
|                                      | Exp.         | 2,136,222               | 2,075,000                | 2,088,000                | 13,000                              |
|                                      | Revised Exp. | -                       | -                        | 2,110,400                | 35,400                              |
| Plant and Capital                    |              |                         |                          |                          |                                     |
| Equipment .....058                   | NOA          | 369,133                 | 461,574                  | 400,635                  | -60,939                             |
|                                      | Revised NOA  | -                       | -                        | 397,285                  | -64,289                             |
|                                      | Exp.         | 328,488                 | 376,400                  | 483,000                  | 106,600                             |
|                                      | Revised Exp. | -                       | -                        | 483,500                  | 107,100                             |
| <u>Intragovernmental funds:</u>      |              |                         |                          |                          |                                     |
| Advances and reimbursements .....058 | Exp.         | 1,879                   | -                        | -                        | -                                   |
| Subtotal Federal funds               |              |                         |                          |                          |                                     |
|                                      | NOA          | 2,509,125               | 2,570,844                | 2,438,135                | -132,709                            |
|                                      | Revised NOA  | -                       | -                        | 2,454,885                | -115,959                            |
|                                      | Exp.         | 2,466,589               | 2,451,400                | 2,571,000                | 119,600                             |
|                                      | Revised Exp. | -                       | -                        | 2,593,900                | 142,500                             |

Summary - 1970 Budget Revisions  
Operating Expenses, AEC  
 Analysis of Obligations and Budget Authority  
 (In Thousands of Dollars)

| <u>Program by activities:</u>     | <u>Budget Estimate</u> | <u>Recommended Change</u> | <u>Amended Estimate</u> |
|-----------------------------------|------------------------|---------------------------|-------------------------|
| Special nuclear materials.....    | \$ 319,260             | \$ -2,400                 | \$ 316,860              |
| Weapons.....                      | 828,700                | 22,800                    | 851,500                 |
| Reactor development.....          | 462,095                | 2,000                     | 464,095                 |
| Other programs unchanged.....     | <u>624,192</u>         | <u>-</u>                  | <u>624,192</u>          |
| Total program costs.....          | 2,234,247              | 22,400                    | 2,256,647               |
| Change in selected resources..... | <u>13,378</u>          | <u>-2,300</u>             | <u>11,078</u>           |
| Total obligations.....            | 2,247,625              | 20,100                    | 2,267,725               |
| Financing of obligations.....     | <u>-210,125</u>        | <u>-</u>                  | <u>-210,125</u>         |
| Budget Authority-NOA.....         | <u>\$2,037,500</u>     | <u>\$ 20,100</u>          | <u>\$2,057,600</u>      |

Relation of Obligations to Outlays

|                                     |                    |                  |                    |
|-------------------------------------|--------------------|------------------|--------------------|
| Obligations incurred, net.....      | 2,093,940          | 20,100           | 2,114,040          |
| Obligated balance, start of year... | 1,004,231          | -                | 1,004,231          |
| Obligated balance, end of year (-). | <u>-1,010,171</u>  | <u>2,300</u>     | <u>-1,007,871</u>  |
| Outlays - Expenditures.....         | <u>\$2,088,000</u> | <u>\$ 22,400</u> | <u>\$2,110,400</u> |

Plant and Capital Equipment  
Analysis of Obligations and Budget Authority

|   |                   |                  |                   |
|---|-------------------|------------------|-------------------|
| Facilities and equipment for --                 |                   |                  |                   |
| Physical Research.....                          | 141,180           | -3,350           | 137,830           |
| Items not changed.....                          | <u>259,455</u>    | <u>-</u>         | <u>259,455</u>    |
| Total obligations and budget authority-NOA..... | <u>\$ 400,635</u> | <u>\$ -3,350</u> | <u>\$ 397,285</u> |

Relation of Obligations to Outlays

|                                     |                   |               |                   |
|-------------------------------------|-------------------|---------------|-------------------|
| Obligations incurred, net.....      | 400,635           | -3,350        | 397,285           |
| Obligated balance, start of year... | 603,170           | -             | 603,170           |
| Obligated balance, end of year (-). | <u>-520,805</u>   | <u>3,850</u>  | <u>-516,955</u>   |
| Outlays - Expenditures.....         | <u>\$ 483,000</u> | <u>\$ 500</u> | <u>\$ 483,500</u> |

for every human being alive." I pointed out that the figure is off by more than a factor of 1,000; in fact, it would actually be less than 30 tons, but to pinpoint it closer would involve classified information. Rostow said he was grateful to be alerted to this; if queried, they might just say that it was a misprint. I said that would be fine, and that maybe they could say it should have been about 30 tons. He suggested that it might have been misprinted as tons instead of pounds--that it should have been 30,000 pounds--and I agreed that this was a reasonable interpretation.

Jim Webb called me to say that a friend of his is interested in possibly acquiring some of the McKinney interests in Santa Fe, because McKinney is rumored to be ready to make a change. He asked if I knew of anyone who might help him approach McKinney in this connection, and I mentioned the name of John Graham.

Dianne is still stranded in Cambridge with Lynne and Bill because of the snowstorm.

Tuesday, February 11, 1969 - Germantown

I met with New York Representative Howard Robison, House Committee on Appropriations, and Eugene B. Wilhelm, staff member of the House Committee on Appropriations, preparatory to their spending the day with us for staff briefings on the AEC program. Ed Bloch, John Abbadessa, Vic Corso and Julie Rubin participated in this preliminary session.

At 10:15 a.m. I visited the meeting of the Chemistry Division Directors of the national laboratories during which I discussed informally our budget problems. Don Ferguson presented to me the californium sample which I am to present to President Nixon during his forthcoming visit to Germantown. Among the Chemistry Division Directors, or their equivalent, present were: Iz Perlman, Winston Manning, Milton Burton, Max Matheson, Don Ferguson, Arthur Rupp and Richard Grove.

I had a call from Stephen Dunn of the National Coal Association asking me whether we might have an opening for a very qualified employee of theirs whose job they are forced to eliminate. The man has an engineering background. I told Dunn to send his resume over and we would take a look at it.

I went to lunch in the cafeteria with Representative Robison, Wilhelm and George Urian, another staff member of the House Committee on Appropriations, who had joined the briefing session. Bloch, Abbadessa and Rubin were also present. After this, I joined the nearby table where Perlman, Manning, Burton and Matheson were having lunch.

Around 5 p.m., as a follow-up from yesterday's call from Richardson, I called Senator Aiken at his residence in Vermont about the concern he has with Article V of the NPT, and which he mentioned at our AEC-JCAE dinner on February 5. I said I have talked with the people in State and believe we can assure him that we will be able to work it out to his satisfaction. He said he wants a ceiling--a stopping point somewhere. He wants this put into the report of the Committee and the Senate. I asked whether he would like a letter on this; he said yes, but he thought it should be worked out before

Secretary Rogers leaves on his trip abroad. I said I will work out with Rogers a letter that treats this point regarding the peaceful use of nuclear explosives and will send it to him. He asked that it be sent to his office here in Washington. I said I will spell it out clearly how we propose that the treaty would apply to peaceful nuclear explosives. The treaty would be concerned with developed applications on a commercial basis where full cost recovery would apply. I will also make it clear that we would not be obligated to carry out any R&D. Senator Aiken said that sounds good. He also said he wants to know specifically how far we will let the international body go with inspection of everything atomic in this country.

Dianne finally returned from Cambridge this afternoon after the airport at Boston was opened following recovery from the snowstorm.

Wednesday, February 12, 1969 - D.C.

I had an interview with Derek Gill, Senior Editor of Pace Magazine, Los Angeles, for a forthcoming article in Pace. Staffan Wennberg, a photographer who accompanied him, took pictures during the interview. The subject of the interview centered on such items as the nuplex concept, my inspiration from my high school teacher as a motivation to become a scientist, the problems of motivating young people to recognize the degree to which science and technology are shaping their lives, the need for the understanding of a broad philosophy in science by the general public.

At 11:00 a.m. Gerard Smith, Director of the Arms Control and Disarmament Agency, came over to get acquainted and discuss some mutual areas of interest. He opened the discussion by referring to Senator Aiken's position on the NPT. I reported on my telephone discussion with Senator Aiken and a follow-on letter with Bill Roger's concurrence that is being sent to help answer his concerns. Smith mentioned Senator Aiken's questioning him about the extent of facilities in the U.S. that would be under safeguards. I expressed awareness of this question and would have an answer available.

Smith indicated Secretary Rogers is expecting me to appear with him next Tuesday, February 18, 1969, when he testifies on the NPT ratification. I stated I have not been requested to appear but would be willing and hope that I would have sufficient notice to prepare some remarks. Smith suggested I be prepared to talk about safeguards and their cost while Rogers would cover the political questions.

I noted that he is planning on attending the forthcoming disarmament conference (the ENDC) and indicated that the AEC has in the past been invited to send a representative to these conferences. I expressed some concern on the limited use of our representative in the past and his need for full access to information. Smith stated he would certainly welcome assistance from the Commission and would see that our representative was requested and treated as a full member of the team during the conferences.

I noted a continuing problem in interpretation of the Limited Test Ban Treaty and related the background of differences in viewpoint with certain elements of ACDA on whether a violation of the treaty occurs when any debris can be detected outside a country versus the AEC preferred position of using international guidelines when radioactive material is "not present." Smith

expressed some knowledge of this problem and stated he is certainly favorable toward a "rule of reason" interpretation of the treaty. I stated that the Soviets appear to be a lot more relaxed in their interpretation of the treaty than we have been.

Smith stated some of his people have expressed concern over the problem of underwater detonation for the Australian project. I stated a personal view that it could be done within the treaty but agreed the matter should be studied before a definite conclusion is reached. Following the study it would probably be desirable to talk to the Soviets and others about the proper interpretation. I advised Smith that President Nixon had personally expressed considerable enthusiasm about the Plowshare program and even went so far as to identify Plowshare activities as something about which he was particularly keen.

In returning to interpretation of the treaty, I informed Smith of my statements at the time of the ratification hearings in which I assured senior Senators such as Anderson and Jackson that Plowshare excavation experiments could be conducted within the framework of the treaty. It is my view that these assurances resulted in their support and the close final vote indicates the treaty would not have passed without support of such influential Senators.

I called another problem to Smith's attention, the Comprehensive Test Ban Treaty. I briefly reviewed the need for continued testing for several years to develop our ABM warhead and agreed with Smith that the Soviets may have need for conducting similar tests. I noted that some sources think the Soviets may have successfully tested warheads critical to an ABM system in their last series of atmospheric tests and could be ahead of us in this area. The significance of x-rays was briefly explained. I indicated the dilemma facing Smith's predecessor in seeking a comprehensive treaty with the above knowledge and also the added problem of an adequate inspection system to enforce a comprehensive treaty.

Smith referred to the NPT as not being very effective in the absence of something like the Comprehensive Test Ban Treaty or some arms limitation cutoff. I suggested there is more benefit from the NPT than implied by Smith and stated that limiting nuclear weapons countries to the present five would still be very desirable and particularly shutting off this capability for countries such as India and Israel would be well worthwhile.

I suggested that Smith might try to arrange meetings of the Committee of Principals to resolve key issues on missile and nuclear weapons cut-backs. Smith responded by stating Henry Kissinger may have knocked out the Principals in his operational plan. I stated there would be a need for the same senior people to get together on key issues no matter what you called it. Smith stated the President appears to want issues brought to him without a decision locked in and with all the alternatives open. I noted this was certainly the way the Principals had handled matters in the past.

Smith stated he would try and find out Kissinger's plans with regard to the Principals and would urge that both he and Secretary Rogers plan on using this group. The discussion was concluded by Smith stating he is looking forward to working with me and would be calling on me for help in developing the necessary machinery to carry out his job in an effective manner.

I had lunch at the Roger Smith Hotel with Myron Kratzer and Julie Rubin. We discussed the developing relations with the new office of ACDA in the Department of State and agreed that in many ways they were even better than they had been with the previous administration. We also discussed my forthcoming testimony on the NPT. Following lunch we took a walk around Lafayette Park.

At 4 p.m. I called Ted Sherburne to discuss the progress of the Science Service Committee on Development.

I sent a telegram to Vikram Sarabhai, Chairman of the Indian Atomic Energy Commission, congratulating him on the criticality of the Tarapur reactor.

Thursday, February 13, 1969 - Germantown

Commissioners Ramey, Tape, Johnson, and Costagliola and I met at 10 a.m. in executive session with General Manager Hollingsworth in a "stock-take" session. Rubin also attended. Hollingsworth went over in detail the strengths and weaknesses of the assistant general managers, the division directors, etc. at the administrative level and told us about his plans for strengthening the weak areas. All in all, he felt that things were in pretty good shape. He did feel that we can use some more people at the administrative level, and, in particular, we need more manpower in order to carry out the increasingly complex audit function properly.

McCool then joined us and we continued the discussion by identifying a number of policy issues. These are problems that we will face and will face us in the near future and upon which decisions need to be made.

We discussed the matter of balance in the breeder program. There was some feeling that more effort should go into the molten salt breeder and the gas cooled breeder because of the possibility that it may be more difficult than anticipated to develop an economical fast breeder. We discussed the question of safety of fast breeders and recognized that the solution to this problem can result in a higher cost which will effect the economics of nuclear power from this source. We decided that we would seek an outside, independent evaluation of the safety and economics problem after we have had a discussion of it with our staff.

We discussed the interface of the AEC-DOD effort in the production of the nuclear warhead as a part of the complete re-entry vehicle. It is possible that the AEC should take over more responsibility in the complete integration of the re-entry vehicle, and we concluded that this is a matter that we will need to investigate with the DOD.

At 12:30 p.m. I had a call from Herman Pollack who said they are shooting for Monday for me to brief the Secretary of State; however, the Secretary has not yet given his formal approval. Pollack said he would have a definite answer for me by the end of the day. He is recommending that this briefing on nuclear energy matters be held in the Operations Center and that Alexis Johnson, Elliot Richardson, and some of the key assistant secretaries attend. As soon as the Secretary confirms the time and date, Pollack will send me a letter he is preparing, so I may have the benefit of his thinking on the other points. He suggested our getting together ahead of time which we agreed to do.

Deleted

Pollack said he had not yet seen it, but remarked that they're setting impossible deadlines and added "this place is smothered with these things." He said that the Secretary told them to let him know if and when they're getting to the point where they're receiving impossible requests.

The above-mentioned study is to be prepared by a steering committee, under the chairmanship of the Director of ACDA, of representatives of the Secretary of State, the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the Chairman of the AEC, the Director of the Central Intelligence Agency, the Assistant to the President for National Security Affairs and President's Science Advisor.

I had lunch with Julie Rubin and Justin Bloom in my small conference room.

At 2:45 p.m. we continued the stock-take meeting with the same group to further discuss the future of the gaseous diffusion plants and decided that the Commission should establish a definite policy that could be expressed in written form. We also recognized that it would be necessary to establish a policy with respect to our attitude concerning cooperation or lack of cooperation with any uranium enrichment endeavors that might be undertaken overseas.

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We discussed the question of our policy for furnishing enriched uranium overseas, the possible drain on our supply of uranium, and whether the 5-year cancellation clause on our toll enrichment contracts might not be too lenient.

We discussed the recent request from the Netherlands that the U.S. collaborate with them on their program to develop naval nuclear propulsion and the relationship of this request to the adamant, negative attitude of the Congress. We identified the problem of the source of funding for the application of domestic safeguards, i.e., should this cost be borne by the Government or should it be borne by the industry as suggested by the BOB. In this connection, we also identified the problem of safeguarding the products of toll enriching of foreign uranium and decided that we would develop a domestic supply of nickel powder for use in the barriers in our gaseous diffusion plants.

We decided to increase the maximum fee for our consultants from \$100 to \$150 per day.

I presided over Information Meeting 876 at 3:30 p.m. (notes attached). We discussed Kissinger's memo (copy attached).

At 6:05 p.m. I received a telephone call from Lee DuBridge who said that the President asked him to let me know that, because of his imminent trip to



February 12, 1969

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National Security Study Memorandum 20

TO:           The Secretary of State  
              The Secretary of Defense  
              The Chairman, Joint Chiefs of Staff  
              The Director, Arms Control and Disarmament Agency  
              The Director of Central Intelligence  
              → The Chairman, Atomic Energy Commission  
              The President's Science Adviser

SUBJECT: Resumption of the Eighteen-Nation Disarmament Committee

The Eighteen-Nation Disarmament Committee (ENDC) is scheduled to resume in Geneva on March 6, 1969. The President has directed that a study be prepared on the full range of issues and proposals involved in this meeting. The study should present alternative U. S. positions on key issues and possible initiatives although agreed recommendations may be submitted.

The study should be prepared by a steering committee under the chairmanship of the Director of the Arms Control and Disarmament Agency, with representatives of the following: Secretary of State; Secretary of Defense; Chairman, Joint Chiefs of Staff; Chairman, Atomic Energy Commission; Director of Central Intelligence; Assistant to the President for National Security Affairs; and the President's Science Adviser.

The study should be forwarded to the National Security Council Review Group by February 24, 1969.

  
Henry A. Kissinger



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NOV 86

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 3  
February 13, 1969

INFORMATION MEETING 876

3:30 p.m., Thursday, February 13, 1969, Room A-410, Germantown Headquarters

1. April 11 AEC Citation Ceremony, Savannah River (See Secretary's February 10 Memorandum)

The Chairman and Commissioner Costagliola will participate. (SECY)

2. April 29 Dedication Ceremony of SEFOR Reactor, Fayetteville, Arkansas

Commissioner Johnson will consider attending. I will check the possibility of Chairman Chet Holifield's, JCAE, attending. (SECY)

3. AEC 979/75 - U.S. Visit by President of the Portuguese Junta de Energia Nuclear

A luncheon and meeting will be scheduled on March 27, 1969. (AGMIA-SECY)

4. AEC 1299/4 - Review of Previous AEC Legislative Recommendation Submitted to the BOB

Approved. (GC) *In for signature*

5. AEC 1170/8 - Personnel Reduction at Battelle - Northwest

Approved. (AGMO-Congr.)

6. AEC 1021/23 - Dutch Interest in Nuclear Propulsion Technology

Staff is to keep the Commissioners informed and assure that the President is provided a balanced briefing paper. (AGMIA)

7. February 12 National Security Council Memorandum re U. S. Policy in the ENDC

The Chairman noted comments are requested by February 24, 1969.  
(SAD-AGMIA)

8. Statement of Proposed Policy regarding the Future Means of Providing Uranium Enrichment Services to the Nuclear Power Industry (Commissioner Johnson's January 10 Draft)

The Commissioners will provide their comments to Commissioner Johnson (Helfrich-SECY)

W. B. McCool  
Secretary

4:15 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Rubin  
Mr. McCool

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General Counsel  
Secretary

Europe, he would not be able to visit the AEC until after his return. He very much wants to make the visit, but he will have to postpone it until after the Europe trip. He asked whether anyone from the President's office had contacted me to see whether we have any atomic energy matters that impinge on foreign policy that I think the President might or should discuss in Europe. I said I had not heard from anyone in exactly those terms; there are two or three sensitive matters, however, and we are involved in the preparation of the President's briefing papers. DuBridge said that he has a memo from Haldeman saying he hoped that Dr. Seaborg might identify international nuclear energy matters that might be raised in Europe. DuBridge asked me to send him a note on this, which he will clear with Ellsworth and get to Kissinger, who is preparing the material for the trip. DuBridge said he doesn't think this should be a long document, just a listing of the items with brief notes. These would include matters pertaining to NATO, IAEA, Euratom, France, and the other countries.

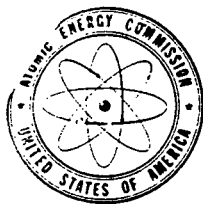
Friday, February 14, 1969 - Germantown

At 9:55 a.m. I presided over Regulatory Information Meeting 329 and at 10:20 a.m. Information Meeting 877 (notes attached). We decided to increase the AEC use charge for the lease of enriched uranium fuel from 5 1/2 percent to 6 1/2 percent effective April 1, 1969.

The other Commissioners and I met at 11:45 a.m. with Dr. Robert Wilson, Professor Edwin L. Goldwasser and Donald Getz of the National Accelerator Laboratory staff, Dr. Norman Ramsey, President of URA, and K. D. Brooks of the AEC's site office at NAL. Others present were the General Manager, Paul McDaniel, John Abbadessa and Justin Bloom. Also, other staff members of the AEC were present.

The purpose of the meeting was to acquaint the Commission with the need for additional obligational authority in FY 1969 to cover the following critical construction items: (1) copper clad steel (\$100,000 needed); (2) copper for drift tubes (\$42,000 needed); (3) construction of a prototype for manufacturing preformed concrete shapes (\$150,000 needed); (4) installation of drainage system to remove standing water (\$70,000 needed); (5) moving one-third of the DUSAF staff to the accelerator site and refurbishing temporary quarters for them (\$150,000 needed); and (6) installation of a gravel staging area for the Linac, booster, and cross gallery (\$28,000 needed).

Wilson also noted that the deferral of FY 1969 obligations would result in the need for an additional \$12 million obligational authority in the first quarter of 1970. He mentioned that at the present time his expenditures are approximately two percent over the estimates for the items that have been procured so far. I questioned him as to his assessment of the overall cost of the project as compared with the original cost estimate of \$241 million, and he replied that such an estimate is now being made and it will be checked by Bill Brobeck. He stated that he feels secure that the accelerator can be built within the original cost estimate. I then asked Wilson if he could foresee any problems arising from placement of foundations, the source of cooling water, and the provision of electrical power. Again Wilson responded that he is examining such factors but can see no real problem developing. (My reason for inquiring about these matters was because I had heard from other sources that the costs may be increasing to the point where the original estimate may be exceeded.)



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

February 14, 1969

REGULATORY INFORMATION MEETING 329

9:55 a. m. , Friday, February 14, 1969, Room A-458, Germantown Headquarters

1. AEC-R 8/34 - Comments on Change on Exposure Reporting Requirements  
(See also Mr. Price's February 13 Memorandum re Additional Comments -  
Rule Change on Exposure Reporting Requirements)

Staff may proceed. (ADRA)

2. Dr. Beck's February 12 Memorandum re Procurement of Reactor  
Components from Foreign Manufacturers

Staff may proceed. (DDR-ADRA)

3. Members for the Advisory Committee on Reactor Safeguards (See  
January 14 and February 11 Memoranda from Mr. Fraley to Mr. Rubin,  
February 12 Memorandum from Dr. Beck, and Associated Material)

The Chairman will call the prospective nominees and follow-up action by the General Counsel is requested. (Rubin-GC-SECY)

4. AEC 783/106 - Proposed Letter to Senator Muskie Commenting on S. 7  
"Water Quality Improvement Act of 1969"

Commissioner Ramey requested a copy of the transcript of testimony by Mr. Gerdes, EEI. A letter to the BOB may be dispatched. (GC)

W. B. McCool  
Secretary

10:20 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

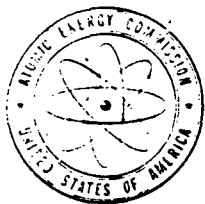
STAFF:

Mr. Price  
Mr. Beck  
Mr. Henderson  
Mr. Hennessey  
Mr. Wells  
Mr. Rubin  
Mr. McCool  
Mr. Eason\*  
Mr. Biles\*

DISTRIBUTION:

Commissioners  
Dir/Regulation  
General Manager  
General Counsel  
Secretary

\*Partial Attendance



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 3  
February 14, 1969

INFORMATION MEETING 877

10:20 a.m., Friday, February 14, 1969, Room A-458, Germantown Headquarters

1. AEC 783/106 - Proposed Letter to Senator Muskie Commenting on S. 7 "Water Quality Improvement Act of 1969"

Commissioner Ramey requested a copy of the transcript of testimony by Mr. Gerdes, EEI. A letter to the BOB may be dispatched. (GC)

2. Briefing Memorandum for the President re AEC International Affairs Responsibilities

The Chairman said Dr. DuBridge had called to request the memorandum by Monday, February 17. (AGM)

3. February 3 Letter from R. F. Gilkeson, President, Philadelphia Electric re Peach Bottom Atomic Power Station's Operations and Desire to Meet with AEC Staff at an Early Date

An early meeting will be scheduled. (AGMR-SECY)

4. Mr. Wells' February 13 Memorandum re Board Members for Future Hearings

Approved. (Chm. AS&LBP)

5. Agenda for the Week of February 17, 1969

Approved. (SECY)

6. AEC 610/155 - Draft Talking Paper on UK Participation in Tripartite Venture (See also AEC 610/156 - Supplement to AEC 610/155)

Approved as a background paper for use in the Commissioners' forthcoming discussion with JCAE members. (AGMIA)

7. AEC 610/157 - Report of European Uranium Enrichment Working Group of Foratom

Noted. (AGMIA)

8. AEC 610/158 - Proposed Briefing Material for President's Conversations with UK Prime Minister

Approved with a suggestion. (AGMIA)

9. AEC 946/7 - Technical Exchange Arrangement Involving NS Savannah and First Nuclear Ship of Japan

Approved. (AGMIA)

10. AEC 1179/12 - HTGR Cooperative Arrangement with PSC and GGA

Staff may proceed. (GC-AGMR)

11. AEC 1192/69 - Proposed Subcontract for Fuel Pellets

Approved with a request. (DC)

12. AEC 568/121 - Documents Compromised by Nahti Imre

Staff may proceed. (C)

13. AEC 901/411 - Proposed Visit and Employment of East German National

Approved. (AGMIA)

14. AEC 720/200 - Revision of Use Charge

Approved as revised. (OC)



15. AEC 1083/134 - IAEA Symposium on the Physics and Chemistry of Fission, Vienna, July 28 - August 1, 1969

Noted. (TI)

16. AEC 1230/17 - ACNMS Resignations

Noted. (SMM-Rubin)

17. AEC 459/63 - Meeting with BOB on Discount Rates in U-235 Studies

Noted. (P)

18. The President's Query re Nuclear Weapons

W. B. McCool  
Secretary

11:35 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Wells\*  
Mr. Quinn\*  
Mr. Kratzer\*  
Mr. Bengelsdorf\*  
Mr. Kavanagh\*  
Mr. Vinciguerra\*  
Mr. Riley\*  
Mr. Parks\*  
Mr. Marshall\*

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General Counsel  
Secretary

\*Attendance by Topic (s)

Wilson was complimentary about the assistance of the AEC local staff and the General Manager, and the Controller. I assured Wilson that every effort will be made to obtain the funds that he needs, but that serious problems lie ahead with the Joint Committee on Atomic Energy and the House Appropriations Committee in obtaining new obligational authority for FY 1969, and also that there is little likelihood that FY 1970 funds will be appropriated early in the fiscal year.

I had lunch in the cafeteria with Norman Ramsey, Robert Wilson, Edwin McMillan, Edwin Goldwasser, Donald Getz and one or two from the Division of Research.

After lunch I met with Norman Ramsey to explore with him whether he would be interested in accepting a commissionership on the Atomic Energy Commission. He indicated some interest but said that his present research program is so interesting and his duties as President of URA so important that he is somewhat doubtful that he will accept. He said he will let me know very soon.

At 2:15 p.m. I received a phone call from John Sheffey of the Atlantic-Pacific Interoceanic Canal Study Commission. He said Robert Anderson called him from New York and asked him to ask me whether, in my judgment, the U.S. is likely to allow the importation of foreign uranium ores, and if so, when. My answer was: Yes, but it will be a number of years from now. We have set 1972 or thereabouts as a sort of tentative date, but this is something we are reevaluating all the time. I said the date could also be earlier than 1972. It's a matter of watching and balancing the health of the domestic uranium mining industry against the health of our electrical utility industry; we are trying to strike a balance of a maximum degree of fairness to both. Colonel Sheffey said he appreciated my frank answer very much, particularly since he wasn't even sure that I would wish to comment on the subject. Sheffey said that Dr. Milton Eisenhower had him (Sheffey) brief Robert F. Ellsworth (Assistant to the President) yesterday on the canal project. Sheffey said he worked in the effect that the Australian harbor project would have on the canal project. Sheffey said he thinks we have a great supporter in Ellsworth who is very enthusiastic about the project.

I called Dr. Jack A. Kyger (AFCO Space Systems, Wilmington, Massachusetts) to inquire whether he would be interested in serving on the ACRS. He said he had not been at all close to reactor work for over ten years. I said that would not matter since we want someone who is not in any possible conflict of interest. He asked how much time he would be required to spend with the Committee and who was on it at the present time. I explained about the monthly meetings and gave him the names of several members. When he said he might contact some of them, I told him that his name had not yet been put before the Committee. He said he would think over the offer and call me back in a few days.

At 4:30 p.m. I had a call from Art Campbell who had a call this morning from UNESCO asking him to check with me whether I had been approached by the State Department about attending the Mendeleev Conference in Paris; they have heard nothing thus far. And if I couldn't attend, would I suggest someone--possibly someone who might already be in Europe, say, at CERN, because UNESCO does not have funds to pay travel expenses. I said I told the State Department weeks ago that I could not attend, and I had suggested Burris Cunningham, although I don't know that he would be able to attend, either. He said that the

Russians, French and English are sending people at the Academy level; UNESCO feels it is most unfortunate that the Americans aren't doing the same. I said it's just a question of timing; they asked me much too late. I said I didn't know any high-level American scientists who are currently in Europe. People such as the following would be excellent, if they could make it: Earl Hyde, Paul Fields, Bob Penneman and O. Lewin Keller.

Right after that I received a call from Secretary Rogers saying he is going to be briefed tomorrow (presumably on the NPT) and asked me to come to his office at 11 a.m. He said I should probably be available to go with him when he gives his testimony. I said that I would be prepared as I have had indications that I might be asked to do this. I told him I had placed a call to him earlier in the day to discuss the Senator Aiken matter. I told him that, when I called Aiken telling him I would be sending him a letter containing assurances in connection with the NPT, Aiken asked that it be cleared with him (Rogers). I said I understood the letter was on his desk now and didn't think he would have any problem with it; it has been cleared with his staff. I said Aiken's office is asking to have the letter sent up. Rogers said I might as well send it right away.

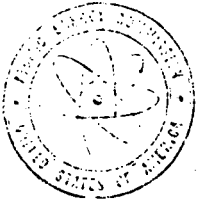
My letter to Senator Aiken, giving him the assurances concerning cost recovery for furnishing of nuclear explosives to foreign countries that he feels are required in order to support the NPT, was dispatched right after my conversation with Rogers.

Around 5 p.m. I talked to Budget Director Mayo in regard to the response we made to his letter of January 23rd and to ask whether he and I, and others, should get together to discuss it. He said his schedule was giving him problems. He said I had probably heard he wasn't too happy with our letter because we ended up with more increases. He said this would be a problem for the President. He has a letter to me on his desk ready for his signature, and he thought it would be a good idea to send me an unsigned copy so I could see what is bothering him. I told him if we cut parts of the weapons program we would be in trouble with DOD and Congress. The only other way of doing it is to cut out some basic research or the peaceful uses to make room for weapons. The latter could get the President in trouble. He said he couldn't help us with our basic problem; we would have to figure out where we could cut in order to suffer the least damage. I said I would appreciate receiving a copy of his letter on an informal basis; that we would look at it again. I also said I hoped somehow we could get together for a few minutes.

Saturday, February 15, 1969 - D.C.

This morning I received the unsigned letter that Budget Director Mayo referred to in our telephone conversation of yesterday afternoon. The gist of it is that we are to try to find offsetting cuts, even to the extent of finding matching cuts to offset the policy items. I have the impression that Mayo hasn't focused on our budget and understood the implications of this. His letter indicated difficulties in finding time to meet with us; it appears to me, however, that it will be necessary to have such a meeting in order to clarify the issues.

I sent a letter to Lee DuBridge (copy with security deletions attached) describing a list of items in the field of nuclear energy which might arise



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

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NOV 86

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Dr. Lee DuBridg  
Science Adviser to the President  
Executive Office Building  
Washington, D. C. 20501

Dear Lee:

While we are disappointed to learn that the President will be unable to visit the Commission before his departure for Europe, we fully understand the necessity for this conclusion and are pleased to have this opportunity to provide, as you requested, a list of items in the field of nuclear energy which might arise during the President's trip:

1. Tripartite Isotope Enrichment Project (SECRET)

2. Uranium Enrichment Trends Abroad

The foregoing is an example of a general trend in Europe and elsewhere to develop independent capability to produce enriched uranium. Although enriching plants exist in the U.S., U.K., France, USSR, and Communist China, the U.S. is essentially the sole supplier of enriched fuel for free world power reactors. There is increasing reluctance abroad to be dependent on the U.S. as the sole supplier. To help overcome this concern, we have agreed to long-term toll enrichment contract commitments, 5-year fuel inventories, guaranteed low-ceiling price (unsubsidized),

and assured capability for expansion of U.S. facilities as necessary. Despite these steps there is active interest in Europe, Japan and Australia in developing independent enrichment capabilities.

3. Safeguards and the NPT

The European Community members, particularly Germany, have long been concerned with the possibility that the safeguards requirements of the NPT would have an adverse effect on the independent regional safeguards system of Euratom. The compromise reached during the negotiation of the NPT provides for the negotiation of a mutually satisfactory safeguards arrangement between the IAEA and Euratom under which the IAEA would verify Euratom safeguards. The Community members who have signed the NPT have publicly announced that their ratification will be dependent on the successful conclusion of this agreement. The United States has offered its good offices toward the conclusion of such an agreement and this offer might be reiterated if the question is raised.

4. Offer to Place U.S. Peaceful Nuclear Facilities Under IAEA (UNC) Safeguards

This offer was made after careful consideration and in the conviction that it was likely to be a determining factor in German adherence to the NPT. The Germans have been concerned that this offer may be reconsidered and it is important that they be reassured that our offer still stands.

5. Nuclear Cooperation with France (UNC)

The French have on several occasions sought assistance from us for their nuclear weapons program. We have consistently refused to cooperate in this area. Despite our inability to cooperate with France in military aspects of nuclear energy and our support for Euratom, cooperation in peaceful uses has remained an important bright spot in US-French relations. A comprehensive US-French bilateral technical exchange took place late last year and the head (Administrator General) of the French Atomic Energy Commission, Mr. Robert Hirsch, is visiting me in Washington next month. Re-affirmation of our continued desire for good relations with France on peaceful uses would be useful.

6. International Atomic Energy Agency (UNC)

The United States support for the International Atomic Energy Agency as a primary channel of cooperation in peaceful uses of nuclear energy,

without derogation of our interest and cooperation with Euratom and its Member States, should be reaffirmed.

7. Euratom (UNC)

The United States has strongly supported Euratom as a step towards European integration and is discouraged by indications of Euratom's declining role in bringing about an integrated European program on peaceful nuclear energy development. We intend to cooperate with Euratom wherever it is effective, particularly in connection with its supply role for the Community Member States.

8. Euratom Supply Assurances (UNC)

Member States are concerned by the possible effect of Article III (safeguards article) of the NPT on the continued ability of the United States to supply enriched uranium nuclear fuel. Our response has been that we are confident that any problems will be avoided by the successful conclusion of a safeguards agreement between Euratom and the IAEA.

9. Plowshare (UNC)

There is worldwide interest in the proposed Plowshare project in Australia. We should stress that while we have a real interest in this project, no decision will be made on whether it will be undertaken until completion of a detailed feasibility study. We should also advise Western leaders that we will probably hold technical talks with the Soviets on Plowshare in the near future so that they will not be taken by surprise by these discussions if they closely follow the President's visit.

10. 300 BEV Accelerator (UNC)

Construction of the accelerator for CERN is of great scientific interest and would insure that Europe remain in the forefront of experimental high energy physics. Although the U.K. has declined to support the project at this time, CERN has so structured the project so as to enable them to go forward. In the meantime, while in no way a substitute for their own project, we should assure European scientific leaders of the greatest possible access to the United States 200 BEV accelerator.

11. US/UK Mutual Defense Agreement (SECRET)

12. Assistance in Naval Nuclear Propulsion Programs (SECRET)

13. NATO Security Matters (SECRET)

We will be glad to supply additional information on these items should you so desire, and we look forward to the privilege of briefing the President on our entire program after his return.

Cordially,

Signed) Glenn T. Seaborg

Chairman

CHAIRMAN

during President Nixon's forthcoming trip to Europe; this was in response to his request of February 13.

I met from 11 a.m. to 1 p.m. in Secretary of State Rogers' office with Secretary Rogers, Adrian Fisher, Gerard Smith and William Macomber. The purpose of the meeting was to brief Rogers on the NPT in preparation for his testimony before the Senate Committee on Foreign Relations next Tuesday morning. We went through the text of the NPT, article by article, and described the background content and import of each article. Macomber indicated that my phone call to Senator Aiken seems to have satisfied him regarding his concerns about the role of Plowshare, as covered in Article V of the NPT.

We discussed the interpretation of the Limited Test Ban Treaty concerning the possibility of violation through the detection of radioactive debris beyond the borders of a country conducting a nuclear excavation experiment, and I emphasized my difference on interpretation as compared with that of Meeker. I described in some detail the role of safeguards, as covered in Article III of the NPT.

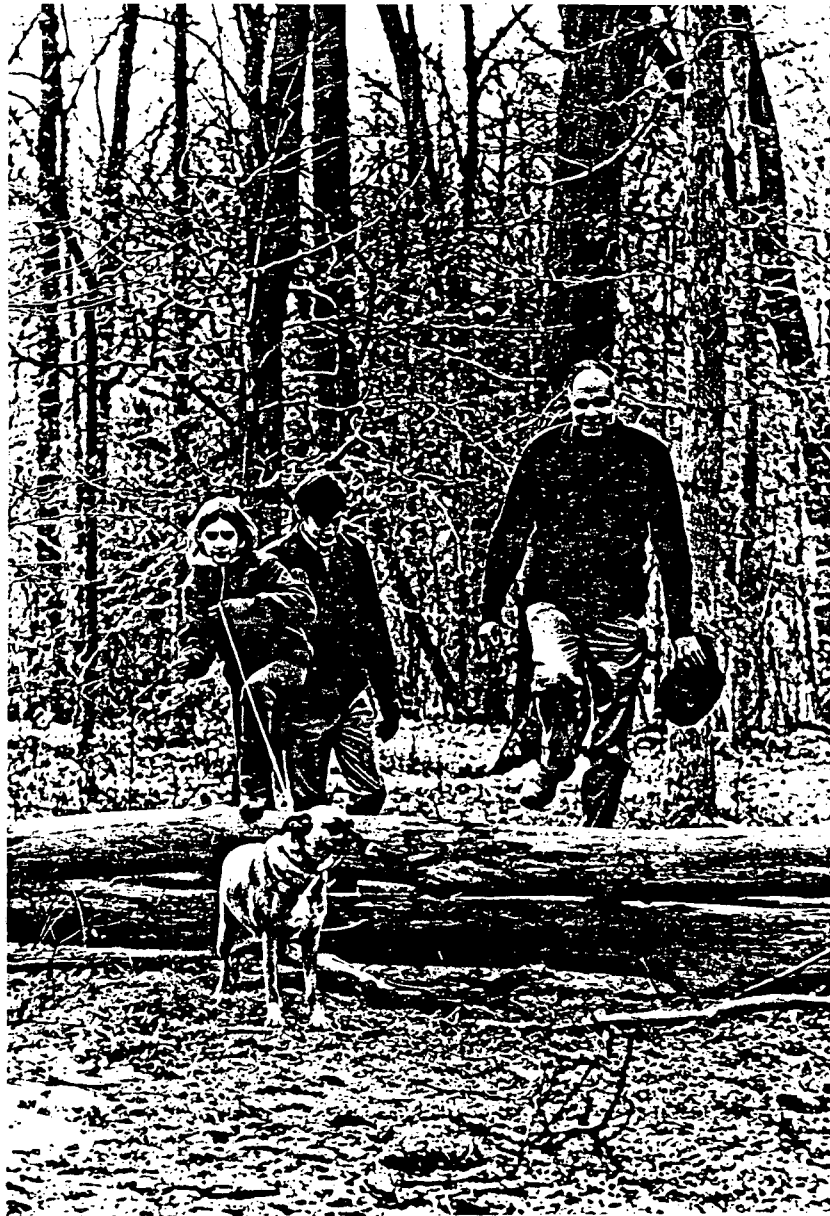
It was agreed that I would appear with Rogers at the Senate hearing next Tuesday, giving a short prepared statement following his prepared statement; then we would both entertain questions from the Committee.

At about 2:30 p.m. Derek Gill and Staffan Wennberg came to our home and took a number of pictures in connection with the article for Pace magazine (a sort of interview article) that Gill is preparing about me. As the last part of his interview and picture taking session, Gill and Wennberg accompanied Eric, Dianne, Suki and me on a hike in Rock Creek Park. We went by the Joaquin Miller cabin and Fort DeRussey. This hike offered Wennberg an additional opportunity to take some pictures in an informal situation. (See picture next page.)

In the evening Helen and I went to dinner at the Tapes. This dinner was in honor of Dr. and Mrs. Lee DuBridge and was also attended by Commissioner and Mrs. Bill Johnson, Commissioner and Mrs. Frank Costagliola and Estelle Ramey (Jim is on a trip to Rome). This offered an opportunity for the Commissioners and their wives to get better acquainted with Lee and Doris DuBridge. At the end of the evening we discussed some business items. Lee had been convinced by some members of his staff that the SCHOONER shot had violated the test ban treaty, so Jerry and I explained to him the matter of needing to define what is meant by radioactive debris being present beyond the borders. We emphasized strongly that we didn't think the SCHOONER shot violated the test ban treaty and that a few radioactive atoms shouldn't be regarded as a matter of violating the test ban treaty.

I also described to Lee the problems we are having with Mayo and the Bureau of the Budget in connection with our response to Mayo's letter of January 23, which required compensating cuts for budget additions. I explained that we don't see how we can meet the increased costs of weapons requirements by making compensating cuts in basic research and the peaceful uses of atomic energy. Lee suggested that rather than cut basic research or civilian programs to meet the increased weapons costs we should suggest reductions in the weapons program. I also mentioned that John Wheeler had declined a commissionership, and that I had subsequently asked Norman Ramsey if he would consider such an appointment; I suggested that Lee call Ramsey in order to





Glenn T. Seaborg with daughter Dianne, son Eric, and dog Suki hiking in Rock Creek Park, February 16, 1969.

help convince him. We discussed the possibility of approaching such people as George Pake, Dale Corson, Bryce Crawford and Charles Townes.

Sunday, February 16, 1969

I read AEC papers and background material for my forthcoming testimony on the NPT before the Senate Foreign Relations Committee.

In the afternoon Dianne, Eric, Suki and I took a very long hike in Rock Creek Park, starting at Devil's Drop rock on Broad Branch Road and making a big

circle including Fort DeRussey and a number of cross trails as well as the White Horse and Black Horse trails.

Monday, February 17, 1969 - Germantown

I presided over Information Meeting 878 at 9:50 a.m. (notes attached). The main item for discussion was the informal response from Budget Director Mayo to our letter of February 10, which we had sent in response to his letter of January 23, in connection with possible amendments to the FY 1970 budget. We considered the possibility that in order to match new obligational authority (NOA) of \$30 million, we would identify some possible drastic actions, such as cuts in or stretch-out of the Poseidon or ABM programs. We will make a request for the \$20 million NOA for the Plowshare program. In the case of the Hanford reactors and the high altitude test readiness program, we will not request the extra money on the basis of cutting an equal amount of our program but will again identify the issues. In the case of the other \$15 million weapons increase for DOD, we will just identify it as an issue without any recommendation.

At 11:30 a.m. I met with Helio Bittencourt, a special emissary of CNEN Chairman Costa Ribeiro (Brazil). Myron Kratzer, Allan Dalton and Julie Rubin were also present. Mr. Bittencourt explained the purpose of his visit was as an official representative of his Government to inform us of their desire to nominate Professor Cintra do Prado as a candidate for Director General of the International Atomic Energy Agency. I indicated Professor Prado is well known and inquired of his present age. The response was not specific but he was thought to be about 62.

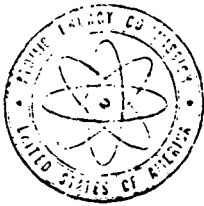
Bittencourt stated his Government's argument for supporting new candidates for the director generalship of the IAEA is principally that two terms covering eight years for any international civil servant is considered sufficient. I indicated some understanding that there is a mandatory retirement age of 60 in the IAEA and offered as an example the recent retirement of Seligman even though he wanted to stay on. Bittencourt indicated he did not think this is an accepted policy throughout the UN operations. Kratzer noted that Eklund is presently about 58 years of age and has expressed an intention of retiring upon completion of his term after he became 60.

Bittencourt stated he made the above representation as an official representative of his Government. Privately he wanted to inform me that his previous association as an assistant to Professor Prado clearly indicated Professor Prado's views on the NPT were not the same as the official position of his Government which opposes it.

Bittencourt indicated he is proceeding to Paris to talk to Goldschmidt and then on to Vienna to review this same matter with other delegates. He indicated his Government would not want to go ahead without being aware of the U.S. position on Eklund's redesignation.

I indicated I would let him know the U.S. position on Brazil's proposal of Prado for this position.

I had lunch in the cafeteria with General Giller, Colonel Tesche, Julie Rubin and Justin Bloom. We discussed problems pertinent to the Division of Military



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February 17, 1969

INFORMATION MEETING 878

9:50 a. m. , Monday, February 17, 1969, Room A-458, Germantown Headquarters

1. AEC 1253/52 - Functional Classification of AEC Budget

Staff discussion with the BoB is requested. (OC)

2. Fiscal Year 1969 Supplemental and Fiscal Year 1970 Budget (See AEC's  
February 10, 1969, Letter to Mr. Mayo, Director, BoB)

Scheduled for discussion on Thursday, February 20, 1969. (OC-SECY)

3. AEC 374/202 - Amchitka Calibration Event

Approved. (AGMMA)

4. AEC 460/107 - Unclassified Conference at Sensitive Installations

Noted. (AGMA)

5. 1969 Lawrence Award Ceremony Arrangements

To be scheduled. (SECY)

W. B. McCool  
Secretary

11:15 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Rubin  
Mr. Ryan  
Mr. Kull  
Mr. McCool  
Mr. Corso\*  
Gen. Giller\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

Application.

At 2:20 p.m. I called Roger Coe (Vice President, Yankee Atomic Electric Company) to inquire whether he would be willing to serve on the ACRS. He said he is still with Yankee part time and has two outside consulting arrangements (NUS and another small firm) which would raise problems. I asked how he would feel about it if the problems were resolved reasonably. He said that depended on how it would be resolved; he would not want to sever his connections with Yankee and the other firms. I said I would have Joe Hennessey call him. (Hennessey did this a few days later, and we found that Coe's conflict of interest problems made the appointment impossible.)

At 3:05 to 4:05 p.m. I gave a talk, "New Outlook for the Transactinide Elements" to a full house in the Auditorium. The talk was followed by a question and answer period.

Tuesday, February 18, 1969 - D.C.

Today I testified, with Secretary of State Rogers, before the Senate Foreign Relations Committee on the Non-Proliferation Treaty. Before leaving for the Hill, I met briefly with Myron Kratzer, Allan M. Labowitz and Julius Rubin to go over some last minute questions. I met Secretary Rogers as we entered the New Senate Office Building, and we proceeded to the Hearing Room. Rogers, Adrian Fisher and I went into the smaller room adjoining the Hearing Room to confer briefly with Senators Fulbright and Mansfield preparatory to the hearing. Senator Fulbright then brought us back into the Hearing Room; a few pictures were taken, and the hearing opened on schedule with Senators William Fulbright, George Aiken, John Sparkman, Jacob Javits, Karl Mundt, Mike Mansfield, and John Sherman Cooper present. Late arrivals included Senators Thomas Dodd, Clifford Case, Gale McGee and Albert Gore.

After a brief opening statement by Senator Fulbright, a prepared statement was read by Secretary Rogers, and this was followed by my own prepared statement.

The question period following the reading of the prepared statements included a question from Chairman Fulbright to me concerning the question of whether the Australian Cape Keraudren project could be carried out without violating the Limited Test Ban Treaty. Most of the questions were friendly and to a large extent anticipated. My letter of February 14, 1969, to Senator Aiken was read into the record, and he indicated it had gone a long way toward satisfying his questions about the NPT. Senator Aiken and later Senator Mundt stated they would vote in the Committee for reporting the NPT out to the full Senate for complete discussion without this being an indication of what their final Senate vote might be.

During Senator Aiken's questioning, I agreed at his request to submit for the record two items: (1) the history, estimate cost and cost sharing arrangement for the Cape Keraudren Plowshare project, and (2) an identification of possible U.S. facilities that might be offered for inspection in line with the offer by President Johnson in connection with the NPT.

One significant result of a question to Secretary Rogers by Senator Mansfield was a commitment by Rogers that the AEC and Arms Control and Disarmament Agency as well as the State Department would participate in the review of the

decision on deployment of the ABM. I reminded Jerry Smith following the hearing of this commitment and he said he would follow up with Secretary Rogers on this item.

As a general observation there were a considerable number of inquiries about the Cape Keraudren Plowshare project in Australia and particularly whether this project could be conducted within the Limited Test Ban Treaty and, separately, the implications of our conducting this work in Australia in view of their not having signed the NPT to date. Another line of questions resulted in my making a personal observation that Israel and West Germany might eventually sign the NPT.

Following the hearing I proceeded directly to the Roger Smith Hotel and had a quick lunch with Kratzer, Labowitz and Rubin.

Later in the afternoon I discussed with Howard Brown and Julie Rubin the growing concern in the CIA and the State Department that an officer of a certain industrial nuclear facility may have diverted appreciable amounts of enriched uranium-235 to Israel over the last several years. This possibility has apparently been brought to the attention of the President.

I received an invitation to attend hearings before the Senate Committee on Armed Services on the military implications of the NPT tentatively scheduled for Thursday, February 27. There is a sort of jurisdictional dispute developing here between this Committee and the Senate Foreign Relations Committee, and I hope that this doesn't lead to any problems in obtaining Senate approval of the NPT.

I received a memorandum from President Nixon, dated February 17, addressed to Heads of Executive Departments and Agencies, asking us to give our personal attention to the matter of ensuring that civilian employment in the executive branch is kept at the minimum compatible with efficient conduct of operations (copy attached).

Wednesday, February 19, 1969 - D.C.

I arrived at the Foreign Service Institute, 1400 Key Boulevard, Rosslyn, Virginia, at 9:00 a.m. in order to be the first speaker at their "AEC Day" in the Senior Seminar in Foreign Policy.

Stan Schneider and I chatted with Ambassador Lewis Jones in his office. The Ambassador's title is "Coordinator, Senior Seminar in Foreign Policy" and he plans the briefings. I was introduced to the Seminar by Mr. Sherman R. Abrahamson, Seminar Chairman. The seminar was attended by about 25 participants--mainly foreign service officers, a few military officers and a few G-16s from other government agencies.

I spoke on "The AEC and the Peaceful Uses of Atomic Energy" using some of the preliminary flip charts prepared for the forthcoming briefing of President Nixon. I covered the general administrative structure of the AEC, the responsibilities of the Regulatory branch, nuclear power, controlled fusion, nuclear ships, nuclear power for space, radioisotopes and basic research with special mention of the work in progress to reach the "island of stability" in the discovery of new very heavy elements.

THE WHITE HOUSE

WASHINGTON

February 17, 1969

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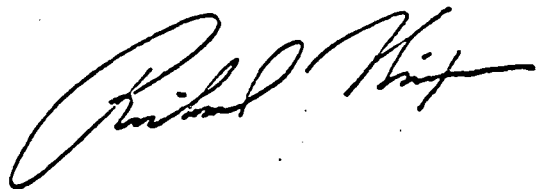
MEMORANDUM FOR THE

HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

Employment statistics reaching my desk have strengthened my conviction that Federal Government employment is considerably higher than it should be. There appears to be overstaffing in many activities and excessive overhead organization in almost all agencies and departments.

We have a responsibility to the American taxpayer to ensure that civilian employment in the executive branch is kept at the minimum compatible with efficient conduct of operations. To this end, I have asked the Budget Director and Dr. Burns to keep me informed of developments. I have also asked the Budget Director to issue instructions designed to review civilian employment levels.

Resultant reductions of employment will be carried out through an orderly process of attrition. This policy will apply to all executive departments and agencies and will include activities now exempted from the employment limitations of the Revenue and Expenditure Control Act of 1968. It should receive your personal attention.



Following my presentation I was asked several questions, some of which concerned: the need for continued weapons development and testing; the Atoms-for-Peace program; the gap between scientists and government; the relative progress of the U.S. and the USSR in the peaceful uses of nuclear energy; how I managed to accomplish so much both administratively and creatively; and some clarification of the process of controlled fusion.

At 11 a.m. I met with Hollingsworth, Corso, Schoenhaut and Rubin to discuss further the response to Mayo's January 23, 1969 letter.

At 11:30 a.m. Herman Pollack (Director, Office of International Scientific and Technological Affairs, Department of State) came over to review with me a policy he plans to submit to the Secretary of State on exchange of scientific information with other countries which we do not recognize, such as Cuba, Albania, East Germany, Mainland China, North Korea, and North Vietnam, and would like to indicate agreement by all concerned government agencies. I informed Herm that I have read the policy statement he sent to Rubin and am familiar with the subject. Herm stated the only opposition encountered was by Brunenkant and this appeared to be in two areas: (1) some disagreement with the basic policy and (2) concern of the JCAE reaction. He continued that the intended purpose is to have U.S. policy not discourage scientist to scientist exchanges even with these countries. He feels the policy as presented gives each agency sufficient leeway to work in this area to the extent they desire.

Herm indicated he plans to talk to the other Commissioners on this subject and hopes that if it comes to the attention of the Commission for a policy decision that it would be favorably received.

On a separate matter I inquired of Herm about State Department activities in science and he stated it appears good. Plans are under way to appoint an assistant secretary for science and the present recruiting for a candidate seems to have centered on Frank Long. I agreed he would be a good choice.

I had lunch with Justin Bloom at the Roger Smith Hotel.

At 2:30 p.m. I met with Commissioner Johnson, Jerry Helfrich (his assistant), Julie Rubin and Justin Bloom to discuss the growing concern regarding the balance between safety and economics in the program for the development of the liquid metal cooled fast breeder reactor; we must be careful that the AEC and the industrial program to develop the fast breeder reactor do not trade a design of maximum safety for a less safe design with greater economic potential.

Later on I viewed a State University of New York film of a seminar discussion on "Political and Social Problems of High Energy Physics," with Viki Weisskopf, Maurice Goldhaber, John Toll and Myron Good, filmed at the recent New York meeting of the American Physical Society.

Thursday, February 20, 1969 - D.C.

At 9:50 a.m. I met in Executive Session with Commissioners Tape, Johnson and Costagliola (Ramey was out of town) along with Bill Riley, Frank Parks, Bob Hollingsworth, Ed Bloch, Howard Brown and Julie Rubin to discuss the sensitive matter concerning alleged diversion to Israel of enriched uranium-235 by a



senior officer of a fuel fabrication concern. J. Edgar Hoover has written to Riley suggesting rather stringent Commission action. In our opinion, however, the evidence is far from proving that the alleged diversion took place.

I presided at 9:50 a.m. over Information Meeting 879 (notes attached) at which such items as our position on the cut-off of nuclear materials (one of the possible proposals in connection with the forthcoming ENDC meeting) were discussed. We also discussed our input into the response to Kissinger's memo of February 12, 1969 (NSSM 20) asking that a new review group consisting of representatives of the Secretary of State; the Secretary of Defense; the Chairman, Joint Chiefs of Staff; the Chairman, AEC; the Director, CIA; the Assistant to the President for National Security Affairs; and the President's Science Advisor, under the chairmanship of the Director of the Arms Control and Disarmament Agency, study and forward suggestions for a full range of issues and proposals that might be presented to the forthcoming ENDC.

We received a follow-up memo from Budget Director Mayo dated February 18, 1969 (copy attached) addressed to Heads of Executive Departments and Agencies, describing in further detail the requirements for further reduction in Federal employment. This was a follow-up to President Nixon's memorandum of February 17, 1969 on this subject.

I received my first communication from Vice President Spiro T. Agnew today in a memorandum dated February 19, 1969. He wrote, "As Chairman of the National Council on Marine Resources and Engineering Development, I am pleased to invite you to the first meeting of the Council under this Administration which will be held from 9:30 to 11:30 a.m. on February 26 in the Cabinet Room, White House." He also sent a memo of the same date enclosing the report of the Commission on Marine Science Engineering and Resources (chaired by Julius A. Stratton) stating that the President has requested that the National Council on Marine Resources and Engineering Development, as the first order of business, review this document.

I read a February 18, 1969 letter from Charles Robbins, AIF, regarding reduction of deliveries of uranium and our planned increase of our nuclear fuel lease charge (copy attached).

We received a call from Robert H. Flemming, who is in charge of personnel procurement in the White House, asking that I proceed to procure Governor Breathitt's resignation as the Federal Representative to the Southern Interstate Nuclear Board. I called Breathitt later in the afternoon to tell him the White House wants him to submit his resignation and he said he would send it to me today, making it effective immediately. I then called Flemming to pass this information to him. I asked whether they have another candidate lined up for the appointment, and he said all he knew was that the Vice President asked him to see that Breathitt was removed. He asked what my thoughts are on the position and whether it is a political appointment. I said it doesn't have to be. I said Breathitt was chosen by President Johnson from a list of 2 or 3 names, but it didn't give me the impression of being highly political at the time. Flemming said he wanted to get my thoughts on how they might proceed. I suggested that we give it some thought at the AEC and come up with recommendations, which they can use, or not, as they wish. He said that would be fine.

I had lunch with Bill Perkins and Stan Schneider in the dining room.



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COPY NO. 2  
February 20, 1969

INFORMATION MEETING 879

9:50 a.m., Thursday, February 20, 1969, Chairman's Conference Room, D. C.

1. Executive Session Item
2. White House Request re Federal Representative to the SINB  
(Rubin-SECY)
3. Chairman's Testimony Before the Senate Armed Services Committee,  
Thursday, February 27, 1969 (Non-proliferation Treaty)  
  
A draft is requested. Commissioner Tape will accompany the Chairman.  
(AGM-AGMMA)
4. Chairman's February 18 Testimony Before the Senate Foreign Relations  
Committee (Non-proliferation Treaty)
5. Invitation to the Commissioners to Attend the National Coal Policy  
Conference, Inc., Luncheon and Dinner, March 11, 1969  
  
Commissioners Johnson and Costagliola will plan to attend. (IP-SECY)
6. Commissioners' Meeting with the AIF, May 23, 1969  
  
The Chairman noted he has a calendar conflict. (Rubin-SECY)

7. AIF Executive Conference, March 12 and 13, 1969, Palm Springs, California  
Commissioner Johnson plans to attend. (SECY)
8. Marine Resources Council Meeting, 9:30 a.m., Wednesday, February 26, 1969  
The Chairman and Commissioner Tape plan to attend. (SECY)
9. Commissioner Costagliola's Report on His February 18 Trip to Dresden Nuclear Power Plant and February 19 Trip to Babcock and Wilcox Facilities
10. February 17 Memorandum from President Nixon re Overstaffing Within Government Agencies and BOB Director Mayo's February 18 Letter to the Chairman  
The General Manager plans a presentation to the Commission. (EAGM)
11. AEC 459/64 - Solicitation of Industry Comments on Uranium Enrichment Activities  
Distributed today for consideration on Wednesday, February 26, 1969. (SECY)
12. Agenda for the Week of February 24, 1969  
Approved. (SECY)
13. AEC 1283/43 - FY 1970 Budget Amendments  
A revised letter is requested for signature and transmittal today. (OC-Rubin)
14. AEC 580/296 - Effect of Fissionable Materials Production Cutoff on Weapons Stockpile (See also AEC 580/297 - Supplement to AEC 580/296)  
Noted for distribution to the Working Group Members. (SAD)
15. AEC 1282/36 - Execution Data for a Portion of BOWLINE III Events  
Approved. The question of test level will be discussed with Mr. Mike May next week. (AGMMA-SECY)

16. AEC 1043/12 - AECL Request for Assistance with Glace Bay Plant

Approved. The Joint Committee is to be informed. (AGMIA-Congr.)  
The General Manager reported Mr. Lorne Gray, President of AECL,  
has agreed to Canadian payment for D<sub>2</sub>O prior to June 30, 1969.

17. AEC 1251/6 - International Nuclear Information System (INIS)

Approved. (AGMIA)

18. AEC 946/8 - Joint USAEC-JAEC Meeting

Commissioner Costagliola will inform the Japanese of the possibility of  
Commissioner attendance at a joint meeting.  
(AGMIA-Griffin-SECY)

19. Diversification at Richland - Proposed Letter to Battelle

Approved. (AGMO)

20. AEC 901/412 - Proposed Letter to Director, NBS, on Soviet Delegation  
Visit to ORNL

Noted. (AGMIA)

21. AEC 780/41 - William A. Jump Memorial Award - 1969

Noted. (PER)

22. Pending Contractual Matters Report No. 296

Noted. (PAR)

W. B. McCool  
Secretary

12:40 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Parks  
Mr. Rubin  
Mr. Kull  
Mr. Ryan  
Mr. McCool  
Mr. Schoenhaut\*  
Mr. Corso\*  
Gen. Giller\*  
Mr. Tesche\*  
Mr. Labowitz\*  
Mr. Clark\*  
Mr. Bloom\*  
Mr. Friedman\*  
Mr. Brunenkant\*  
Mr. Erlewine\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

EXECUTIVE OFFICE OF THE PRESIDENT  
BUREAU OF THE BUDGET  
WASHINGTON, D.C. 20503

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NOV 86

February 18, 1969

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

Pursuant to the President's memorandum of February 17, 1969, I am issuing these instructions concerning the orderly reduction of unnecessary civilian employment in the executive branch of the Government.

The employment limitations of section 201 of the Revenue and Expenditure Control Act (Public Law 90-364) do not apply to certain activities of some agencies, but the need to reduce excessive employment applies to all.

The head of each agency must ensure that he handles his available personnel vacancies in such a way as to increase his agency's productivity. To this end, he must reassign his work force from low priority activities to those of a higher priority. In such reassignment, emphasis should be placed on meeting needs involving health, safety, and human lives.

Reductions will be accomplished in an orderly fashion through attrition, rather than through the use of reduction-in-force techniques.

For the next three months, each agency head should have the objective to:

- Reduce full-time permanent employment from month to month, and
- Reduce part-time and temporary employment when compared to the same month of 1968.

I am confident our joint efforts will be successful in reducing personnel without involving an arbitrary formula more restrictive than the present law.

Employment reductions obtained through fixed formulas are often inefficient. I want to do everything possible to avoid such a system, which can unjustly penalize good management practices, inhibit proper recruiting, and cause employment to be reduced in the wrong places--

unnecessarily cutting more public services. Yet a restrictive formula approach may be necessary if our efforts do not produce satisfying results.

The Special Reports on Employment furnished under Bureau of the Budget Bulletin No. 68-15 will be used to monitor the trend of each agency's full-time permanent employment--whether covered by section 201 employment limitations or not. The extent to which this report shows a greater reduction in actual employment than required by the law will provide a yardstick to measure agency performance.

Excessive overtime and contracting-out procedures must not be used to circumvent the intent of these reductions, which is to manage our manpower resources more effectively, to reduce overhead, to phase down or eliminate low priority programs, and to reduce the size of staffs at the seat of Government, at regional and other field offices, and overseas.

The provisions of Bureau of the Budget Bulletin No. 68-15 remain in effect.



Robert P. Mayo  
Director

# ATOMIC INDUSTRIAL FORUM INC.

550 THIRD AVENUE • NEW YORK, N.Y. 10022 • PLAZA 4-1075

VICE PRESIDENT & EXECUTIVE MANAGER

February 18, 1969

The Honorable Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

1577 2/20/69

Dear Dr. Seaborg:

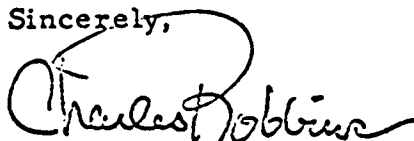
The Atomic Energy Commission recently announced that it would permit uranium producers under contract to supply the Commission with uranium to reduce the quantities they have agreed to deliver over the next two years. One incentive to reducing deliveries would be that it might provide one or more producers to sell the uranium to other buyers at a better price than that available under the AEC contract.

Because most private sales for delivery in 1969 and 1970 already have been made, the most likely incremental market over and above existing commitments would be to replace leased fuel via the in situ option available to utility operators of nuclear power reactors after December 31, 1970.

We understand that the Commission is considering increasing its fuel lease charge beyond 5-1/2%. If this change is imminent, and could be announced at an early date, it would perhaps encourage the exercise of the in situ option by the utility operator. If it is to prove of maximum help to the uranium supplier who is considering submitting a bid for a reduction in his uranium deliveries to the AEC, he should have the information as far in advance as possible of March 17, the deadline set by the AEC for the submission of delivery reduction bids.

I would appreciate your consideration of this suggestion.

Sincerely,



Charles Robbins

CR:MB



The Commissioners and staff worked on the follow-up response, supplementary to the response of February 10, to Budget Director Mayo's letter of January 23, requesting our supplementary FY 1970 budget proposals. The letter (copy attached), which I sent today, put the \$20 million for the additional Plowshare effort in as a definite amendment to the FY 1970 budget, and was partially offset by a recommended reduction of \$13 million in the weapons testing budget. Otherwise, the policy items identified in our letter of February 10 were mentioned as desirable additions but not of high enough priority to warrant compensating cuts. We also pointed out the possibility that, if there is a slippage in the time for the ABM program in view of the current Administration's review, this might lead to a saving of as much as \$33 million in new obligational authority.

I sent a letter (copy attached) to President Nixon forwarding the proposed amendment to the Agreement for Cooperation between the Government of the United States and the Government of Iran Concerning Civil Uses of Atomic Energy. I also sent a similar letter to Mr. Ellsworth in connection with my submission of the above mentioned letter to the President. Both letters described in some detail the whole background of our bilateral agreements and the steps involved in their negotiation, approval and execution. This was done in order to acquaint the new Administration with the history and procedures involved in this rather complex field.

I sent a memo to Dr. Kissinger in response to National Security Decision Memorandum (NSDM) 5 dated February 3, 1969, suggesting the restoration of a number of National Security Action memoranda to the list of those remaining in effect; these had been dropped from the list given in NSDM 5 in an attempt to remove those no longer necessary. The ones I identified are still of importance and should remain in effect. The new Administration has changed the name of the National Security Action Memorandum (NSAM) to National Security Decision Memorandum (NSDM).

Norman Ramsey called me to say he has decided to turn down the offer of a commissionership. He suggested J. C. Street, Bob Bacher and Charles Slichter as possibilities.

Friday, February 21, 1969 - (HOLIDAY)

I spent the morning working at home largely in order to give my office staff a day off. I read a number of AEC papers and studied with especial care the staff paper that will form the basis for the solicitation of industry comments on uranium enrichment activities (AEC 459/64). Charles Robbins of the Atomic Industrial forum returned my call of yesterday at 9:15 a.m. I told him that I had developed a conflict that would make it impossible for me to attend the meeting scheduled between members of the Atomic Energy Commission and the Board of Directors of the Atomic Industrial Forum at Airlie House on May 23. I suggested that perhaps he would want to go ahead with the meeting anyway, but he immediately said he would prefer to change the date so that I could attend. He indicated that a date a week or two in either direction would be all right and that it wouldn't necessarily have to be on a Monday or Friday. I said that I would talk to my fellow Commissioners and we would try to set a date very soon.

UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

FEB 20 1969

ENCL. BY DOE  
NOV 86

Honorable Robert P. Mayo  
Director, Bureau of the Budget

Dear Mr. Mayo:

On February 10, 1969, the Commission transmitted to you proposed amendments to its FY 1970 budget, in response to your letter of January 23, 1969. However, we have been giving further consideration to our program and budget outlook for FY 1970, with particular focus on how the policy items mentioned in our letter fit into our formal budget pattern. You will recall that in addition to the budget amendments set forth in the tabular material attached to our letter, the Commission identified four items of a policy nature which, in the event of affirmative decisions, would have a sizeable impact on our FY 1970 budget. Three of these items related to military programs and one, the plowshare excavation program, related to the civilian activities of the Commission.

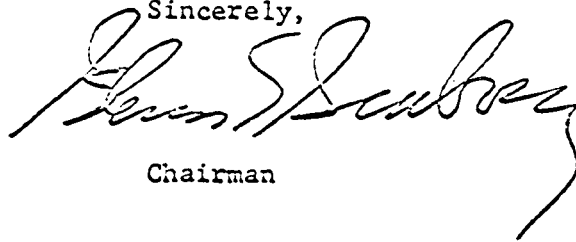
With respect to the plowshare program, we believe that the increased funding for this item should be handled as a budget amendment. Treated in this fashion, our proposed increases to the FY 1970 budget, including those listed in our letter of February 10, amount to \$59,950,000 in NOA and \$43,450,000 in expenditures. Our letter of February 10 identified partially offsetting decreases amounting to \$23,000,000 in NOA and \$5,400,000 in expenditures. We are proposing a further decrease associated with the weapons supplemental test site program amounting to \$13,300,000 in NOA and \$10,000,000 in expenditures. The proposed budget amendments are set forth in an enclosure to this letter.

Of the three policy items of a military nature, one was of a contingent character, in that it related to weapons production (WALLEYE emergency capability and prescribed action links for the MARK 61 Bomb) and would have a budgetary impact only in the event we received firm requirements from the Department of Defense. The other two items, i.e., full operation of both K reactors at Hanford and the attainment of a high altitude weapon test readiness capability represent activities which the Commission believes should be undertaken. In connection with the high altitude weapon test readiness program, in keeping with past practice, the Commission will be communicating separately with the President. In any event the Commission does not believe further reductions can be made in its budget to finance these items.

If the above policy items are approved, the Commission would recommend that the total budget be increased. However, there are pending DOD decisions that could have significant impact on the Commission's activities and related funding. For example, there would result a further reduction in the Commission's FY 1970 budget of \$33,200,000 in NOA and \$25,200,000 in expenditures in the event that deployment of the thin ABM system is deferred by one year.

We would welcome an opportunity to sit down with you and discuss our views more explicitly. We are confident that such a meeting would be of mutual benefit.

Sincerely,

A handwritten signature in cursive script, appearing to read "Philip S. Dabney". The signature is written in dark ink and is positioned below the word "Sincerely,".

Chairman

Enclosure:  
Proposed Budget  
Modifications

Summary - 1970 Budget Revisions  
Operating Expenses, AEC  
 Analysis of Obligations and Budget Authority  
 (In Thousands of Dollars)

| <u>Program by activities:</u>                     | <u>Budget Estimate</u> | <u>Recommended Change</u> | <u>Amended Estimate</u> |
|---|------------------------|---------------------------|-------------------------|
| Special nuclear materials .....                   | \$ 319,260             | \$ -2,400                 | \$ 316,860              |
| Weapons .....                                     | 828,700                | 12,800                    | 841,500                 |
| Reactor development .....                         | 462,095                | 2,000                     | 464,095                 |
| Civilian applications of nuclear explosives ..... | 14,000                 | 15,150                    | 29,150                  |
| Other programs unchanged .....                    | <u>610,192</u>         | <u>-</u>                  | <u>610,192</u>          |
| Total program costs .....                         | 2,234,247              | 27,550                    | 2,261,797               |
| Change in selected resources .....                | <u>13,378</u>          | <u>-550</u>               | <u>12,828</u>           |
| Total obligations .....                           | 2,247,625              | 27,000                    | 2,274,625               |
| Financing of obligations .....                    | <u>-210,125</u>        | <u>-</u>                  | <u>-210,125</u>         |
| Budget Authority - NOA .....                      | <u>\$2,037,500</u>     | <u>\$ 27,000</u>          | <u>\$2,064,500</u>      |

Relation of Obligations to Outlays

|                                      |                    |                  |                    |
|--------------------------------------|--------------------|------------------|--------------------|
| Obligations incurred, net .....      | 2,093,940          | 27,000           | 2,120,940          |
| Obligated balance, start of year ... | 1,004,231          | -                | 1,004,231          |
| Obligated balance, end of year (-) . | <u>-1,010,171</u>  | <u>550</u>       | <u>-1,009,621</u>  |
| Outlays - Expenditures .....         | <u>\$2,088,000</u> | <u>\$ 27,550</u> | <u>\$2,115,550</u> |

Plant and Capital Equipment  
Analysis of Obligations and Budget Authority

|   |                   |                  |                   |
|---|-------------------|------------------|-------------------|
| Facilities and equipment for --                     |                   |                  |                   |
| Physical Research .....                             | 141,180           | -3,350           | 137,830           |
| Items not changed .....                             | <u>259,455</u>    | <u>-</u>         | <u>259,455</u>    |
| *Total obligations and budget authority - NOA ..... | <u>\$ 400,635</u> | <u>\$ -3,350</u> | <u>\$ 397,285</u> |

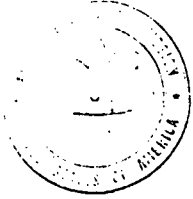
Relation of Obligations to Outlays

|                                      |                   |               |                   |
|--------------------------------------|-------------------|---------------|-------------------|
| Obligations incurred, net .....      | 400,635           | -3,350        | 397,285           |
| Obligated balance, start of year ... | 603,170           | -             | 603,170           |
| Obligated balance, end of year (-).. | <u>-520,805</u>   | <u>3,850</u>  | <u>-516,955</u>   |
| Outlays - Expenditures .....         | <u>\$ 483,000</u> | <u>\$ 500</u> | <u>\$ 483,500</u> |

ANALYSIS OF BUDGET AUTHORITY AND OUTLAYS  
(In Thousands of Dollars)

U. S. ATOMIC ENERGY COMMISSION

| <u>Account and functional code</u>         |              | <u>1968</u><br>Enacted | <u>1969</u><br>Estimate | <u>1970</u><br>Estimate | <u>Increase or</u><br><u>Decrease</u> |
|--|--------------|------------------------|-------------------------|-------------------------|---------------------------------------|
| <u>FEDERAL FUNDS</u>                       |              |                        |                         |                         |                                       |
| <u>General and special funds:</u>          |              |                        |                         |                         |                                       |
| Operating Expenses..058                    | NOA          | 2,139,992              | 2,109,270               | 2,037,500               | -71,770                               |
|  | Revised NOA  | -                      | -                       | 2,064,500               | -44,770                               |
|  | Exp.         | 2,136,222              | 2,075,000               | 2,088,000               | 13,000                                |
|  | Revised Exp. | -                      | -                       | 2,115,550               | 40,550                                |
| <u>Plant and Capital</u>                   |              |                        |                         |                         |                                       |
| Equipment .....058                         | NOA          | 369,133                | 461,574                 | 400,635                 | -60,939                               |
|  | Revised NOA  | -                      | -                       | 397,285                 | -64,289                               |
|  | Exp.         | 328,438                | 376,400                 | 483,000                 | 106,600                               |
|  | Revised Exp. | -                      | -                       | 483,500                 | 107,100                               |
| <u>Incremental funds:</u>                  |              |                        |                         |                         |                                       |
| Advances and reimburse-<br>ments ..... 058 | Exp.         | <u>1,879</u>           | <u>-</u>                | <u>-</u>                | <u>-</u>                              |
| <u>Subtotal Federal funds</u>              |              |                        |                         |                         |                                       |
|  | NOA          | 2,509,125              | 2,570,844               | 2,438,135               | -132,709                              |
|  | Revised NOA  | -                      | -                       | 2,461,785               | -109,059                              |
|  | Exp.         | 2,466,589              | 2,451,400               | 2,571,000               | 119,600                               |
|  | Revised Exp. | -                      | -                       | 2,599,050               | 147,650                               |



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DC  
NOV 86

The President  
The White House

Dear Mr. President:

Knowing of your deep interest in furthering the peaceful uses of nuclear energy, I am pleased to enclose for your consideration a proposed amendment to the "Agreement for Cooperation Between the Government of the United States of America and the Government of Iran Concerning Civil Uses of Atomic Energy."

In submitting to you for the first time an action relating to our program of Agreements for Cooperation, I should like to note that other such submissions will be forwarded to you from time to time pursuant to Section 123a of the Atomic Energy Act of 1954. Some, as in the case of the agreement with Iran, will pertain to cooperation in the research aspects of nuclear energy; others will include not only research but power applications as well and will provide for the supply of uranium enriched in U-235 to fuel power reactors over periods of up to thirty years. The purpose of these agreements will be to extend and develop, on a peaceful basis, the humanitarian and economic benefits of scientific and technological advances in nuclear energy. They will also serve to help keep the United States in the forefront of international developments of both an economic and scientific nature in the peaceful applications of atomic energy.

The Atomic Energy Commission recommends that you approve the proposed amendment to the "Agreement for Cooperation Between the Government of the United States of America and the Government of Iran Concerning Civil Uses of Atomic Energy," determine that its performance will promote and will not constitute an unreasonable risk to the common defense and security, and authorize its execution. The Department of State supports the Commission's recommendation.

The proposed amendment has been negotiated by the Department of State and the Atomic Energy Commission pursuant to the Atomic Energy Act of 1954, as amended. It would revise and extend the Agreement for Cooperation between the United States of America and Iran which was signed at Washington on March 5, 1957, as amended by the agreement signed on June 8, 1964.

The present agreement is scheduled to expire on April 26, 1969. Accordingly, the main purpose of the amendment is to extend the agreement; an additional period of ten years would be established pursuant to proposed Article VI.

In extending the agreement, the opportunity has been taken to bring other aspects of the agreement up to date. As regularly reflected in other recent amendments and agreements, changes have been occasioned by the 1964 "private ownership" legislation. Pursuant to proposed Article II, therefore, authorized persons in either the United States or Iran would be permitted to make arrangements directly with authorized persons in the other country to transfer special nuclear material; such transactions would also be permitted between either government and authorized persons under the jurisdiction of the other.

The other articles of the amendment would update the aspects of the current agreement as noted below.

Article I of the amendment would modify the fuel article, Article IV of the agreement, to (a) permit fueling of reactor experiments in addition to research reactors; (b) discontinue the obsolete requirement that title to enriched uranium, purchased from the Commission, be retained by the Government of Iran until such time as private users in the United States are permitted to acquire title to such material; and (c) discontinue the present option of the United States to retain special nuclear material produced in U.S.-origin leased material, following reprocessing, and to purchase special nuclear material produced in U.S.-origin material which Iran acquired by means other than lease. The United States, however, would have the right to approve transfers of such produced special nuclear material from Iran to any other nation or group of nations. The formulation governing the quantity of material, which may be transferred

under Article IV of the current agreement, would be retained under the amended article. Also, the authority to provide this material enriched to greater than 20% in the isotope U-235 would be continued, subject to a finding of technical or economic justification for such enrichment.

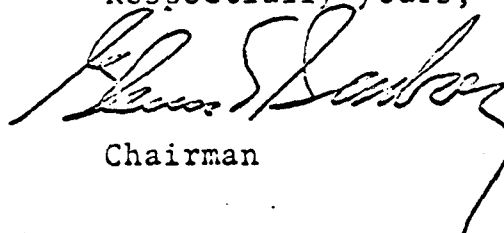
Article III would bring the present comprehensive safeguards article, Article VIII, into conformity with the similar provision in current agreements and incorporate changes in cross-references necessitated by the new fuel article. At Iran's request, proposed Article III would also amend the safeguards article to make the present U.S. right to consult with Iran on health and safety matters a mutual right.

Article IV would expressly extend Iran's "peaceful uses" guarantee in the present Article IX to cover special nuclear material produced through the use of material, equipment and devices transferred under the agreement.

Article V would update the article providing for the transfer of safeguards responsibilities to the International Atomic Energy Agency [Article IX(A)] to reflect that such a transfer has been accomplished under a trilateral safeguards agreement signed in 1964 and to provide for the continued application of safeguards by the Agency.

Following your approval, determination, and authorization, the proposed amendment will be formally executed by appropriate authorities of the Government of the United States of America and the Government of Iran. In compliance with Section 123c of the Atomic Energy Act of 1954, as amended, the amendment will be placed before the Joint Committee on Atomic Energy.

Respectfully yours,



Chairman

Enclosure:

Proposed Amendment to Agreement  
for Cooperation Between the  
Government of the United States  
of America and the Government of  
Iran (3)



Robbins then went on to talk about the forthcoming appearance of Sheldon Novick on the Today show next Thursday, February 27, to discuss his book, The Careless Atom, and wondered whether I could suggest someone who might appear with him, or on a subsequent show, in order to counterbalance what will obviously be a biased report. I mentioned to him the review of Novick's book that had been written by Clark Goodman for the Houston Post and suggested that this might be used for distribution as an answer to Novick and that Goodman might be the man to appear on the Today show as a balancing influence to Novick's appearance. Robbins said he would get in touch with Goodman. (Actually Novick appeared on the show on Monday, February 24, so it wasn't possible to arrange an appearance of another person; Novick's statements were not too devastating although he said the fast breeder reactors offered the potential for explosions.)

I mentioned to Robbins that I had read his letter of February 18, 1969, in which he suggested that, as an incentive to reducing deliveries to the AEC of uranium (as we are suggesting in connection with our FY 1970 budget), we might make an early announcement of our increase of fuel lease charge (if it is our intention to increase it). If we do this, the utilities might be encouraged to replace leased fuel with uranium via the in situ option, thus encouraging mine operators to sell their uranium to the utilities. I said that we would let him know as soon as we make a decision to increase our lease charge.

Immediately after Robbins' call I had a call from Dayton E. Carritt of Nova University advising me that Nova is considering acquiring a research reactor in order to interest Glen Gordon in accepting a position with them. I told him that the Government no longer has a program for assisting in the acquisition of such reactors by universities but that he might call Paul McDaniel in order to ascertain the best places for them to be purchased. He said that Glen Gordon is also considering accepting offers at the University of Rhode Island and the University of Maryland.

At 4:35 p.m. I had a call from Earl Ewald, President of the Northern States Power Company. He said he had just returned from a luncheon meeting with the Mayors of Minneapolis and St. Paul who are quite excited as a result of the charges by a group of the University of Minnesota faculty that the discharges from their Monticello nuclear power plant will result in unsafe levels of tritium in the Mississippi River. Two of the accusers are Dean Abramson, an assistant professor of anatomy, and Charles W. Huver, an associate professor of zoology. (The reactor at Monticello is a General Electric boiling water with a power level of 500 MW.)

The Abramson-Huver group would like a large mass meeting to discuss this so-called problem. Ewald is trying to counter this by arranging a quiet meeting next Wednesday evening at St. Thomas College at which the two mayors, four members of the Abramson-Huver group and Ewald and four of his people would participate. He would like to include one representative of the Atomic Energy Commission to defend its point of view. I said that I would get in touch with him with a response to this request as soon as possible. (Later we learned the meeting was postponed.)

In the afternoon I took a long hike in Rock Creek Park with Eric and Suki. We explored a number of new trails such as cross trails 8 and 9 or the bridle paths and a number of footpaths that we hadn't found before.

In the evening Helen and I went to dinner at the Ted Sherburnes, 3110 Hawthorne Street, N.W. Another couple was present, Mr. and Mrs. David Challinor. He is the Director of the Office of International Activities at the Smithsonian Institution.

Saturday, February 22, 1969 - D.C.

I received NSSM, dated February 20, 1969, from Dr. Kissinger (copy attached) directing that a study be prepared on the relationship of the Cape Keraudren project to the Limited Test Ban Treaty and the various options by which we might proceed with the project. The study is to be prepared by an ad hoc NSC group under the chairmanship of a representative of the Secretary of State, with representatives of the Secretary of Defense, Chairman of the Atomic Energy Commission, Director of the Arms Control and Disarmament Agency, Director of Central Intelligence, Assistant to the President for National Security Affairs, and the President's Science Adviser, and should be forwarded to the NSC Review Group by March 17, 1969.

I sent a letter to Johnny Foster informing him that the AEC has decided that the backup work for the Spartan nuclear warhead at Los Alamos is no longer required due to the excellent progress of the mainline effort at the Livermore Laboratory.

I received a memo from Dwight Chapin, the President's Appointments Secretary, advising us that President Nixon would probably visit at Germantown Headquarters on March 13.

I called Gerard Smith (Director, ACDA) to make an informal suggestion regarding the forthcoming ENDC meeting which, if he thought well of, he might utilize as a suggestion originating from his agency, and, if he didn't like it, he could forget it. The suggestion was that rather than again going into a protracted and largely barren exercise in oratory concerning past proposals, some of which may have become infeasible with the passage of time, they should recognize that the new Administration has the first opportunity in many years to break that pattern. They might take the public position at the opening of the forthcoming session of the ENDC that it will not be our intent at each ENDC to restate previous proposals made by the U.S., but we intend to address only those previous U.S. proposals, and those by others, which we realistically believe are right for serious negotiation in the ENDC. We would make it clear that our failure to address any specific proposal of our own or of others is not intended to convey a lack of interest in that proposal and should not be so interpreted. Our intention would rather be portrayed as an indication of our desire to reduce the necessity to indulge in rhetorical mutual recriminations resulting from the ritualistic introduction by one party of proposals concerning which another party has made clear that there is not a sufficient area of agreement or interest. At the same time that the foregoing attitude is expressed, the U.S. representative can give some indication that U.S.-USSR bilateral talks could play a role in resolving issues which have stood in the way of previous proposals aimed indirectly at the objective to which the bilateral talks are directly aimed. Smith said this proposal was worth considering, and I said that I would write it up and give it to him for informal use in whatever manner he wished.

Julie and I went over to the Pot-O'-Gold for lunch.

NATIONAL SECURITY COUNCIL  
WASHINGTON, D.C. 20506

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February 20, 1969

National Security Study Memorandum 25

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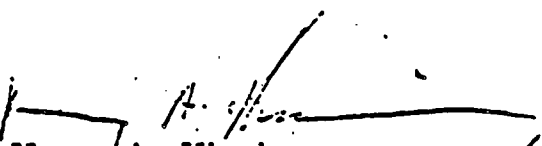
TO:           The Secretary of State  
              The Secretary of Defense  
              ✓ The Chairman, Atomic Energy Commission  
              The Director, Arms Control and Disarmament Agency  
              The Director of Central Intelligence  
              The President's Science Adviser

SUBJECT: Cape Keraudren Nuclear Excavation Project  
          and the Limited Test Ban Treaty

The President has directed that a study be prepared on the relationship of the Cape Keraudren nuclear excavation project to the Limited Test Ban Treaty and the various options by which we might proceed with the project.

The study should be prepared by an ad hoc NSC group under the chairmanship of a representative of the Secretary of State, with representatives of the Secretary of Defense, Chairman of the Atomic Energy Commission, Director of the Arms Control and Disarmament Agency, Director of Central Intelligence, Assistant to the President for National Security Affairs, and the President's Science Adviser.

The study should be forwarded to the National Security Council Review Group by March 17, 1969.

  
Henry A. Kissinger

After I returned to the office I had a call from John Rasmussen who said the FAS would like to have me, Robert McNamara and possibly Senator Ted Kennedy (or Senator George McGovern) talk generally at a symposium (mentioned in his letter to me of February 13) on the prospects for closing the gaps between the rich and the poor areas of the world in response to Charles Snow and in support of Sakharov's statement. They are thinking of having the symposium at the time of the American Physical Society meeting in New York in April. He said the best night would be Monday, April 28, the alternative being Sunday, April 27. He said FAS people in the Boston area could contact Senator Kennedy, and we decided that I would call McNamara in the next two or three days and then Rasmussen could follow that up with a call to McNamara at the end of the week.

I told him it might not be easy to get McNamara on such short notice, and in fact it is very short notice for me, and I am not sure I could work something up of which I could be proud on that time scale. I said, if we don't get McNamara now, we might get him for a later date. He said it might be possible to hold the symposium in conjunction with the AAAS fall meeting in Boston. He said it would be their hope that these talks could be included with a series of articles that Jack Hollander is putting together for the Bulletin of Atomic Scientists along the general theme of responding to the ideas raised in the Sakharov document.

Rasmussen told me that he has decided to leave Berkeley and will stay on at Yale. This is a great loss to Berkeley.

In the afternoon Helen and I attended a song recital given by Dianne's Girl Scout Troop #1971 in the auditorium of the Blessed Sacrament School; Dianne participated in the recital.

I then took a hike in Rock Creek Park with Eric and Suki. We started at the corner of Oregon and Nebraska Avenues and hiked along the White Horse Trail, Cross Trail No. 2, the Black Horse Trail and then back to our starting point.

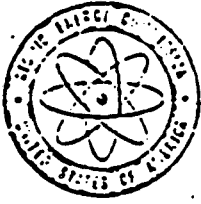
I worked on my talk "The Atom's Expanding Role in the Medical World" to be given at Livermore Laboratory on March 6.

#### Sunday, February 23, 1969

A great deal of my day was spent working on various speeches I will be giving--"The Heritage of Albert A. Michelson" at the Naval Academy on May 10; "Nuclear Power - A New Overview" at the meeting of the Southeastern Electric Exchange in Boca Raton, Florida, on March 25; my remarks for the Science Talent Search Banquet on March 3; "Science Teachers in a Changing World" at the science building dedication at Indiana State University on April 16. I also worked on my article, "The Potential of Science Now and in the 21st Century" to be published in Rehovoth Magazine. I started work on a possible speech, "A Scientist in Washington" that might be available for an appropriate occasion.

#### Monday, February 24, 1969 - Germantown

I presided at 9:55 a.m. at Information Meeting 880 (notes attached) and



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

OFFICE DIARY  
GLENN T. SEABORG  
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COPY NO. \_\_\_\_\_  
February 24, 1969

INFORMATION MEETING 880

9:55 a. m. , Monday, February 24, 1969, Room A-458, Germantown Headquarters

1. President Nixon's Visit to AEC Headquarters, Germantown

The Chairman said the visit is tentatively scheduled for March 13, 1969.  
(Rubin-AGM-SECY)

2. Commissioners' Meeting with General Electric Officials to Discuss Plans for the Fast Breeder Program, 10:00 a. m. , March 27, 1969

Scheduled. The Commissioners requested staff recommendations on criteria for siting of breeder demonstration plants. (Rubin-AGMR-ADRA-SEC)

3. Commissioners' May 1969 All Day Meeting with the Atomic Industrial Forum

The Chairman said he had mentioned his calendar conflict to Mr. Robbins who suggested an alternative date. We will reschedule after discussion with him. (Rubin-SECY)

4. Appearance of Mr. Sheldon Novick, Author of "The Careless Atom" on the Today Show, Thursday, February 27, 1969

The Chairman said Mr. Charles Robbins, AIF, had called to ask if we could suggest someone to respond to Mr. Novick's expected statements. The Commissioners suggested Messrs. Clark Goodman, Carroll Zabel, and Congressman Chet Holifield as possibilities. (Rubin-SECY)

BY AUTHORITY OF DOE/OC

Reviewed by *Carroll Zabel* 11/17/87  
DATE

5. Telephone Call from Mr. Earl Ewald, Northern States Power Company, re March 5 Meeting at St. Thomas College to Discuss Monticello Plant Discharges

The Chairman noted Mr. Ewald's request for an AEC representative to be present and the Commissioners agreed the request should be accommodated. (ADRA)

6. February 3 Letter to the Chairman from Dr. Ernest J. Sternglass and the Chairman's February 20 Response re "Infant and Fetal Mortality Increase in the U.S. : Evidence for Correlation with Nuclear Weapons Test"

Circulated for the Commissioners' information. (SECY)

7. Commissioner Ramey's February 17 Meeting with Professor Carlos Salvetti in Rome

Commissioner Ramey reported the following items were discussed:

- a. Fuel for the Italian Nuclear Ship
- b. Request for a Commissioner to attend the March 20-21 Meeting in Rome  
(Commissioner Costagliola will plan to attend.)

(Ryan-Griffin-SECY)

8. March 20, 1969, Dedication of the General Electric Fuel Fabrication Plant, Wilmington, North Carolina

Commissioner Johnson will plan to attend. (Helfrich-SECY)

9. Discussions with the UK re Gas Centrifuge

Commissioner Tape reported plans are underway for him and staff to open the discussions in London on March 2-3, 1969. (AGM-Rosen-SECY)

10. US-UK Exchange of Materials

Commissioner Tape will discuss with the British in London. (Rosen)

11. USSR Interest in Plowshare Technical Discussions

Commissioner Tape reported Mr. I. D. Morokhov, Deputy Chairman of the State Committee on Atomic Energy, had raised this matter in Vienna.

12. Meeting with Chairman Chet Holifield to Discuss UK Gas Centrifuge Interests, 4:00 p.m., Tuesday, February 25, 1969

The Chairman, Commissioners Ramey, Tape, and Johnson and Mr. Hollingsworth and Mr. Brown will attend. (AGM)

13. February 20, 1969, National Security Study Memorandum 25 re Cape Keraudren Nuclear Excavation Project and the Limited Test Ban Treaty

Commissioner Tape will represent the Commission. (Rosen-AGMIA-PNE)

14. February 12, 1969, National Security Study Memorandum re U. S. Policy in the ENDC

The Chairman noted relaxation of the deadline for receipt of the Study. // ?

15. February 10 Memorandum re Uranium Mining Requirements and Uranium and Thorium Costs for Advanced 30 Year Life 1000 MWe PWR and LWBR Plants

Circulated by Commissioner Johnson. (SECY)

16. February 18 Letter from Charles Robbins, AIF, re Pricing of Uranium

The Press Release on the Fuel Lease Charge will be issued today with advance notice to the Joint Committee. (PI-Congr. -SECY)

17. AEC 1130/52 - Draft Letter to the President re Test Readiness Program

Approved with revisions. (AGMMA-Rubin)

18. AEC 1044/23 - NTS Visitor Policy

Approved with revisions. (AGMMA-PI)

19. Joint AEC-MLC Conference

An April 21, 1969, Meeting is suggested. (SECY)

20. Ceremony at Weston, Illinois

The May 5, 1969, date is to be checked. (Rubin)

21. AEC 1285/4 - Agreement for Cooperation with Finland

Approved. (AGMIA)

22. AEC 194/71 - National Lead Reduction in Force

Staff may proceed. (P)

23. AEC 544/95 - Radiation Standards for Uranium Miners

Approved. (RM)

24. AEC 471/8 - Possible Leak of Official Information

An additional check is requested. (INS)

25. NTS Events (See General Giller's February 20 Memorandum)

Noted. (AGMMA)

26. February 28, 1969, Apollo 9 Launch

The Commissioners will not be able to attend. I will check the Apollo 11 launch window. (SECY)

W. B. McCool  
Secretary

11:40 a. m.



PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Hennessey  
Mr. Schoenhaut  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Gen. Giller\*  
Mr. Harris\*  
Mr. Erlewine\*  
Mr. Quinn\*  
Mr. Faulkner\*

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Commissioners'  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

announced that President Nixon is tentatively scheduled to visit Germantown Headquarters on March 13, 1969.

Following the Information Meeting I went with the other Commissioners down to the Commission meeting room to see the special display of models and pictures of nuclear weapons. This is the display that will be shown Secretary of Defense Melvin Laird and some of his assistants at the Pentagon tomorrow; they will also possibly be shown to President Nixon during his forthcoming visit.

I had lunch in the cafeteria with Justin Bloom and Julie Rubin.

I signed my first letter to Robert Finch in his capacity as Secretary of the Department of Health, Education and Welfare asking that the AEC be joined in Department conducted administration proceedings required by the Civil Rights Act to enable the AEC to make a final decision as to the eligibility of certain school systems for Title VI assistance from The AEC. This involves three school systems in Arkansas which are suspected of non-compliance and for which hearings will be conducted.

I received a letter from Robert Ellsworth, Assistant to the President, asking that I send routinely to his office all significant press releases and advance notices of important events in order that he will be informed of the activities of this agency (copy attached).

Tuesday, February 25, 1969 - Bethesda and D.C.

I presided at 9:35 a.m. over Regulatory Information Meeting 330 at the Bethesda headquarters (notes attached). One of the policy items discussed was the matter of providing that backfitting of production and utilization facilities will be imposed only when the Regulatory staff can meet the burden of showing that the backfitting will provide appreciable, additional protection which is required for the public health and safety or the common defense and security. This policy will be announced in the Federal Register as 10 CFR Parts 2 and 50. We decided that the Director of Regulation and the General Manager should get together in order to provide a suggested policy regarding the use of AEC people as advisers in public and private meetings involving disputed cases concerning power reactor siting, etc. We decided we would suggest to the ACRS the names of Jack A. Kyger and Hibbert M. Hill as candidates for membership on the Committee.

I also presided at 10:30 a.m. over the Regulatory Meeting 272 (action summary attached) at Bethesda. We were briefed by Peter Morris of the Division of Reactor Licensing on the status of reactor licensing, by Dave Low and Bob Engelken on the problems that have been encountered by the Division of Compliance in the course of reactor construction and by Ed Case on the status of development of criteria standards and codes. We were so impressed by the many examples of problems for which the Division of Compliance has been forced to request remedial measures to be put in effect by the suppliers of the reactors, the architect-engineers and the utilities, that we decided these groups should also receive the same briefing we did.

I sent copies of my letters of February 10 and 20 to Budget Director Mayo to Lee DuBridge so he would be informed of our budget problems.

THE WHITE HOUSE

WASHINGTON

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NOV 86

February 19, 1969

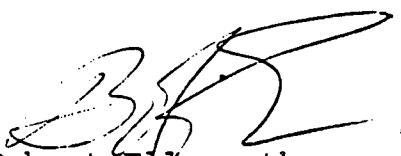
Dear Mr. Chairman:

One important factor in keeping my office informed of the activities of your agency is the press releases from your Public Information Office or its equivalent.

Would you please send routinely all significant releases as well as advance notices of important events to my office. Copies should also be sent to Mr. DuBridge.

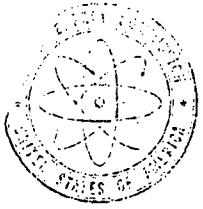
Mr. Herbert G. Klein, Director of Communications for the Executive Branch, may already have contacted your agency about keeping his office independently informed of public releases. If he has not, you should contact him to make appropriate arrangements.

Sincerely,



Robert Ellsworth  
Assistant to the President

Honorable Glenn T. Seaborg  
Chairman  
Atomic Energy Commission  
Washington, D. C. 20545



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

February 25, 1969

REGULATORY INFORMATION MEETING 330

9:35 a.m., Tuesday, February 25, 1969, Room P-422, Bethesda

1. AEC-R 2/71 - Proposed Amendments to Parts 2 and 50 - Backfitting of Facilities; Elimination of Provisional Construction Permits and Provisional Operating Licenses

Mr. Price reported briefly on his discussions with the ACRS and said a revised paper will be issued for early Commission consideration.  
(ADRA-SECY)

2. Seismic Criteria

A staff paper is in preparation for early issuance. (ADRA-SECY)

3. Quality Assurance Criteria

A staff paper is in preparation for early issuance. (ADRA-SECY)

4. Mr. Price's Oral Report on the Jersey Central Power and Light Company (Oyster Creek 1), Docket No. 50-219

5. Dr. Beck's Oral Report on the Rotterdam Inspection Team Visit

6. Mr. Price's February 12 Memorandum re Extension of Expiration Date of Provisional Operating License, Power Reactor Development Company, DPR-9 (Docket No. 50-16)

Approved. (DRL)

7. Liquid Effluent Discharges from the Monticello Plant

8. Regulatory Staff Participation in Public Hearing by the Hampton Falls, New Hampshire Board of Selectmen

9. Ground Rules on AEC Staff Participation in Public Meetings re the Licensing and Operation of Nuclear Reactors

Staff views are requested. (AGMR-ADRA)

10. Agenda for Commissioners' Meeting with the Advisory Committee on Reactor Safeguards, 3:00 p.m., Thursday, March 6, 1969

Approved. (SECY)

11. Chairman's Comment on Mr. Sheldon Novick's Appearance on the Today Show, February 24, 1969

12. Nominees for the Advisory Committee on Reactor Safeguards

Approved. (SECY)

13. Tritium Spill from the Savannah River Plant

To be checked. (P)

W. B. McCool  
Secretary

10:25 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Price  
Mr. Beck  
Mr. Henderson  
Mr. Rubin  
Mr. Ryan  
Mr. Rosen  
Mr. Helfrich  
Mr. Yore  
Mr. Mann  
Mr. McCool  
Mr. Doan\*  
Mr. Morris\*  
Mr. Case\*

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Dir/Regulation  
General Manager  
General Counsel  
Secretary

\*Attendance by topic (s)

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

February 26, 1969

Approved \_\_\_\_\_

HLP

Date \_\_\_\_\_

H. L. Price, Director of Regulation

ACTION SUMMARY OF REGULATORY MEETING 272, TUESDAY, FEBRUARY 25, 1969,  
10:30 A.M., ROOM P-118, BETHESDA, MARYLAND

SECY:JFB

Commission Business

1. Briefing on Reactor Licensing Problems
2. Briefing on Identification of Problems During Reactor Construction

The Commission requested consideration be given to briefing representatives of the nuclear industry, including utilities, architect-engineers, and component manufacturers concerning problems identified during construction of nuclear power facilities. (ADRA)

3. Briefing on Status of Development of Criteria Standards and Codes

Approved: \_\_\_\_\_  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

I sent a letter to President Nixon calling his attention to the need for additional funds in the FY 1970 budget in order to implement our program of readiness to conduct atmospheric testing in the event the Soviets decide to violate the nuclear test ban treaty; these funds were not included in President Johnson's budget and the readiness to test issue was left as a major policy issue to be decided by the incoming administration.

Rubin and I arrived at the River Road entrance to the Pentagon about 12:45 p.m. going directly from Bethesda. We had lunch in the car and also reviewed some of the morning's mail. We proceeded to Secretary Melvin Laird's office with Carl Walske as an escort where we met the Secretary and Deputy Secretary of Defense David Packard. We then proceeded to Room 3C925 where we viewed the same display of nuclear weapons that we saw at Germantown yesterday. John Foster, Ed Giller and Colonel Robert Hixon, Laird's assistant, were also present.

We returned to Secretary Laird's office after the tour of the exhibit and, with just Laird, Packard, Rubin, Hixon, and me present, discussed a few important issues of current mutual interest. These included the matter of shutdown of the Hanford reactors, our underground test program, and the need for a policy decision whether to proceed with development and manufacture of small tactical nuclear weapons.

With regard to the Hanford plutonium reactors, I emphasized the need for an early decision. I said that we have a responsibility to the Richland community, and, therefore, the shutdown of two reactors now, which would leave only two operating, might have too drastic an effect. I reviewed the history of shutting down reactors from the original 9 at Hanford and 5 at Savannah River to the present status of 4 operating at Hanford and 3 at Savannah River. I said that there is a difference of opinion as to whether the plutonium is needed for weapons but that in any case the plutonium production would not be wasted as it could be produced at a cost (on an out-of-pocket cost basis) not very different from that for the production of plutonium in civilian power reactors for use eventually in the breeder reactor program. In answer to a question from Packard, I stated that it would cost \$10-12 million to keep one of the two reactors going and \$16 million to keep them both going. I suggested the best solution might be to shut down only the C reactor at this time and decide between now and next year whether the K reactor should be shut down.

On the underground test question, I reviewed the problem which has arisen as a result of the complaints concerning the high yield tests at the Nevada Test Site. These complaints were from the Hughes organization and from scientific and public groups. They have to do with the direct seismic effects, the delayed small seismic effects, the possibility of ground water contamination, and the venting of radioactivity. I mentioned that some of these problems will be surfaced soon when the Pitzer Panel report is released. I emphasized that these problems are so severe that they might lead to curtailment of the high yield tests in the future. In order to minimize the possible adverse effects, we are developing a test site in central Nevada and on Amchitka Island in the Aleutian chain in addition to that at Pahute Mesa. In answer to a specific question, I noted that an absolute minimum of four high yield tests are required to prove out the Spartan warhead, but we should be conducting as many as ten to fifteen high yield tests if the job were done properly.

The need for a policy decision on development of small nuclear tactical weapons appeared to be clearly understood by Laird and Packard and did not require any further elaboration. At this point, Secretary Laird raised a question about a story he heard up on the Hill about our losses of nuclear materials. I briefly reviewed the matter of the alleged diversion of enriched uranium to Israel by the executive of a nuclear fuel fabrication plant. Laird's reaction was that we should make every attempt to squelch this story and not have it result in any Congressional Report.

Rubin and I left the Pentagon at about 2:30 p.m. and returned immediately to the "H" Street office where I reviewed a few items in the current mail before leaving again for my 3:30 p.m. appointment with Attorney General Mitchell.

I saw John Lawrence and Cornelius Tobias in the lobby for a moment as I was leaving for my meeting with the Attorney General. They told me that they had seen John Totter, Paul McDaniel, and Congressman Craig Hosmer to describe their hope that \$100,000 be added to the FY 1970 budget in order to continue design work on the synchrotron that would be added to the improved HILAC to make it applicable for their medical experiments.

Howard Brown accompanied me to my meeting with the Attorney General. I informed Mr. Mitchell about the background of the case concerning alleged diversion to Israel of enriched uranium by an officer of a nuclear fuel fabrication corporation. Mitchell commented that he was aware of the case because President Nixon had telephoned him and FBI Director J. Edgar Hoover had also discussed the case with him. I described the complete background for the case and said that an alternate explanation that would account for the missing material is that the fuel fabrication corporation had passed along its losses from one job contract to the next in order to avoid paying for the losses as they occurred; thus, at a certain point, our inspectors caught up with them when a rather substantial amount of material was missing. I said that there is no proof that the material has been diverted to Israel and that it would be a mistake to prosecute and on the assumption that an adequate case could be made. I also asked permission, which must be granted by the Attorney General, to pass on the latest information (that is, the Presidential and FBI interest in the case) to the Joint Committee. Mitchell said that he would let us know whether the Department of Justice planned to prosecute and whether we might inform the Joint Committee of the turn of events.

On the way out of the Attorney General's office, I saw Robert Finch, Secretary of Health, Education and welfare. We talked briefly about the magnitude of his problems as Secretary and about the difficult situation with regard to student strikes at the University of California. He commented that he was rather glad that one of his last acts as a Regent was to cast the deciding vote for the appointment of Philip Lee as Chancellor of the San Francisco campus of the University of California. There had been much opposition to him from medical societies, etc.

Howard and I then went to the Hill to join Commissioners Ramey, Tape and Johnson and General Manager Hollingsworth at a meeting with JCAE Chairman Holifield, Vice Chairman Pastore, Senator Aiken, Congressman Hosmer, Ed Bauser and George Murphy. The meeting was held in the small meeting room just off the JCAE main hearing room. The purpose of the meeting was to discuss the question of the extent to which AEC Restricted Data will be incorporated in the U.K. gas centrifuge design information which is to be contributed by the



U.K. to the impending tripartite project (involving the United Kingdom, West Germany and the Netherlands) on the development of the gas centrifuge, a method for the enrichment of uranium-235. Although the other members of the group were quite relaxed, Holifield and especially Murphy and Bauser were quite concerned that Restricted Data obtained by the U.K. from the U.S. during our period of cooperation on the gas centrifuge (1961-1965) will be passed on by the U.K. to its tripartite partners.

Tape and I pointed out that the U.K. probably made so much progress since that time that it would be difficult to identify our five-year-old contributions and that there were advantages in terms of the U.K.'s becoming more involved in European integration and in preventing proliferation of nuclear weapons (which is inherent in a multi-nation arrangement); therefore, we shouldn't be unreasonable in our demands on the U.K. It was left that during his trip to England next week to discuss this with representatives of the U.K. Tape will try to identify, with their help, the information that the U.K. will pass on to its tripartite partners so that we can assure ourselves that no U.S. Restricted Data is involved.

The Senate Foreign Relations Committee approved today the Non-Proliferation Treaty by a vote of 14-0 with Senator Dodd voting "present." The Committee reported that they will consider further the question of whether under Article III the United States should give nuclear assistance in the peaceful uses of atomic energy to a country that did not adhere to the Treaty or would not place its nuclear activities under IAEA inspection. They will also give further consideration to whether Article VI obligates the United States to enter into arms control negotiations with the Soviet Union.

I signed letters today to Budget Director Mayo, JCAE Chairman Holifield and Secretary of State Rogers informing them that because of the large continuing increase in interest rates the Atomic Energy Commission has decided to raise the charge rate for special nuclear and other materials leased from the Commission from 5-1/2 percent to 6-1/2 percent per annum.

Wednesday, February 26, 1969 - D.C.

About 9:10 a.m. Jerry Tape and I went to the White House to attend a meeting of the National Council on Marine Resources and Engineering Development. Just prior to the start of the meeting Jerry and I discussed with Alexis Johnson and Herm Pollack the analysis of the relationship of the Limited Test Ban Treaty to the Australian Cape Keraudren Project, which was requested by NSDM dated February 20, 1969. Tape and I also pointed out to Johnson that the Soviets want to start the bilateral discussion on the technical aspects of Plowshare before the U.S. and USSR could agree on the role of the IAEA concerning Article V (peaceful uses of nuclear explosives) on the NPT. We urged Johnson to get both of these matters under way as soon as possible.

We were all sitting in our designated places in the Cabinet Room when Vice President Spiro Agnew entered at 9:30 a.m. We rose to greet him. Present at the table were Vice President Agnew, sitting in the chair usually occupied by the President at Cabinet meetings, Edward Wenk, Lee DuBridge, Robert Mayo, Lee Haworth (NSF), William H. Stewart (PHS, DHEW), John A. Volpe (Transportation), Russell E. Train (Interior), John H. Chaffee (Navy), Paul W. McCracken (Council of Economic Advisers), Alexis Johnson (State), Thomas O. Paine

(NASA), Rutherford Poats (AID), Dillon Ripley (Smithsonian), Rocco C. Siciliano (Commerce) and I. J. A. Stratton, Jerry Tape, Herman Pollack, Glenn Schweitzer, David Adams, and others were sitting in chairs around the wall. This was the first meeting of the Marine Council in the Nixon Administration, and it is interesting to note that the only continuing members (that is, heads of agencies) from the Johnson Administration were Paine, Haworth and I, all scientists.

Vice President Agnew opened the meeting by making a reference to the fact that this was his first meeting of the Marine Council. He pointed out that the Council has a statutory life of only four more months. He said that President Nixon gives high priority to its work and wants to move forward deliberately with its program. He said the work of the Council is very important because no single agency has overall responsibility in this field, and he intends to give it the attention it deserves.

He then called on Wenk who gave a very well organized slide talk on the responsibilities, scope and cognizance of the Council. He pointed out that the total budget in related Marine Council matters spread throughout the Federal Government is \$528 million for FY 1970. He then went on to discuss the present and future big business of offshore oil drilling; the importance of the continental shelf (which extends out to where the depth of the ocean is about 600 feet and is equivalent in area to about one-fourth of the land area of the earth); the status of the U.S. fishing industry, which is losing its relative position with respect to foreign fishing activities; the ocean-borne trade and the diminishing role of the U.S. Merchant Fleet; the Navy's role in national security; the potential oceanographic observation by spacecraft, and the role and magnitude of the worldwide oceanographic research fleet.

Vice President Agnew then called on Robert Packard of the State Department who spoke on the international legal regime for the seabed and the role of the U.N. He pointed out that there is a U.N. agreement whereby countries are entitled to the ocean's resources extending from their shores to a point where the ocean has a depth of about 200 meters or, in some cases, where resources are recoverable extending somewhat farther. He said that a number of nations, such as Canada, Italy, Germany, Japan, Peru, etc. do not adhere to this U.N. agreement. In order to make the cognizant group more manageable, there has been created a U.N. Seabeds Committee consisting of 42 nations. The U.S. is undecided about the best definition of the marine and seabed boundaries and the legal regime. Vice President Agnew said these questions regarding the extent of the legal regime were among the most important areas requiring decisions by President Nixon--decisions important in the area of national security and defense, important because of the need to prevent escalation of fixed weapons on the floor of the ocean, etc.; they will require much attention by this Council.

The Vice President then called on Glenn Schweitzer of the Marine Council staff who spoke on the international decade of ocean exploration. He said that the U.S. has one-third and the USSR one-third of the world's capability for the exploration of the oceans and that there are 100 organizations throughout the world, government and non-government, concerned with this activity. The Vice President said that the Council will need to make some recommendations to the President regarding the international decade, and that he will create an interagency task force to bring recommendations to the Council.

The Vice President then called on Russell Train of the Interior Department who spoke on the matter of oil pollution control. He said that a plan is evolving for Federal regional control which would provide cooperative forces of federal, state and local governments and private organizations to help clean up any oil spills. The federal participants will be the Departments of Interior, Transportation, Defense, Health, Education and Welfare, and the Office of Emergency Planning. The Vice President asked that DuBridge and Wenk be invited as consultants in these efforts.

The Vice President then called on David Adams of the Marine Council staff who spoke on the management of coastal zone activities.

Then the Vice President introduced Dr. Julius Stratton, the Chairman of the Commission on Marine Science, Engineering and Resources. Stratton said that his Commission has been hard at work for two years and has just issued their report whose contents he described. He said that one of the proposals of his Commission is that an interagency group be formed to handle marine matters, and this might have the name National Oceanic and Atmospheric Agency. The Vice President said that he would like to have recommendations on the Commission's report from the agencies by March 10, which would then be combined into an overall commentary by March 15. This would be used as a basis for recommendations to the President. In commenting upon the Commission's recommendation for the creation of the new agency (NOAA), Volpe and Train expressed doubts about whether such an agency should be created (NOAA would include the Coast Guard, to be taken from the Department of Transportation, and a number of functions to be taken from the Department of the Interior). Vice President Agnew recognized the problems in creating such an agency and said that often the hoped for advantages could be obtained by assembling ad hoc groups from the different agencies to solve the individual problems. He said that he himself hadn't yet decided what his position would be on the creation of this new agency.

The Vice President then brought the meeting to a close by making some comments on how the Council can carry on its statutory responsibilities. He said that in the near future it will operate much as it has in the past but he won't activate the Council committees for the time being; he will rely on task forces. He asked Executive Secretary Wenk to check with members and to come up with recommendations by the next meeting concerning methods of operation of the Council.

After the meeting Jerry Tape and I discussed with Bill Stewart the forthcoming JCAE hearings on the limitations of radiation exposure to uranium miners. He said that HEW Secretary Finch will be in touch with me, possibly next week, to suggest that we might get together to talk over his (Finch's) testimony. He said that Finch realized that the issues are the lowering of the standards from 1 working level to 0.3 working level, and, in this connection, the need to establish a basis for this and the need to establish the role of the Federal Radiation Council. Stewart said that he (Stewart) was appalled at the actions of former Secretary Cohen in making his partially successful end run around the recommendations of the Federal Radiation Council in the final days of his term as the Secretary of Health, Education and Welfare.

I returned to my office and then had lunch in the dining room with Rubin, Bloom, Schneider and Perkins.

At 1:20 p.m. I presided over Information Meeting 881 (notes attached). We discussed the two bills concerning control of pollution, S-7 (the Muskie Bill) and S-544 (Department of Interior Bill) in order to arrive at an AEC position. This is required because Commissioner Ramey will testify before the Subcommittee on Air and Water Pollution of the Senate Committee on Public Works next Monday morning. We tended to favor S-7 at the present time. We decided to recommend closing out the governmental agreement with the MWD when the extension expires on March 31, 1969. We also discussed Hosmer's objections to our agreement with the Japanese concerning the exchange of information on fast breeder reactors. We approved the recommendation of the GAC for the five Lawrence Award winners (Geoffrey F. Chew, Don T. Cromer, Ely M. Gelbard, F. Newton Hayes, and John H. Nuckolls) and will recommend them to the President for approval.

We then held an Executive Session to discuss further possible replacements for Jerry Tape as AEC Commissioner. We decided to explore the possibilities of Theos Thompson and Edwin L. Goldwasser, and we also considered the possibility of Frank A. Long, Maurice Goldhaber and Alvin Weinberg.

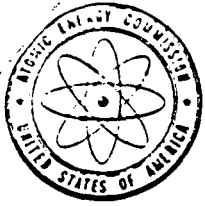
I then presided at 3:05 p.m. over Commission Meeting 2362 (action summary attached). We approved the document to be used for the solicitation of industry comments on the future of our uranium enrichment plants (AEC 459/64). We also decided that we would request a meeting with Secretary of Defense Laird to discuss the possibility of having more stringent applications of their internal approval of safety rules; that we would also discuss with the Secretary the rules for locking and unlocking permissive action link (PAL) devices. We discussed the JCAE hearings which will be held on the ABM (SENTINEL) next Tuesday at 10 a.m. Ed Giller, Mike May and Norris Bradbury will testify.

I sent a letter to Budget Director Mayo (copy attached) in response to President Nixon's memorandum of January 25 requesting that we examine our spending plans through this June to achieve all the savings that we can and that Mayo be kept informed of our plans. It also responded to Mayo's letter of February 22 regarding FY 1969 expenditures.

At 9 p.m. I received a call at home from Roy Heath, Director of Office of Research and Development, Board of Regents of State Universities, State of Wisconsin, Madison, Wisconsin. (Roy worked in my chemistry section at the Metallurgical Laboratory in Chicago during World War II.) He said that a review committee on higher education in the State of Wisconsin, known as the Kellett Committee, has recommended the creation of a coordinating council which would have authority over both the University of Wisconsin and the State College System in Wisconsin. He asked whether I would be interested in heading up this council, which would be the top administrative position for higher education in the State of Wisconsin. If I had any interest, he would like to propose me as a candidate. I told him I did not feel I would wish to be considered for such a position.

Thursday, February 27, 1969 - D.C.

I spoke with Lee DuBridge on the phone in order to explore with him such names as Theos Thompson and Ed Goldwasser for the position of Commissioner on the Atomic Energy Commission. I thought that we should explore the possibility of Thompson first, and DuBridge said that he will make some checks in order to



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 88

COPY NO. 2  
February 26, 1969

INFORMATION MEETING 881

1:20 p.m., Wednesday, February 26, 1969, Chairman's Conference Room, D. C.

1. Agenda for Friday, February 28, 1969

Revised. (SECY)

2. February 19 Letter from Mr. Ellsworth, Assistant to the President, re Public Information Releases

Appropriate staff action is requested. (AGM)

3. AEC 783/108 - Proposed Testimony for Commissioner Ramey on "Water Quality Improvement Act of 1969"

Approved with revisions and final clearance with Commissioner Ramey and transmittal to the BOB. (GC)

4. Commissioners' Meeting with the Director of Regulation to Discuss Major Policy Issues

Rescheduled to 9:30 a.m., March 11, 1969, D. C. Office. (DR-SECY)

5. Mr. Shaw's February 26 Memorandum re Metropolitan Water District Contract for the Bolsa Island Project

Approved. (RDT)

6. Commissioner Johnson's Report on Considerations for Changing Date for Initiation of In-Situ Toll Enrichment

7. AEC 901/414 - Proposed Soviet Bloc Participation in Richland AEC-Sponsored Conference and PNL Visit

Approved. (AGMIA)

8. AEC 946/9 - Fast Breeder Reactor Cooperation with Japan

Commissioner Johnson will discuss with Congressman Craig Hosmer. (AGMIA-Congr.)

9. Senator Aiken's February 24 Letter to Secretary of State re the Non-Proliferation Treaty

10. AEC 782/61 - Possible Amendment of US-UK Bilateral Agreement

Noted. (AGMIA)

11. AEC 1192/70 - Proposed Agreement with NAS

Noted. (BM)

12. AEC 412/62 - Jones County Board of Education, Trenton, N. C.

Noted. (Asst. to GM)

13. AEC 767/23 - 1969 Lawrence Award Nominees

Approved with an addition. (SECY)

14. Dedication of SEFOR Reactor Facility, Fayetteville, Arkansas, May 7, 1969

Commissioner Johnson will plan to attend. (Helfrich-SECY)

15. Letter to Dr. Lee DuBridge re Attendance at the IAEA 13th General Conference, September 23, 1969, Vienna

Requested. (AGMIA-Rubin)

16. Senator Edward M. Kennedy's February 24 Letter re Agency Procedures

Commissioner Ramey will prepare an appropriate reply. (GC-Ryan)

17. Draft Position Paper for the ENDC

To be circulated today. (SAD)

W. B. McCool  
Secretary

2:35 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Price\*  
Mr. Schur\*  
Mr. Yore\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)



UNITED STATES  
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WASHINGTON, D.C. 20545

February 28, 1969

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Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2362, WEDNESDAY, FEBRUARY 26, 1969, 3:05 P.M.,  
ROOM 1115, D. C. OFFICE

SECY:RBM

Commission Business

1. Minutes of Meetings 2340, 2341, 2342 and 2343

Approved, subject to Commissioner Ramey's comments. (SECY)

2. AEC 1147/2 - Extension of Contract with University of Rochester

Approved. (DC)

3. AEC 459/64 - Solicitation of Industry Comments on Uranium Enrichment Activities

Approved, as revised.

Commissioner Ramey requested revisions in the summary staff report, which will be reviewed by the Commissioners prior to issuance.

The Commission also:

- a. Requested the list of recipients of the staff report and questions be expanded;
- b. Requested informal discussion with the JCAE;
- c. Requested the list of questions submitted to the recipients be expanded to include reference to continued government ownership and operation of the enrichment facilities; and
- d. Noted Chairman Seaborg would make the staff report available when he presents his speech at the South East Electric Exchange on March 25, 1969.

(AGMP&P)



4. AEC 25/408 - Interim Safety Rules

Discussed.

The Commission agreed to request that DMA receive interim safety rules from the JCS simultaneous with their receipt by the Assistant to the Secretary of Defense for Atomic Energy.

The Commission approved the following procedures for the review of safety rules as a basis for negotiation with DOD:

- a. Interim safety rules containing policy issues will be submitted as action papers to the Commission for concurrence;
- b. Interim safety rules which do not contain policy issues will be concurred in by DMA and the General Manager with copy for information of Commission;
- c. The AEC will continue to participate in the field review of safety rules after promulgation of interim rules and before approval of final rules; and
- d. All final safety rules will continue to be submitted to Commissioners for concurrence.

(AGM/AGMA)

5. AEC 25/409 - Interim Approval and PAL Issues in Safety Rules

Discussed.

The Commission requested preparation of two letters, one on safety rules and the other on PAL, to the Secretary of Defense offering the Secretary additional background information. (AGMA)

6. AEC 25/410 - Summary of Safety Rules Policy Issues

Discussed.

The new format for action papers on safety rules is approved. (AGMA)

7. AEC 25/411 - Proposed Army Safety Rules

Approved. (AGMA)

8. AEC 25/412 - Proposed Air Force Safety Rules

Approved. (AGMA)

February 28, 1969

9. AEC 25/413 - Proposed Air Force Safety Rules  
Approved. (AGMMA)
10. AEC 25/414 - Proposed Air Force Safety Rules  
Approved. (AGMMA)
11. AEC 25/415 - Proposed Army/Navy/Marine Corps Safety Rules  
Approved. (AGMMA)
12. AEC 25/416 - Proposed Navy Safety Rules  
Approved. (AGMMA)
13. JCAE Hearings on Sentinel, March 4, 1969  
The Assistant General Manager for Military Application reported on the tentative agenda.
14. AEC 1299/3 - Extension of Patent Licensing Provisions of the Atomic Energy Act  
Approved. (GC)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola



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FEB 26 1969

Honorable Robert P. Mayo  
Director, Bureau of the Budget

Dear Mr. Mayo:

This is in response to President Nixon's memorandum dated January 25, 1969, requesting that we examine our spending plans through this June to achieve all the savings that we can and that you be informed of our plans. It also responds to your letter of February 22, 1969, on FY 1969 expenditures.

Under the expenditure limitation established by Public Law 90-364, AEC expenditure estimates were reduced by \$100 million. Reductions in program activities and construction projects were made last fall in amounts adequate to effect this \$100 million reduction. Despite the actions taken last fall, there was still no guarantee we could meet our expenditure limitation. Of particular concern were the large amounts of revenues anticipated and the extensive amounts of work done on a reimbursable basis for other Government agencies since the timing of the receipts from these two activities is not completely within our control. Estimated revenues are \$141 million and reimbursable work for other Government agencies will exceed \$300 million in FY 1969. One of our concerns for example is whether we will be able to collect for all reimbursable expenditures made during the fiscal year. We are currently contacting the other Government agencies involved in order to obtain assurances that they will pay their bills to us promptly at the end of the year and to investigate the possibility of obtaining progress payments.

In addition, to better assure that we will avoid exceeding our ceiling of \$2,451.4 million, we recently reduced our financial plan cost ceilings and instituted a series of supplemental controls on contractor hiring, equipment purchases, and construction contract awards. Meetings with all field office managers and finance directors have been held in Headquarters to emphasize the objectives stated in President Nixon's memorandum, and currently our Controller and key programmatic personnel are visiting our larger offices to follow up on action plans developed during the Headquarters meetings to maximize to the extent feasible FY 1969 savings.

Honorable Robert P. Mayo

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You may be assured that we will be unrelenting in our efforts to achieve greater economies and savings to the full extent of our ability.

Sincerely,

(Signed) Glenn T. Seaborg

Chairman

get information to satisfy him. I said that I am satisfied that he would be a first-rate appointment. He then referred to our FY 1970 budget which he has studied as a result of my sending him copies of my letters of February 10 and 20 to Mayo and said he is disturbed about the cut on the NOA for the 200 Bev Accelerator. I said that this small cut (\$7 million out of \$102 million) seemed to be necessary and had been explained to Bob Wilson. I said that our basic problem is to get Mayo to understand the policy issues that have been left over from the Johnson Administration; so he won't try to make corresponding cuts in basic research and the civilian uses of nuclear energy in order to compensate for the huge sums of money involved. He said perhaps, since a number of these involve increased costs for nuclear weapons, he and I should get together with Packard and Mayo to discuss this, and I said that would suit me fine.

I received a memorandum from Lee DuBridge dated February 24, 1969, attaching a description of a policy, approved by the President, on the Expanded Use of Federal Research Facilities by University Investigators and asking that we incorporate the substance of the policy in our instructions to laboratory directors.

I received a Draft Executive Order "Establishing the Environmental Quality Council" from the BOB, advising us that this proposal has been presented by the Science Adviser to the President and asking for an expression of our views with respect to this matter.

At 12 p.m. I went to the Hill to have lunch with the 40 winners of the 28th Annual Science Talent Search held in Room B-339 of the Rayburn House Office Building. Among those I met and had an opportunity to talk with were: Andrea Jane Yates, Austin High School, Decatur, Alabama; William Francis Ganong, III, Albany High School, Albany, California; Lynne Dianne Calonico, Presentation High School, Berkeley, California; Edward J. Jackson, III, John F. Kennedy High School, Richmond, California; Allan Dale Pekary, Santa Monica High School, Santa Monica, California; and Clarence Lapierce Wiley, Manual High School, Muskogee, Oklahoma. I learned that Ganong, Calonico and Jackson and heard my talks either at the International Science Fair in Dallas in 1967 or in San Francisco in 1966.

During a telephone conversation with Bob McNamara on another matter, he said he would like to come over and visit with me sometime regarding my personal views about the outlook for peaceful uses of atomic energy in the developing countries. He said he is deadset against status projects. So many of these peaceful uses applications started as status projects, but they are now moving into areas of real contributions. Also, he said he has a long-run interest regarding water. He has the personal theory that the most undervalued commodity today is water and that it might move into an area of being priced higher in relation to other commodities, say, bread; he thinks that, in this way, the whole economy of the use of water would change. He would like to get from me an appraisal of meeting water needs by means of nuclear power in the next decade or two. He said that the cost may be high in relation to last year's water cost, but it may not be high in relation to the stimulus that water gives to life.

I received a letter dated February 25 from Secretary of Labor George P. Shultz, in reply to my letter of January 21, telling me that he concurs in my recommendation that the Atomic Energy Labor-Management Relations Panel be continued.

I sent Gerard Smith (ACDA) an informal summary (copy attached) on a possible new attitude toward the role of the United States in the ENDC. This would be that as a new administration the U.S. might enunciate a new policy at the ENDC that will use a fresh approach and not be tied to previous U.S. proposals. This approach might be linked with the announcement that the U.S. will begin bilateral talks with the USSR, which would be aimed directly at limiting the quality and quantity of strategic nuclear weapons, objectives which measures like a comprehensive test ban or the cut of production of nuclear material aim at directly.

Russ Ward of NBC News came in around 4 p.m. to interview me for the NBC radio program--the so-called Second Sunday program--that will be devoted to thermal pollution of the environment (9:05 p.m., EST, March 9). He focused on such matters as the present absence of guidelines to control thermal pollution, the role of nuclear energy in alleviating air pollution, the contributions of nuclear energy to thermal pollution, the drop in radioactive fallout concentrations in recent years, the plans of the Atomic Energy Commission for the underground disposal of radioactive waste, and the greatest challenge that lies ahead for the AEC in the thermal or atomic pollution field. In my responses I emphasized that we prefer the term "thermal effects" because it is not pollution in the normal meaning of the word, the clean nature of nuclear plants from the standpoint of air pollution, the need for methods of handling thermal effects in the future, our plans to dispose of radioactive wastes in insoluble form in impermeable underground disposal areas, and the hopeful role of the huge nuclear agro-industrial complexes in the future.

I received a notification at home from Richard P. Stefel, Secretary of the Chevy Chase Club, dated February 26, 1969, saying that I have been elected as a resident member.

Friday, February 28, 1969 - D.C.

This morning I testified before the Senate Armed Services Committee executive hearing on the military applications of the Non-Proliferation Treaty, which was held in room 212 of the Old Senate Office Building. Senators John Stennis, Stuart Symington, Harry Byrd, Margaret Chase Smith, Strom Thurmond, John Tower, George Murphy, Barry Goldwater, and Richard Schweiker were present for all or parts of the hearing. Accompanying me were Commissioner Tape, Allan Labowitz, Abe Friedman, and Bob O'Neill; accompanying Gerard Smith were Adrian Fisher, Charles Van Dorn, Albert Christopher, and Lieutenant John J. Davis.

I read my prepared statement, then Smith read his. This was followed by questions to both of us. One of the questions to me involved the history of the IAEA and the adequacy of its safeguards system; I gave a rather complete history and a description of the present and planned future capability of the IAEA safeguards system. I also answered a number of questions concerning: President Johnson's offer of December 2, 1967, to place U.S. peaceful uses activities under IAEA safeguards and their identity; the role of the U.S. in furnishing peaceful nuclear explosives under Article V; the growth of nuclear power in the U.S.; the non-nuclear countries that have the capability to produce nuclear weapons of varying sophistication and on a varying time scale; the Dutch developing the gas centrifuge for the enrichment of uranium-235; and the state of nuclear technology in Brazil, Italy, Israel, India, and Japan.

In addition to examining specific individual measures, it would be appropriate to consider the question of the overall US approach to the ENDC. There are two aspects to the question: first, the opportunity for the new Administration to cut loose from those previous US proposals whose chief merit may lie in their venerability; and second, the opportunity to break the schedule of sessions into which the ENDC has fallen over the years.

With respect to the former, the Administration has an opportunity such as occurs practically only with a change in administration. Once the US has made a proposal at the ENDC, it is under external and internal pressure to reaffirm and, in fact, to embellish it at every opportunity thereafter, notwithstanding its current lack of utility or prospects for acceptance. At this time, and quite apart from consideration of individual proposals, the US could enunciate a fresh approach at the ENDC by stating that we are not interested in using the ENDC as a propaganda forum and that we will henceforth only be prepared to discuss those measures which are ripe for multilateral negotiation. We could be candid and note that certain measures are of direct and overriding importance to the US and the USSR and that some indication of mutual acceptance by them is a prerequisite to success in broader negotiations. We could explain that, in limiting our discussions at the ENDC, we would hope to avoid having it become merely a forum for recrimination. We would make it clear that the failure of the US to repeat a previous proposal is not intended to convey a lack of interest on our part, but rather a realistic assessment of its prospects for achievement. This approach could well result in our losing opportunities to score some debating points by proposing measures we know very well are non-negotiable. This approach would also likely offend some delegations who might view it as derogating the role of the ENDC.

We could reduce the negative reaction, of course, if the situation permitted the US to announce, at the same time, that the bilateral missile talks with the USSR are to begin. In that context, we could point out that those talks are aimed directly at limiting the quality and quantity of strategic nuclear weapons -- objectives which measures like a comprehensive test ban or a cutoff are aimed at indirectly. Since the indirect approach has not met with success, we should give the direct approach a try.

These thoughts are offered in the spirit of presenting a tactical alternative and not as an argument to drop all previous proposals. They are not intended to provide a substitute for consideration

within the Administration of individual proposals. In fact, the approach could accommodate restatement by the US of any previous proposal found worthy on its merits. It does present a possible counter to the argument that failure to restate a previous proposal will incur heavy diplomatic penalties and jeopardize the NPT.

With respect to the question of scheduling sessions, it is apparent that the pattern of semi-annual ENDC meetings places a burden upon the US in fielding a delegation for months at a time. More distressing, perhaps, is the frantic negotiating among the interested agencies, often without time for deliberation, in developing the US position on the eve of the session under pressure to restate or embellish previous proposals. It may be difficult to change this pattern, but the approach of discussing only those measures ripe for multilateral negotiation offers some hope that it may lead to a lower frequency of sessions and more deliberate preparations within the Government.



Senator Strom Thurmond had a rather long list of questions many of which I answered on the spot; the remainder he submitted so that I might answer them for the record.

After the hearing Senator Stennis told me privately that his Committee will hold hearings on the ABM and that he would like me to testify at that time.

On the way back from the Hill, Friedman, Labowitz and I stopped at the Roger Smith Hotel for lunch. We were joined by Julie Rubin.

During my absence this morning Justin Bloom took a call from Mr. Strelnikov, the Pravda correspondent in Washington, asking permission to reprint the article I wrote on Mendeleev and the Periodic Table for Chemistry and Life magazine. Bloom told him I would be pleased to have my article reprinted in Pravda and would appreciate receiving copies when it appears.

In the afternoon, from 2:15-3:40 p.m., Commissioners Ramey, Tape, Johnson, Rubin and I first met with Mike May (in the type of meeting regularly held with laboratory directors) to be brought up to date on his problems and laboratory problems, followed by a meeting in which Mike May and Carl Haussmann of Livermore briefed us on the five-year projected program for Livermore Laboratory and the suggested funding for it.

This was followed by Information Meeting 882 at 3:50 p.m. (notes attached). We discussed the summary report on the activities for assuring the safety of underground nuclear testing which might be issued at the same time as the Pitzer Panel report. We also discussed the United Kingdom request for permission to fly nuclear weapons over the United States to and from Singapore. This raises a problem with respect to Section 92 of the Atomic Energy Act.

I signed a letter to Lee DuBridge forwarding a letter for submission to the President which contains our recommendation of Geoffrey F. Chew, Don T. Cromer, Ely M. Gelbard, F. Newton Hayes, and John H. Nuckolls to receive the Ernest O. Lawrence Awards for 1969.

I received a call from John Whitaker, Secretary to the Cabinet, who said that the President has instituted a system where he will be receiving on a daily basis staff notes and agency and department notes, consisting of one to one and a half pages and containing 5 to 10 items. The ground rules are that each would be an item of significance or a problem that is really a nagging one but which has not yet found its way into the newspapers, so that the President doesn't get surprised. Al Toner will be responsible for this project. I designated Julius Rubin as the key contact for AEC and Whitaker asked that Julie call Toner next week.



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INFORMATION MEETING 882

3:50 p.m., Friday, February 28, 1969, Chairman's Conference Room, D. C.

1. Commissioners' Meeting with BOB Director Mayo to Discuss Fiscal Year 69-70 Budget

Mr. Hollingsworth reported the Director will be happy to see the Commissioners and the Chairman requested Mr. Mayo be informed of the Chairman's availability. (EAGM-OC)

2. Dr. Edward Teller's Statement re Fast Breeder Reactor Plants

The Chairman will mention this to Dr. Teller when he sees him. (Rubin)

3. February 26 Memorandum from Mr. Bryce Harlow, White House, re Congressional Requests for Information.

Noted. (AGM-GC)

4. February 25 Letter from Herman Pollack, Department of State, re AEC Stimulation of Australian Interest in the Cape Keraudren Project

A response is requested. (PNE)

5. February 24 Letter from Lee A. DuBridge re Expanded Use of Federal Research Facilities by University Investigators

A letter to Mr. DuBridge is requested. (AGMR&D)

6. February 27 Letter from Mr. Arthur B. Focke, BOB, re Draft Executive Order "Establishing the Environmental Quality Council"

The Chairman will discuss with Mr. DuBridge. (Rubin)

7. Arthur Dean Request for AEC Testimony re Nuclear Power

The Commissioners requested staff testimony. (GC)

8. Mr. Friedman's February 27 Memorandum re Fast Breeder Reactor Cooperation with Japan

Commissioner Johnson reported he had discussed this matter with Congressman Craig Hosmer and his objections are now removed and that earlier Joint Committee notice of the status of the Commission's negotiations of such agreements was requested. Commissioner Costagliola is to be informed, by cable to Tokyo, that formal Commission approval is scheduled for next week. (AGMIA-Congr. -Griffin)

9. Commissioner Ramey's January 22 Memorandum re Commission Consideration of Continuation of Article II of the 1958 US-UK Agreement for Cooperation for Mutual Defense Purposes, Providing for Exchange of Information on Military Applications

Noted. Procedures for assuring Commission notice are requested. (AGMIA-SECY)

10. Commissioner Ramey's February 28 Memorandum re Views with Respect to Possible Transfer of Gas Centrifuge Information by UK to Dutch and West Germans

Noted. (AGM)

11. Commissioner Ramey's March 3 Testimony on S. 7, The Water Quality Improvement Act of 1969

To be transmitted to the Committee today and circulated to the Commissioners (GC)

12. Agenda for the Week of March 3, 1969

Approved. (SECY)

13. Chairman Seaborg's Testimony Today re the NPT Before the Senate Armed Services Committee

A staff check is requested. (SAD)

14. AEC 141/122 - Summary Report on Activities for Assuring the Safety of Underground Nuclear Testing

Revisions are requested and a final draft will be prepared for the Commission's review next week. (AGMMA)

15. UK Request

Mr. Brown discussed briefly the UK request and said a paper will be circulated to the Commission. (AGM)

16. AEC 901/415 - USSR Nationals Participation in AEC-Sponsored Conference and Facility Visit

Approved. (AGMIA)

17. Mr. Erlewine's February 27 Note re April 10 Luncheon to Pass 200 BEV Site Title to AEC

Commissioner Ramey will plan to attend. (AGMO-Ryan)

18. AEC 719/75 - Status of the AEC Program on Radiation Preservation of Food

Noted with a request. (ID-SECY)

19. Pending Contractual Matters Report No. 297

Noted. (PAR)

20. AEC 1219/22 - Personnel and Budget Problems Associated with Richland Reactor Shutdown(s)

The Joint Committee is to be informed. (P-Congr.)

21. Exercise of Option for Purchase of TVA Power

Reaffirmed. (AGMP&P)

22. Commissioner Johnson's January 10 Memorandum re Statement of Proposed Policy Regarding the Future Means of Providing Uranium Enrichment Services to the Nuclear Power Industry

Comments are to be sent to Commissioner Johnson and we will schedule an early discussion. (Helfrich-SECY)

23. General Manager's Report on Storm at NTS

W. B. McCool  
Secretary

5:15 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. Griffin  
Mr. McCool  
Mr. Tesche\*  
Mr. Friedman\*  
Mr. Erlewine\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

Saturday, March 1, 1969 - D.C.

I spent a couple of hours at the office and sent notes to Peter and David about my coming trip to the Bay Area, when I hope to see both of them. Then I went to the Exhibit Hall at the Sheraton-Park Hotel to begin the judging of the 40 finalists of the Science Talent Search in order to determine which would receive the ten top scholarship awards. The other judges were Dr. Harold A. Edgerton, Dr. David Axelrod, Dr. Alan W. DeSilva, Dr. James Hummel, Dr. Russell D. Johnson, Jr., and Dr. John Zinner, representing the professional fields of psychology, chemistry, biology, physics, mathematics and psychiatry.

I was met there by Dr. Edgerton, Ted Sherburne and Dorothy Schriver who said that a problem had arisen, and, therefore, we all assembled in Suite C-240 to discuss it. Apparently one of the contestants, Jeffrey L. Hawryluk of Jamaica High School, Jamaica, New York, has conducted operations on mice in his home without having the required supervision by a licensed sponsor as required by New York law. He was sponsored by his physician, but his physician is not licensed. He had done this without realizing that he was violating the law. The question was whether he should be allowed to exhibit under those circumstances because it might come to the attention of organizations like the Animal Welfare League and make trouble for the Science Talent Search and its Westinghouse sponsor. I recommended that he be allowed to participate with his exhibit in view of the fact that he didn't know that he had broken any law, and this hadn't yet been proved.

We then went on to have lunch with the Science Talent Search winners in the Frederick Room where we were joined by Stephen, Eric and Dianne.

After lunch I interviewed each of the 40 winners at their exhibits in the Exhibit Hall. In the course of going about my interviews, I was asked by Zora Safir of the Russian branch of the Voice of America if she could tape a short interview with me. I assented and spoke of the value of an affair like the Science Talent Search for identifying young science talent which is so important today in both the United States and the Soviet Union. Zora Safir told me that she had interviewed me at the Science Talent Search exhibit some five years ago and that this had established her position with the Russian branch of the Voice of America. Also, in the course of my interviews I saw Barbara Orlans of the Animal Welfare League who was giving a number of the winners problems with her criticism of their animal experiments.

When the interviewing was completed the judges assembled in Suite C-240 and proceeded to pick the winners of the scholarships as follows: First place, Lane Palmer Hughston, Hillcrest High School, Dallas, Texas; second, David Allan Wright, Pascack Valley High School, Hillsdale, New Jersey; third, J. Edward Jackson III, John F. Kennedy High School, Richmond, California; fourth, Willy C. Shih, Niles Township High School, West Skokie, Illinois; Fifth, William F. Ganong III, Albany High School, Albany, California; sixth, Claude A. Raifaizen, Bayside High School, Bayside, New York; seventh, Jennie Marie Orr, Coeur D'Alene Sr. High School, Coeur D'Alene, Idaho; eighth, Clarence L. Wiley, Manual High School, Muskogee, Oklahoma; ninth, Justin Craig Schaffert, Springbrook High School, Silver Spring, Maryland; tenth, John D. Whittaker, Nova High School, Fort Lauderdale, Florida; first alternate, Allan Dale Pekary, Santa Monica High School, Santa Monica, California; and second alternate, Barbara J. Rosenberg, Bronx High School of Science, New York.

In the evening I corrected the transcript for my testimony before the Senate Armed Services Committee on the Non-Proliferation Treaty.

Sunday, March 2, 1969

I worked on my speech, "Development of the Periodic Table Through the Discovery of New Elements" to be delivered on my behalf by Dr. Jack Vanderryn at the UNESCO Mendeleev 100th anniversary celebration in Paris on March 17. I also worked on correcting the article entitled, "Synthetic Elements IV" that Bloom and I submitted to Scientific American, which they returned in a somewhat rewritten form. I also worked on my article, "Technology as a Tool for Achieving Future Values" for the book, Technology and the Idea of Mankind.

In the afternoon Steve, Eric, Suki and I walked to Rock Creek Park (because we couldn't get the Pontiac started) in the snow to go on a hike.

In the evening we had a birthday dinner with Helen. We surprised her with a birthday cake and a number of gifts such as books, a box of candy and a key ring (the latter a gift from Dianne).

Monday, March 3, 1969 - D.C.

I signed the Certificates of Award for the winners of the 28th Annual Science Talent Search for the Westinghouse Science Scholarships and Awards.

At 11 a.m. I watched Astronauts James A. McDivitt, David R. Scott, and Russell L. Schweickart soar into space in the Apollo-9 spacecraft for the first manned test of the lunar module, an earth orbital mission.

I received a wire from Professor Jose M. Otero, President of the Spanish Atomic Energy Commission and permanent secretary of the Royal Academy of Sciences of Spain, notifying me that I have been elected a Corresponding Fellow of the Academy. I responded to Otero saying that I am pleased and honored to accept.

Julie Rubin, Justin Bloom and I had lunch at the Pot-O'-Gold and then walked around Lafayette Square.

I received a letter from George White, President of the Nuclear Exchange Corporation of San Jose, California, requesting the Commission to make the necessary policy decision to permit immediate in situ enrichment transactions to take place.

John C. Whitaker, Secretary to the Cabinet, sent me a memorandum confirming the fact that Julius Rubin will be the contact with Albert P. Toner of the White House staff for a daily reporting system to the President. The procedure for this was outlined in a memorandum by Whitaker dated January 25, 1969 (copy attached).

In the evening Helen and I attended the Reception and Banquet of the 28th Annual Science Talent Search held in the Ballroom of the Sheraton-Park Hotel. Ted Sherburne first introduced the 40 winners individually and then introduced Dr. William E. Shoupp, (Vice President, Research, Westinghouse Electric

THE WHITE HOUSE  
WASHINGTON

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NOV 86

January 25, 1969

MEMORANDUM FOR

Cabinet Members  
U. S. Representative to the United Nations  
Director of the Bureau of the Budget  
Newly Appointed Agency Directors

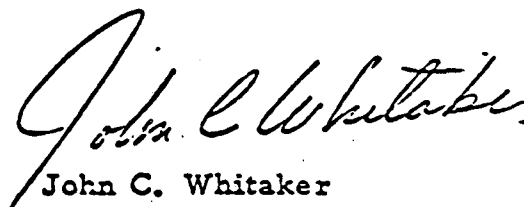
RE: Daily Reporting System to the President (Staff Notes by Mr. Toner)

As requested by the President in Cabinet January 22, each Cabinet Member is asked to designate a key man in his Department familiar with the entire sweep of activities to work with Mr. Albert Toner to obtain news items for a daily reporting system to the President.

This report should consist of brief items not yet reported in the press on upcoming significant events and problems.

The report is intended to improve communications between the President and Department heads. It is not a channel for requesting Presidential action, but an excellent vehicle for reporting on subjects which may require future attention by the President, and for following up on decisions he has already made.

Would you or an assistant please telephone me at your earliest convenience (456-2526) to indicate who you wish to be your contact with Mr. Toner for this reporting system. Should you find time, Mr. Toner and I would be happy to meet with you and your designated contact to insure we are all in agreement on how the reporting system will function in your Department.

  
John C. Whitaker  
Cabinet Secretary



Corporation) who gave brief welcoming remarks. I followed with remarks in my capacity as President of Science Service, and then I introduced Dr. Philip Handler who gave the main address. After the address, Dr. Harold A. Edgerton, Chairman of the Judges, gave the report of the Judges, and as the winners were named (in reverse order of their winner position) they proceeded to the stage behind the head table for recognition.

Following this we went across the hall to the Wilmington Room where a number of pictures were taken of the ten scholarship winners; some of them included Dr. Shoupp, Dr. Handler, Mr. Sherburne, Dr. Edgerton, and me.

Tuesday, March 4, 1969 - D.C.

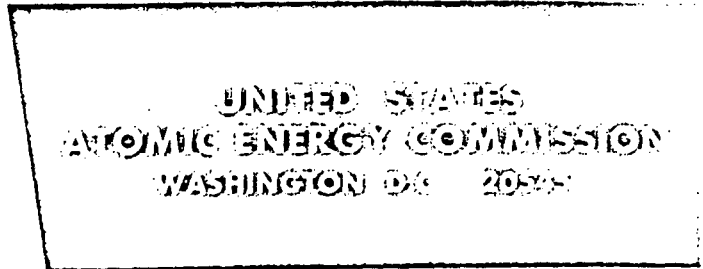
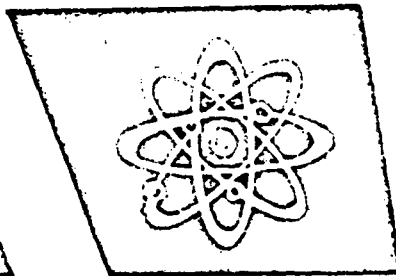
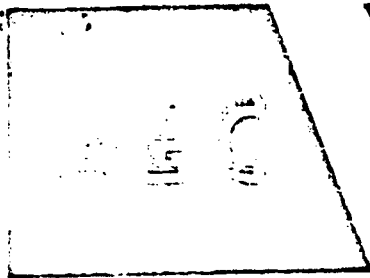
I called Bob Haldeman regarding the President's impending visit to Germantown on March 13. I suggested that the President might wish to arrive at Germantown by helicopter. I asked whether he would be willing to have the AEC employees line the route to the building, and he said yes. I said we would then go to my office where I would present an informal briefing on the AEC activities, stressing current national policy considerations and peaceful uses of nuclear energy along the lines of my Bohemian Grove talk to which the President referred when Haldeman and I met with him. I would use a few flip charts and would have several models and interesting displays set up in my office. This group would be limited to the Commissioners, General Manager, Director of Regulation and maybe one or two other key people.

We would then go to the auditorium, where would be assembled about 400 of our key staff to hear the President make a few remarks. Haldeman said that was a good idea. I said that the President's remarks could be piped to the entire AEC staff, who would be assembled elsewhere. I asked about news media coverage, and he said that would be fine. I asked with whom we should work regarding detailed arrangements, and he said he would have Dwight Chapin call me; Chapin handles implementation of the President's schedule.

I mentioned that during our visit the President indicated he would like to have the Secretary of State make the visit with him, and I suggested adding possibly DuBridge, Ellsworth and Kissinger. Haldeman said he thought it was probably a good idea to have all four of them and asked whether Secretary of Defense Laird should be included. I said that would be ideal; that would be his first day back from Vietnam, however. Haldeman's comment was, "Let me see about that." I asked about my accompanying the President on the helicopter trip, and he said fine. Haldeman said he would get all these suggestions to Chapin and ask him to call me.

I asked whether there is any indication of the time of day for the visit, and Haldeman said that it is tentatively scheduled on the President's calendar for 3:15 p.m. Haldeman said that, generally, it sounds like a very good plan. He asked whether we would plan to cover Plowshare and peaceful uses, as well as weapons. I said, yes, as well as a number of national policy considerations facing the AEC.

I issued a statement (copy attached) on the appointment by Dr. Sigard Eklund of Dr. Rudolf Rometsch to the position of Inspector General of the IAEA, indicating that we are gratified by the appointment.



No. M-52  
Tel. 973-3281

FOR IMMEDIATE RELEASE  
(Tuesday, March 4, 1969)

NOTE TO EDITORS AND CORRESPONDENTS:

The following statement was made today by Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission, in commenting upon the appointment of Dr. Rudolph Rometsch to the position of Inspector General of the International Atomic Energy Agency:

"The decision by IAEA Director General Eklund in appointing Dr. Rudolph Rometsch to the position of Inspector General of the International Atomic Energy Agency is one which is gratifying to the United States and to all those who look upon the IAEA for leadership in the field of international safeguards.

"Dr. Rometsch has wide experience in nuclear technology and, as managing director of the European Nuclear Energy Agency's Eurochemic chemical processing plant, has demonstrated his ability to work effectively with multi-national organizations.

"He played an important role in introducing international safeguards in the Eurochemic plant, and I look forward to his doing an excellent job in his new position.

"I know Dr. Rometsch personally and can attest to his competence, integrity, industry, and effectiveness. His acceptance of this key position should give us increased assurance that the IAEA will be able to fulfill its important role in the implementation of the Non-Proliferation Treaty."

#

There was an Executive Session briefing, which I did not attend, before the JCAE on the Sentinel (ABM) program. The technical aspects were covered by such people as May and Herbst from the Livermore Laboratory, Bradbury and Agnew from the Los Alamos Laboratory, and the representatives of the Department of Defense.

I received a call from Kenneth E. Belieu of the White House who said they have received two wires, dated March 1, from Senators Richard Russell and Herman Talmadge of Georgia, regarding the Savannah River Plant. They state that they would like to meet with the appropriate officials if the review contemplates any change at Savannah River. I gave Belieu the background. When President Johnson approved our FY 1970 budget, he did so without enough money to include the operation of all the Hanford reactors. There was some question whether this would allow us to produce enough plutonium for all the contingent possibilities. Closing two of the four reactors at Hanford would be quite an impact on the community. Washington Senators Henry Jackson and Warren Magnuson and Congresswoman Catherine May appealed this to President Johnson, and he agreed that the AEC could defer starting the shutdown of the reactors so that President Nixon would be able to review the decision. This is supposed to be under review at BOB at present, and we are supposed to receive an answer before the middle of March.

In the meantime the nuclear industrial people from Hanford have come to Washington to talk to us and the BOB, and they are beginning to talk as though maybe the reactors to be shut down are the Savannah River ones. I said the argument against this would be that the Savannah River plants are newer, much more versatile, and instead of producing plutonium, they have a potential for producing other isotopes in the future that have a number of other uses. It wouldn't make good sense to shut down Savannah River reactors, and certainly not in lieu of the Hanford ones. The Southerners have learned about this desire to shift the reactor shutdown to Savannah River, and somebody has them sending wires. The most important message I have received is from South Carolina's Senator Strom Thurmond, who is very excited over this possibility, and he wants to be reassured that none of the reactors at Savannah River are shut down. I said that Savannah River is not supposed to be in this review at all. Belieu said he probably should call Mayo, and then he will answer the letters in a general vein. Belieu asked me to guarantee to him that I would talk to Russell and Talmadge if this should come up, and I agreed.

I called Harry Flemming at the White House and passed on to him the following names that occurred to me for the position of federal representative to the SINB: Lewis L. Strauss, Sterling Cole, Bill Clapp (formerly of Florida Power & Light), and Bob Blair (formerly AEC Manager of the Savannah River Operations Office).

Dwight Chapin of the White House called me as a follow up to my conversation with Haldeman this morning. He said an advance man and a secret service agent would come out to look over the routes, etc. and asked me to designate a contact on my staff for this purpose. I told him he could contact Julius Rubin or Howard Brown.

At 5 p.m. I called New York Senator Jacob Javits as a follow up to the hearings before the Senate Committee on Foreign Relations on the Non-Proliferation Treaty to explore his interpretation of the U.S. attitude toward non-signers with respect to the furnishing of nuclear materials under safeguards.

I explained to him that the negotiating history would indicate that we were not using the possibility of the cut-off of supply of enriched uranium as a threat in order to obtain adherence to the NPT. I indicated that Article III (2) requires that we would have to see to it that safeguards were applied to nuclear materials that we supplied to the non-signers, but it was not necessarily true that these had to be IAEA safeguards. (I had in mind the case of EURATOM where there is such sensitivity regarding being forced to accept IAEA safeguards in order to continue to receive nuclear materials from the U.S.). I told Javits I would be glad to have someone come up and go into this with him in more detail, and he said he would be glad to see someone. (I called Labowitz and gave him the gist of my talk with Javits and suggested he make an appointment to go up and review the matter with Javits.)

I watched President Nixon's News Conference on television tonight. He answered questions in the foreign relations field in connection with his trip to Europe, as well as in other areas.

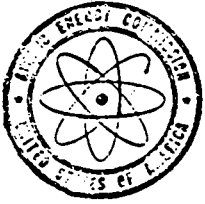
Wednesday, March 5, 1969 - D.C. and Frederick, MD

At Commission Meeting 2363 (Action Summary attached) at 9:30 a.m. the Commission decided that it will allow enriched uranium on lease from the AEC to be purchased by the method of in situ toll enriching beginning April 1, 1969 instead of January 1, 1971, as previously announced. We also ratified the technical exchange arrangement with the Power Reactor and Nuclear Fuel Development Corporation of Japan for cooperation in the field of liquid cooled fast breeder reactors (AEC 946/10).

At Information Meeting 883 (notes attached) at 10:05 a.m. we discussed the February 26 letter (copy attached) from Michael McCloskey of the Sierra Club concerning opposition to future use of natural coastline for industrial development, including nuclear power generation, and an acknowledgement thereto.

Leaving about 11:15 a.m. I was driven to Hood College in Frederick, Maryland, by Joe Gibson. I was met by Dr. Phyllida M. Willis, Chairman of the Physical Sciences and Mathematics Department, who accompanied me to the Dining Hall where the 750 students (all women) of Hood College have their meals. I had lunch in the large Dining Hall (all one room) at a table with a number of science majors--Louann Kern (a math major), Marty Tully (a chemistry major and a senior), Sue Tacy (a chemistry major, a junior, who has applied to spend a semester at Argonne), Nicolette Orlando (a chemistry major, a freshman, who won nuclear AEC first place at the San Francisco International Science Fair in 1967 and consequently spent a week at Argonne), Jeanne LeRoy (a chemistry major, a senior), Georgia Doyle, Stephanie Yingst (a chemistry major, a sophomore), Kathy Owen (a chemistry major, a junior), Karin Norlin (editor of the Hood College newspaper, a weekly), Ratelje Fairlye, Jane Hively, Lind Rosengarten (a chemistry major, a sophomore), and Mary Hargens (a chemistry major, a junior).

After lunch Miss Kern walked with me to the Science Building where I joined Dr. Willis, who took me on a tour of the building and introduced me to a number of faculty members--Prof. Margaret Neely (chemistry, whose husband is also a professor in humanities) and members of the biology and mathematics faculty. Dr. Willis told me about Sally Buchanan, the sole chemistry major in the class of 1968, an outstanding student, now in the graduate school in chemistry at Berkeley.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

March 5, 1969

Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2363, WEDNESDAY, MARCH 5, 1969, 9:30 A.M., ROOM 1115,  
D. C. OFFICE

SECY:SBR

Commission Business

1. AEC 946/10 - U.S.-Japan Technical Exchange Agreement on Fast Breeder Reactors

Approved.

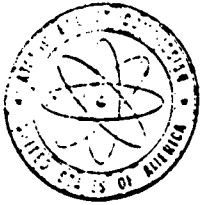
The Commission requested staff prepare a list of similar agreements in the process of negotiation with other governments for transmission to the JCAE. (IA)

2. AEC 720/201 - Change in Effective Date of In Situ Toll Enrichment

Approved, subject to the concurrence of Commissioners Tape and Costagliola. (RM/SECY)

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

COPY NO. 2  
March 5, 1969

INFORMATION MEETING 883

10:05 a.m., Wednesday, March 5, 1969, Room 1115, D. C.

1. President Nixon's Visit to Headquarters

Tentatively scheduled for 3:15 p.m., March 13, 1969.  
The briefing flip charts will be shown to the Commissioners.  
(AGM-SECY)

2. Chairman's Comment on his Telephone Call to Senator Javits re the NPT

3. February 26 Letter from Michael McCloskey, Sierra Club, re Opposition to Future Use of Natural Coastline for Industrial Development

Preparation of a reply is requested. (Rubin-SECY)

4. Expressions of Interest in Redox (See AEC 1143/83)

Staff recommendations are in preparation. (AECA)

5. February 28 Letter from George White re In-Situ Toll Enrichment Policy

A response is requested. (AGMP&P)

6. Commissioner Johnson's Draft Letter to Representative Craig Hosmer re Exchange Agreements

To be circulated. (Helfrich-SECY)

7. Agenda for the Week of March 10, 1969

Approved. (SECY)

8. Briefing Memorandum on the March 17 Visit of Mr. Robert Hirsch,  
French CEA

Requested. (AGMIA-SECY)

9. Location for 1969 Lawrence Award Ceremony (See Secretary's March 4  
Memorandum)

We will schedule the ceremony at the Cosmos Club. (SECY)

10. AEC 780/42 - AEC Citation Ceremony, April 11, 1969

Approved with a change. (SECY)

11. NTS Events (See General Giller's February 28 Memorandum)

Noted. (AGMMA)

12. AEC 141/123 - Proposed Reply to Hughes Organization Inquiries

Revision and recirculation for the Commissioners' comments are requested. (AGMMA-SECY)

13. AEC 141/122 - Summary Report on Activities for Assuring the Safety of  
Underground Nuclear Testing

The revised version is to be circulated for consideration on Monday, March 10, 1969. (AGMMA-SECY)

14. AEC 901/416 - Proposed Participation of Soviet Bloc Nationals in  
Conference at ANL

Approved. (AGMIA)

15. AEC 671/29 - Management Discussions with Principal Contractors at NRTS

Approved. The Joint Committee and the Congressional delegation are to be informed. (RDT-Congr.)

16. AEC 1083/135 - Proposed Participation of French Nationals in Second Nuclear Isospin Conference

Noted. (AGMIA)

17. February 28 Letter from Senators Jackson and Magnuson and Congresswoman May to the President re the Hanford Reactors

18. March 4, 1969, Scientists' Work Stoppage

Commissioner Ramey asked whether there had been any effect on AEC programs. (DGM)

19. Briefing on High Yield Test Effects, 10:00 a.m., Friday, March 7, 1969, Room A-410, Germantown

20. Controller's Report on Expenditure Limitations

To be scheduled for consideration on Wednesday, March 12, 1969. (OC-SECY)

21. Commissioners' Meeting with the Atomic Industrial Forum, Thursday, May 29, 1969

Scheduled. Location to be determined. (Rubin-SECY)

22. AEC 459/64 - Solicitation of Industry Comments on Uranium Enrichment Activities

Commissioner Ramey circulated his comments. (SECY)

\*\*\*\*\*

23. Mr. Wells' February 28 Memorandum re Board Members for Consolidated Edison Company (Indian Point #3) Hearing

Approved. (Chm. AS&LBP-SECY)

W. B. McCool  
Secretary

10:55 a.m.



PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Johnson

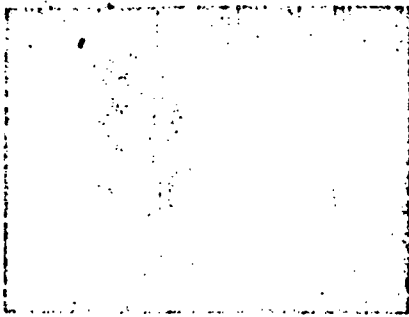
STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Rubin .  
Mr. Kull  
Mr. Rosen  
Mr. Griffin  
Mr. McCool  
Mr. Wells\*  
Mr. Tesche\*  
Mr. Friedman\*  
Mr. Giambusso\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)



by Ansel Adams in *This Is the American Earth*

# SIERRA CLUB

Mills Tower, San Francisco 94104

UNCL. BY DGP  
NOV 86

February 26, 1969

Dr. Glen Seaborg, Chairman  
Atomic Energy Commission  
Washington, D.C.

Dear Dr. Seaborg:

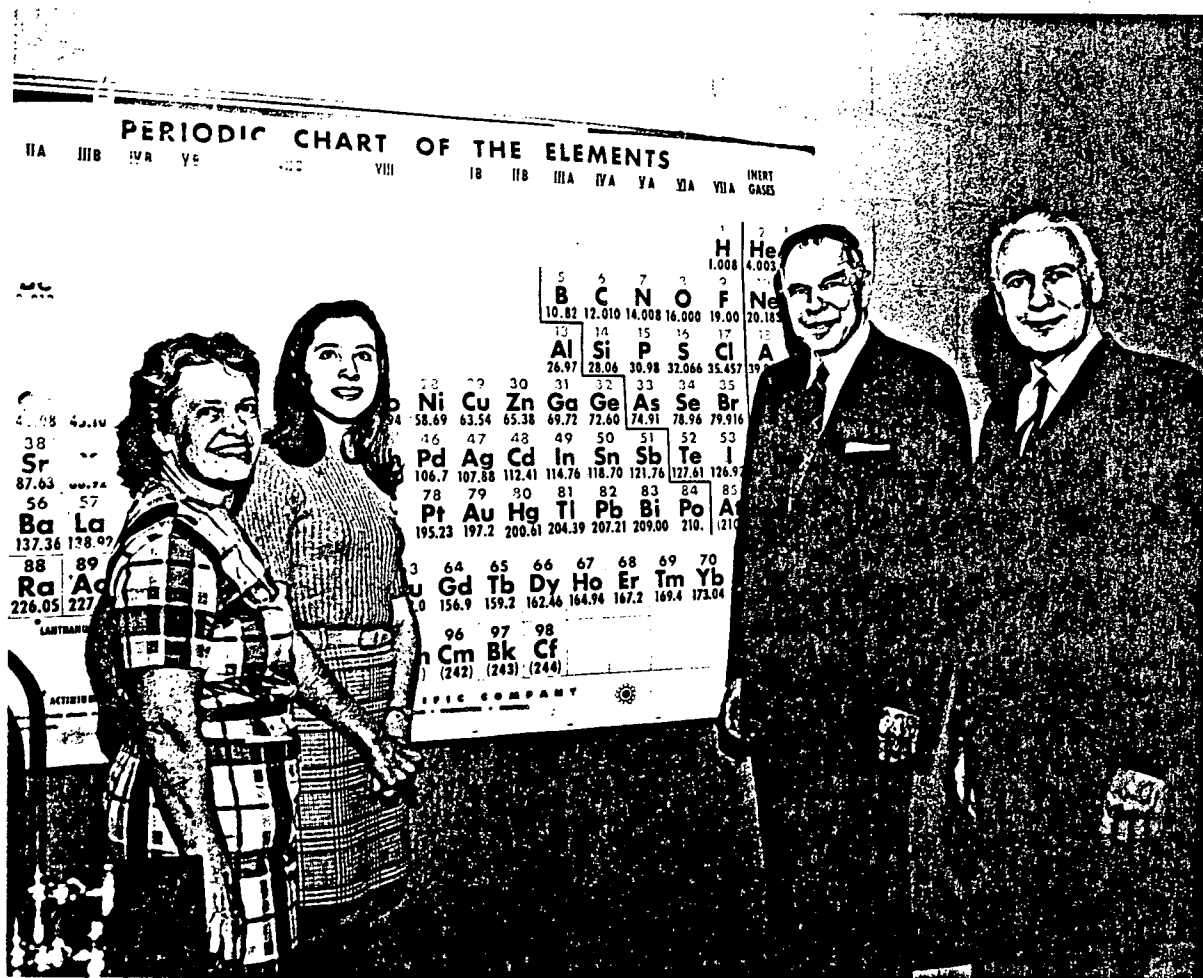
At a recent meeting of our Board of Directors, a resolution was adopted which I know will interest you. Our Board went on record opposing further use of our natural coastline for industrial development. The text of that resolution follows:

"The Sierra Club as a matter of policy and general principle, opposes use for industrial purposes, including the purpose of nuclear power generation, of wild, natural, native, pristine, scenic, or pastoral portions of coasts or shores of the United States, including the shores of the Pacific, Atlantic and Arctic oceans or the Gulf of Mexico, and their bays and estuaries and inland waters."

If you think it appropriate, we would be happy to meet with you at some convenient time to discuss these goals.

Very truly yours,

Michael McCloskey  
Conservation Director



Hood College, Frederick, Maryland; March 5, 1969.

L to R: Dr. Phyllida M. Willis (Chmn. Physical Sciences and Math. Dept.), Sue Nagle (student), Dr. Seaborg, and Randle Elliott (President, Hood College).

At 2:30 p.m. I attended a reception held in one of the classrooms; many students and faculty were present. Here I met Dean Keeler (a woman). Miss Dorothy Wallace, whom I knew as Luther Arnold's assistant during the Metallurgical Laboratory days, was there. She taught at Goucher College before and after the war, but most of her time after the war and until retirement was spent at Argonne. She now lives in Frederick. She told me that Charlotte (Young) Brooke (her husband is DeForest Brooke) wanted to come today but couldn't. I also knew her at the Metallurgical Laboratory; she worked with Arnold. She lives now at 8422 Stable Drive, Alexandria, Virginia, 22308, telephone 703/780-8989. A photographer took pictures during the reception.

I gave my talk on "The Transuranium Elements" illustrated with slides at 4:10 p.m. in the packed main lecture room of the Science Building and questions followed. After my talk I met the President of Hood College, Randle Elliott, Ira Nagin, a Berkeley alumnus now at the local Aerojet plant who took some pictures of me with President Elliott and Sue Nagle, a student. Miss Nagle took a picture of President Elliott, Nagin and me in front of the Science Building for possible use in the Cal Monthly, according to Nagin.

After the lecture I rode back to Washington with Joe Gibson.

Thursday, March 6, 1969 - Berkeley, California

I flew to San Francisco with Justin Bloom on United Airlines Flight No. 53, leaving Dulles Airport at 9 a.m. and arriving in San Francisco at 11:40 a.m. On the plane we worked up a statement (copy attached) to be used as part of a response to Soviet Ambassador Anatoly Dobrynin's questions to the State Department concerning the Cape Keraudren Plowshare experiment. We pointed out the analogy of performing nuclear explosions under the ocean bottom to performing them under the earth-air interface.

We were met at the airport by Ellison Shute, Manager of the AEC San Francisco Operations Office, and we all rode to the Livermore Laboratory with Ward Blackmon.

On arriving at Livermore at about 1:30 p.m., we were taken to Mike May's office, where we were met by May, Roger Batzel, Jack Gofman, Duane Sewell, and Edward Teller of the Laboratory and John Totter of AEC headquarters. (Batzel and Gofman did their Ph.D. research work with me at Berkeley.)

We were served a light lunch and I told the group about the plans for the visit of President Nixon to Germantown. I then raised the subject of Teller's public adverse comments about fast breeder reactors. Edward was adamant in his position, saying that he would continue to speak out against them until it could be demonstrated to him that they were safe. He made the point that he would much rather have a fast reactor in a cavern 700 feet under a large city than 70 miles away from the city. I observed that the engineering difficulties with underground siting are severe, considering such factors as heat dissipation. He asked if we have studied underground siting in detail, and I said that we have looked at it to some extent. He requested that he be sent any reports available. I remarked that we have an extensive internal study of fast breeder safety under way, and again he asked for any reports. I said we would send them to him when they were available. Teller also asked for a copy of the newspaper story in New Orleans which had reported on his remarks concerning reactor safety and I agreed to furnish this. He also made some statements about the possibility of a planned effort by saboteurs to cause a major release of radioactivity by first breaching the containment and then using a subversive reactor operator to mishandle the reactor controls to cause an excursion.

Following lunch, Roger Batzel took Justin and me on a tour of selected parts of the Laboratory. We went first to the new bio-medical building, which was being dedicated, where photographs were taken of Gofman, Totter, May, and me in a group around a microscope used for chromosome analysis. (See picture next page.) We then went to a weapons assembly area where Dave Dorn, Dick Seilheimer, and Lou Eccles showed us the components and design of the ZIRCON heavy element Plowshare experiment. It is hoped that his experiment will provide at least three times the integrated flux of the previous VULCAN experiment and that mass numbers as high as 265 will be achieved. Phosphorus-31 and argon-40 will also be added to the assembly with the hope of producing neutron-rich isotopes, such as phosphorus-35, silicon-35 (by the n,p reaction) and argon-46. After the explosion, drilling into the cavern is expected to be accomplished within two days for recovery of the product

STATEMENT ON CAPE KERAUDREN

The proposed Cape Keraudren harbor excavation project will involve the detonation of nuclear explosives in earth several hundred feet below the earth-water interface. Such detonations are exactly analogous to the "underground" nuclear explosions permitted by the Limited Test Ban Treaty which are below the earth-air interface.

We understand the prohibition on nuclear testing "under water" to mean that the explosion cannot occur in water, just as we cannot conduct explosions in air. The Keraudren experiment does not involve detonation of nuclear explosives in water.

isotopes. Hand selection of the most promising material will be made and these samples will be taken to Livermore and other laboratories for chemical processing.



The new Bio-Medical Building at LRL, Livermore, California; March 6, 1969. L to R: Dr. Michael May (Director, LRL, Livermore), Dr. Jack Gofman (LRL, Livermore), Dr. John R. Totter (Director, Division of Biology and Medicine), and Seaborg.

We were then taken to the Radiochemistry Laboratory where we were met by Ken Hulet and later by Pete Stevenson. Dick Hoff was ill and not at work. (Hulet and Hoff did their Ph.D. research work with me at Berkeley and Stevenson did postdoctoral work with me there.) Hulet's group was in the process of purifying 17 micrograms of einsteinium-253 which had been produced in the HFIR at Oak Ridge. The sample contains about 500 dpm ( $10^9$  atoms) of fermium-257. The einsteinium-255 content is about  $10^{-4}$  that of the einsteinium-253. Hulet plans to make einsteinium triiodide, seal it in a quartz tube with hydrogen and to try to reduce the tripositive einsteinium to the dipositive state by microwave heating of the tube. An alternative will be to reduce the einsteinium to metal and then oxidize it to the dipositive state. Hulet noted that LASL is studying the higher oxidation states of einsteinium.

After inspecting four large caves being built (each can handle one gram of californium-252), we visited the magnetic isotope separator facility, where einsteinium-254 will be separated from einsteinium-253. The decay properties of the former isotope are not well known, and an enriched sample will enable these measurements to be made.

Hulet mentioned that the Berkeley accelerator group is examining the Livermore Astron machine with the idea of modifying it to make it into an electron ring accelerator. If the project goes ahead, proton beams would be produced first, and then heavier ions would be accelerated. I inquired if anything has been done on pursuing the evaluation of tungsten isotope separation for use in Plowshare devices. The Livermore group is performing a study of the relative hazards of radioactive tungsten isotopes so that the tungsten composition could be optimized on the basis of safety considerations. The nuclear considerations are already worked out.

Our next stop was the auditorium, which is located outside the restricted area. Here pictures were taken of Gofman and me along with the two co-chairmen of the bio-medical symposium, Frederick Hatch and Bernard Shore. I then granted an interview to Ron Iscoff of the Livermore Herald News, who questioned me on President Nixon's interest in nuclear energy, my appointment by three successive Presidents, the progress other countries (especially the USSR) are making in nuclear energy, and the growth of nuclear power in the U.S.

I then was called into the auditorium proper to give my speech ("The Atom's Expanding Role in the Medical World" at the Symposium on the Biological Implications of the Nuclear Age Dedicating the Bio-Medical Laboratories of the Lawrence Radiation Laboratory at Livermore) on the medical applications of radioisotopes. Mike May introduced me and I spoke from 3:50 p.m. to about 5:00 p.m. I estimate the audience at about 150 people.

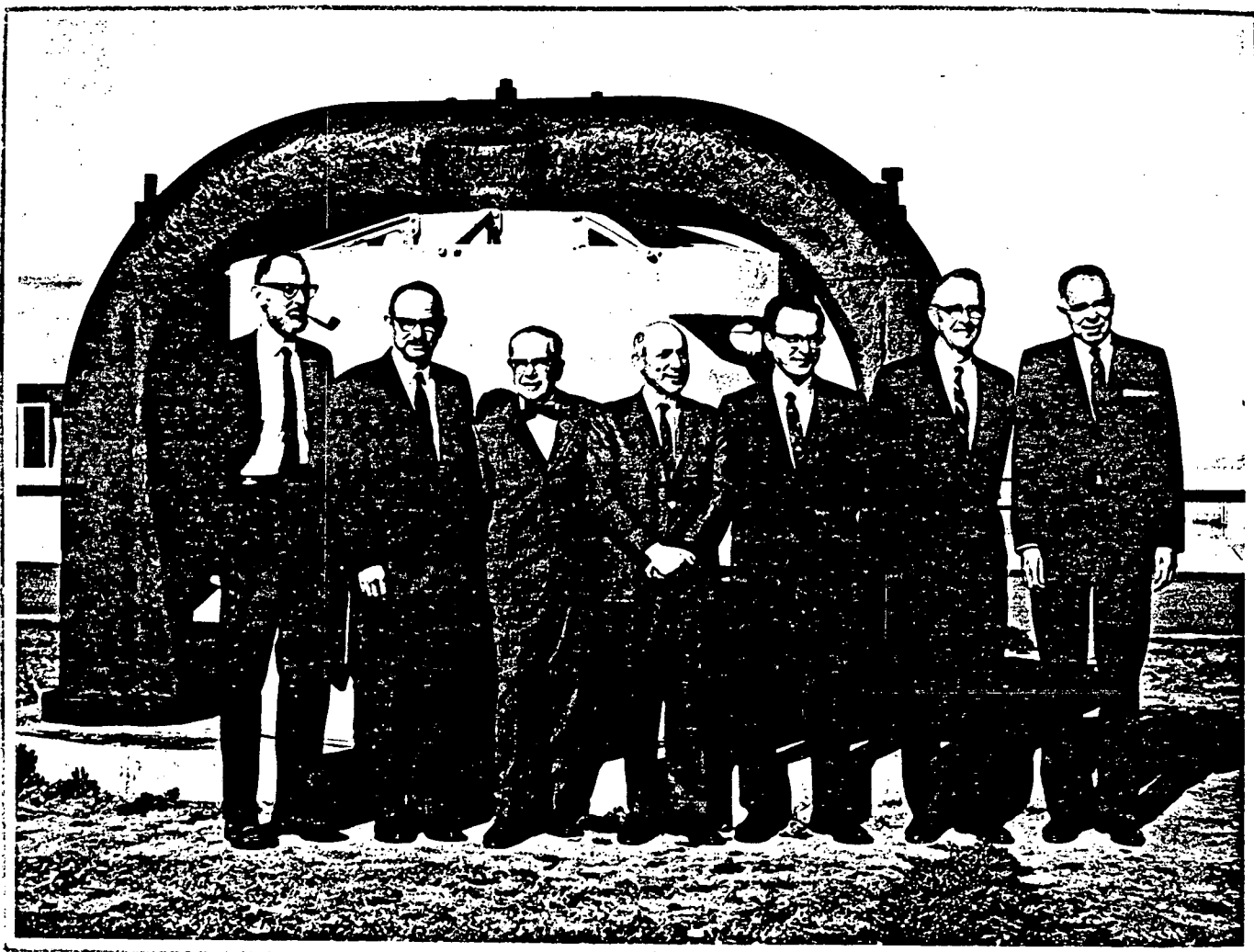
Following the speech, I returned to Mike May's office where he, Sewell, Batzel, Shute, Bloom and I discussed the ABM situation, student unrest on the campus and possible picketing or violence at the local AEC office, the problems of getting the Keraudren experiment approved from the standpoint of the test ban treaty, and the possible impact of the Pitzer Panel report on future high yield testing.

At about 5:30 p.m. I left the Livermore Laboratory and rode with Dan Wilkes to our home in Lafayette where I met Peter. Wilkes left us at this point. Pete and I talked with Mrs. Carney, their son Danny and their daughter for a while. Then Peter and I had dinner at Cape Cod House. We then rode in his new Volvo to his apartment house (on Dwight Way) and visited with his roommate, John Harling. Peter, with John, drove me to the Durant Hotel where I spent the night in room 507.

Friday, March 7, 1969 - Berkeley, California

I had breakfast in the dining room of the Durant Hotel with Justin Bloom.

After breakfast we were taken to the site of the 37-inch cyclotron magnet outside of the Lawrence Hall of Science, arriving there at 9 a.m. A large group of movie and still photographers were on hand to take pictures of the seven Radiation Laboratory Nobel Prize winners. We each recorded our thoughts to a movie camera on the occasion of this assembly.



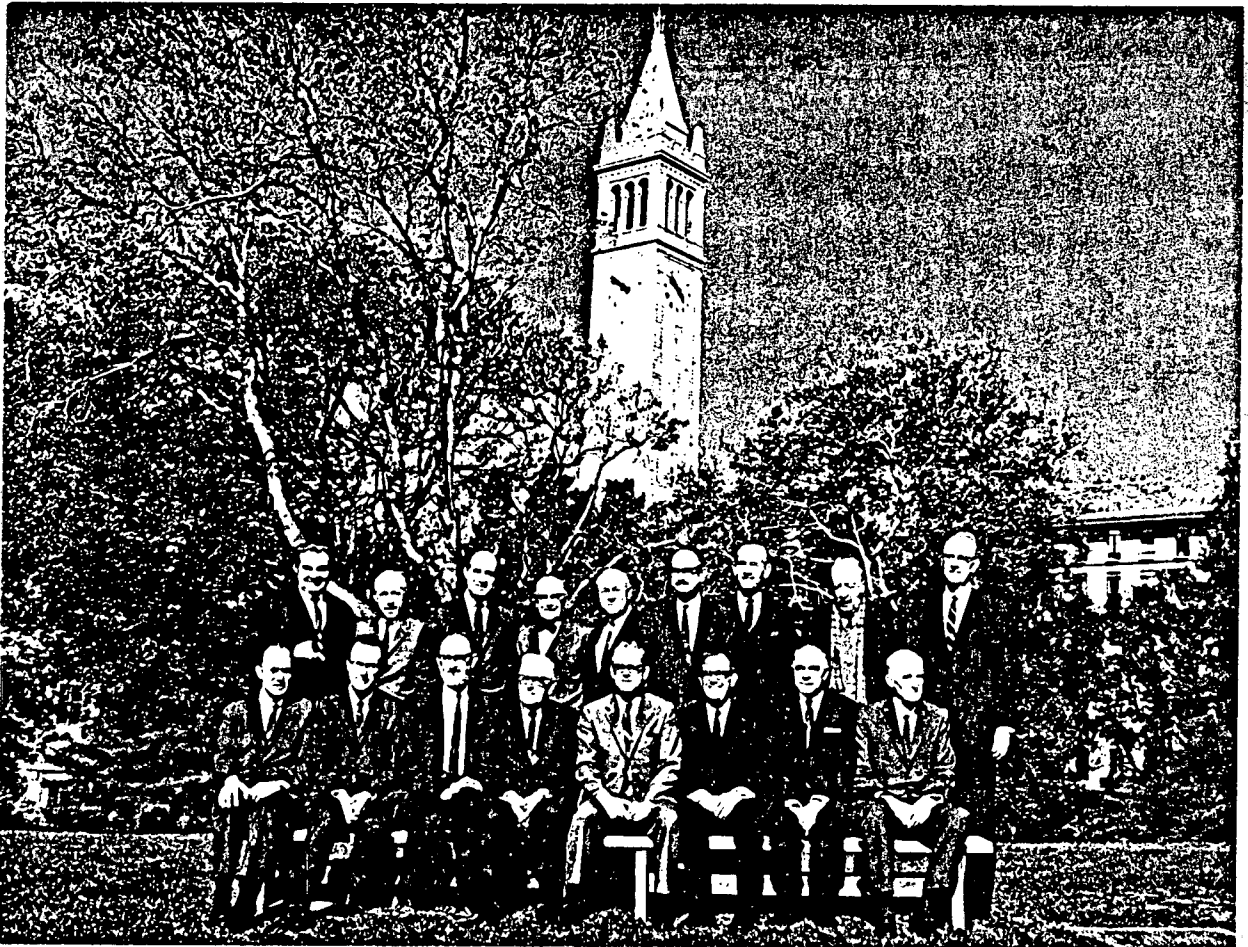
*Owen Chamberlain*  
*Edwin McMillan*  
*Emilio Segrè*  
*Melvin Calvin*  
*Donald A. Glaser*  
*Luis Alvarez*  
*Seaborg*

Seven Nobel Laureates of the Lawrence Berkeley Laboratory,  
University of California, with historic 37-inch cyclotron at the  
Lawrence Hall of Science - March 7, 1969.

L to R: Owen Chamberlain, Edwin McMillan, Emilio Segrè, Melvin Calvin, Donald  
Glaser, Luis Alvarez, and Seaborg.



I then rode with Segrè to the Berkeley campus where the four other Nobel laureates at Berkeley joined the previous group. They were John Northrop, William Giaque, Wendell Stanley, and Charles Townes. Additional photographs and movies were taken of the group. Then Connecticut Congressman Emilio Daddario, and California Congressmen George Brown, George Miller, Jerry Pettis, and Jeff Cohelan (who were on the campus to confer with Berkeley scientists and to hear Mr. Daddario give a seminar on the relationship of science and government later today), were photographed with the Nobel Prize winners. Chancellor Roger Heyns also joined the group for photographs.



California Congressmen on the House Committee on Science and Astronautics and the eleven Nobel Laureates on the Berkeley campus of the University of California; March 7, 1969.

L to R: Front row; Dr. Charles H. Townes, Dr. Donald A. Glaser, Dr. Owen Chamberlain, Congressman George P. Miller, Chancellor Roger W. Heyns, Congressman Jeffrey Cohelan, Seaborg, Dr. William F. Giaque. Back row; Congressman George E. Brown, Jr., Dr. Melvin Calvin, Congressman Emilio Q. Daddario, Dr. Emilio Segrè, Dr. Wendell M. Stanley, Dr. Edwin M. McMillan, Congressman Jerry L. Pettis, Dr. John H. Northrop, Dr. Luis W. Alvarez.

Justin and I then were driven to the HILAC building at the Radiation Laboratory, where we were met by Al Ghiorso. He first showed us the winding of a large beam bending magnet in progress. Al stated that by fabricating the magnet himself, he could do the job for \$10,000 instead of the \$70,000 that

would be charged by a commercial shop. We then went to the HILAC control room, where Alexander von Cube, the German movie director, had his equipment set up to make a movie of a brief lecture by me on the origin of the actinide concept, and practical applications of the actinide elements, and the prospects for discovering new elements. We were delayed a while as a modern periodic table was drawn on a blackboard. The movie making went fairly well.

At 12:30 p.m. Justin and I went to Iz Perlman's office to have lunch with the Chemistry Department "luncheon club." Besides Iz, Earl Hyde, Frank Asaro, Stan Thompson, Al Ghiorso, Ken Street, Jack Hollander, Darrah Thomas, and Dick Diamond were present. We chatted about events on the campus, AEC financial limitations, some of the articles and speeches I am preparing, the Iagolnitzer affair, the Welch Foundation Mendeleev celebration, and other subjects. Earl Hyde asked us to give him a list of speakers qualified to talk about new concepts in heavy ion accelerators at the June Gordon Research Conference, and I agreed to do so. During the lunch, I had a call from Julius Rubin, who alerted me to scheduling problems that were to face me on Monday, March 10, after my return to Washington.

At 1:30 p.m., we returned to the HILAC to make a "news" movie for possible future release, in which Al Ghiorso announces to me the unqualified discovery of isotopes of element 104, introduces the members of his discovery team (Matti Nurmi, Jim Harris, and Kari and Pirrko Eskola), and describes the experiments which led to the discovery. Planning of the movie was handled by Dan Wilkes and Jim Halverson of LRL and Dale Cook of AEC-SAN, all of whom were present and assisted.

We then had time to discuss some of the current findings of Ghiorso's group in their work on element 104, and we also discussed the UNESCO speech which will be given for me and the Scientific American article (Synthetic Elements IV).

At about 3:30 p.m. Pete, his friend Bob Jansen and Jansen's girl friend, Dorothy (Dott) Chocin, met us in the HILAC Building. Ghiorso, Nurmi and I showed them the HILAC, its target areas, the counting equipment and panel, and target preparation areas, etc. I then took them down to the Bevatron and showed it and its control room and target and experimental areas to them.

Bloom and I then visited the local AEC office in Berkeley (2111 Bancroft Way) and met with the senior staff of the office. In attendance were: Ellison Shute (Manager), Thomas A. Nemzek (Deputy Manager), Paul M. Goodbread (Assistant Manager for Administration), J. Wickson Thomas (Chief Counsel), Rodney L. Southwick (Assistant to the Manager for Public Information), Milton F. Moore (Classification Officer), Joseph E. Armstrong (Director, Engineering Division), John F. Philip (Director, Special Projects Division), D. Kilgore (Deputy Director, Technical Services Division), H. Burke Fry (Director, Contracts Division), John L. O'Gara (Director, Security Division), Edward B. Pike (Director, Organization and Personnel Division), Anthony A. Vergari (Director, Finance Division), Milford Bookman (Deputy Director, Administrative Services Division), Frederick A. Robertson (Chief, California Patent Group), and Howard C. Hooper (Area Manager, Palo Alto Area Office).

I briefed the group about current activities in Washington, including my appearances before Congressional committees, the negotiations that are under way on the Cape Keraudren experiment, my thoughts on the limitations on expenditures that are in effect for AEC offices, and the forthcoming visit of the President to Germantown, and answered questions relative to these subjects.

I then rode with Ward Blackmon to Davis where I met David in his apartment (No. 13 at Campus Manor, 230 A Street). We went to Beckett Hall where we had dinner with Dave's friends David New, Mike Lowery and Tung Fu. After dinner we went to the library to look up his apartment roommate, Dan Sheldon; we found him and Dave introduced us. We also met Dennis Leighton in the library. Dave and I then went to Young Hall where we saw a radical movie on Venezuela. We returned to Dave's apartment and chatted for a while, and then I returned to Berkeley to the Durant Hotel with Blackmon.

Saturday, March 8, 1969 - En route to Washington

I had breakfast in the Durant Hotel with Bloom. We rode to the San Francisco Airport with Blackmon. Bloom then went to San Mateo to his sister's home to spend the day with her and his parents in San Francisco. I flew to Dulles Airport on United Airlines Flight No. 50, leaving at about 9 a.m. and arriving at about 5 p.m. On the way I read AEC papers which had arrived in a package at the San Francisco Airport last night. One of the papers I received was a note from Julie Rubin telling me that Lee DuBridge has told Jerry Tape that I am to be the AEC representative to the Space Review Committee. This Committee was established by the President and is chaired by the Vice President.

Sunday, March 9, 1969

I read AEC papers most of the day and evening. In the afternoon I took a hike in Rock Creek Park with Eric and Suki. We started at Pierce Mill, hiked north on White Horse Trail past Military Road, took a loop around Fort DeRussy and returned on the Black Horse Trail.

Monday, March 10, 1969 - D.C.

At 10 a.m. this morning, I briefed the Secretary of State William P. Rogers and the following State Department staff: Jonathon Moore, Executive Assistant, Office of the Under Secretary; U. Alexis Johnson, Under Secretary for Political Affairs; Richard F. Petersen, Counselor; George C. Denney, Jr., Deputy Director, Bureau of Intelligence and Research; Thomas H. E. Quimby, Deputy Assistant Secretary, Bureau of African Affairs; Martin J. Hellenbrand, Assistant Secretary, Bureau of European Affairs; Ward P. Allen, Deputy Assistant Secretary, Bureau of International Organization Affairs; H. G. Torbert, Jr., Deputy Assistant Secretary, Congressional Relations; Richard I. Phillips, Assistant Secretary (Acting), Bureau of Public Affairs; Leonard C. Meeker, Legal Adviser; Joseph A. Greenwald, Assistant Secretary (Acting), Bureau of Economic Affairs; Barbara M. Watson, Administrator, Bureau of Security and Consular Affairs; Miriam C. Camps, Vice Chairman, Policy Planning Council; John P. Walsh, Deputy Executive Secretary, Office of the Secretary; Howard Furnas, Office of Deputy Assistant Secretary for Politico-Military Affairs; Herman Pollack, Director, International Scientific and Technological Affairs; Carl E. Bartch, Deputy Director, Office of Policy News; Gerard Smith, Director, U.S. Arms Control and Disarmament Agency; Frank Shakespeare, Director, U.S. Information Agency; Donovan Q. Zook, International Scientific and Technological Affairs; and Arthur E. Pardee, Jr., International Scientific and Technological Affairs.

I introduced my subject by first reviewing the U.S. AEC's organizational structure. I then noted that the AEC budget is approximately \$2.5 billion broken down as follows:

|  |     |           |
|--|-----|-----------|
| Procurement of Raw Materials   | 5%  | of budget |
| Production of Nuclear Materials  | 20% |           |
| Weapons Development and Fabrication  | 31% |           |
| Development of Nuclear Reactors  | 22% |           |
| Research (Including Physical Sciences,<br>Biology and Medicine, Plowshare) | 17% |           |
| Other Programs   | 5%  |           |

I indicated that I would cover in this briefing primarily non-weapons matters.

The first major topic which I discussed was nuclear power and plutonium production. I noted that at the present time there are about 100 nuclear plants in the United States which are operating, under construction, or planned, accounting for over 70 million kilowatts of power. Furthermore, in the last few years more than half of the new power plants ordered for this country have been nuclear. By 1980 I said I anticipate an installed nuclear capacity of about 150 million kilowatts in the U.S., and in the early 1980's an installed nuclear capacity in Europe of about 150 million kilowatts. At the present time, of the 31 power reactors sold outside their country of origin about 25 have been sold by U.S. companies. The 150 million kilowatts in Europe in the 1980's will involve a capital investment of over \$20 billion and about \$10 billion for fuel enrichment services over the lives of these plants. I pointed out that this obviously will have a very significant effect on balance of payments benefits.

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This led into the second major topic which I discussed--the IAEA. After reviewing the U.S. role in the development of the IAEA, I commented on the importance of the IAEA, especially in the field of international safeguards. In discussing the IAEA, I stressed the effectiveness of Ambassador Harry Smyth as the head of the U.S. Mission to the Agency and also commented on the excellent cooperation we have with the State Department, and with Herman Pollack in particular. I referred to the IAEA budget, which this year is approximately \$11.5 million for the assessed budget, of which the U.S. pays 31.57%. I told Secretary Rogers that I would be sending him a letter soon on the subject of the U.S. voluntary contributions according to the formula for voluntary contribution, so that our pledge would be based on (a) the target figure (\$2 million for the past several years) at the same percentage as our assessed contribution, in accordance with the 1962 General Conference resolution, which would amount to about \$630,000 and (b) a pledge of \$1 million for contributions in kind to the Agency (which has been limited to about \$400,000 annually during recent years) to strengthen the Agency's technical assistance program.

I then reviewed U.S.-Euratom relations. I noted that Euratom has three major functions, 1. promotion and technical development; 2. supply; and 3. safeguards. The first function of Euratom is being less and less supported by

the member countries, and as a consequence, our technical cooperation with Euratom is being supplemented by bilateral cooperation with the member countries. Although we would like to see a strong European Community, it is felt that we should not exert undue pressure on the member countries. In the supply function, we have been supplying material to the member countries through the Euratom Supply Agency. In the cases of France, Germany, Belgium, and the Netherlands, our bilateral Agreements for Cooperation with them have terminated and been folded in with our agreement with Euratom. Since our bilateral agreement with Italy is a long-term agreement, that agreement has not yet been folded in to Euratom. Even in the case of Italy, however, a large part of the material we supply to them is supplied through the Euratom Supply Agency. In the field of safeguards, Euratom has been playing an effective role. There is a special problem relating to the NPT of working out mutually acceptable arrangements for IAEA verification of Euratom safeguards. At the request of the State Department, the AEC (Myron B. Kratzer) is performing a coordinating role in resolving this problem.

I now turned to the European uranium enrichment problem. I noted that although the USSR, the U.K., and France have enrichment plants, the United States is essentially the sole supplier of enriched fuel for power reactors because of our ability to produce significant quantities at a price far lower than any other supplier could possibly meet. Although many people abroad are convinced that our price for enriching services (\$26 per kilogram unit of separative work) is subsidized, the fact is that the price is based on full-cost recovery, including amortization of that fraction of the plants devoted to this service, as well as contingency factors, etc. In fact, when our cascade improvement program is put into effect, the cost may go down very significantly and our capacity would increase by about 50 percent. In spite of our low price for enriching services, there is increasing reluctance abroad to be dependent on the U.S. as the sole supplier; there is active interest in Europe, Japan, and Australia to develop independent enrichment capabilities. The U.K., Germany and the Netherlands are cooperating in the possible development of an isotope separation plant based on gaseous diffusion. We are faced with a policy dilemma as to whether, at one extreme, to offer to assist these countries in their development of an isotope separation plant with its contingent proliferation implications, or, at the other extreme, to cut ourselves off entirely from their development forcing them to go it alone, with its contingent proliferation implications. I also mentioned the problem relating to the U.S.-U.K. classified exchange in gas centrifugation during 1960 through 1965 and the need to assure ourselves that no classified U.S. technology made available under this exchange is transmitted to Germany and the Netherlands. I told Secretary Rogers about Commissioner Tape's trip of last week to London where this subject was discussed with the British.

I briefly commented on the AEC's Plowshare program and more specifically, the Australian interest in jointly carrying out with the AEC a feasibility study for a harbor project at Cape Keraudren. I gave a general description of the problems concerning the interpretation of what constitutes radioactive debris in connection with possible violations of the Limited Test Ban Treaty and described our proposed interpretation which regards radioactive debris as being not present when the concentrations fall below the definitions of not present used by the International Radiological Commission. I also mentioned the planned technical talks with the Soviet Union on the "state-of-the-art" peaceful nuclear explosions. (Following the briefing, I told Secretary Rogers, Alex Johnson, and Herm Pollack that I am very anxious that we move

fast in setting up these discussions since I want Commissioner Tape to handle this and Commissioner Tape will be leaving the Commission shortly; therefore, I urged that these talks take place while Dr. Tape is still with the Commission.)

I commented briefly on the interest on the part of the Netherlands in obtaining nuclear submarine technology from us and the interest on the part of Italy in obtaining enriched uranium fuel for a critical experiment related to an Italian nuclear propelled surface vessel, described by Italy as a civil project, but which is to be operated by the Italian Navy. I explained the very strong Congressional sensitivity regarding any possible cooperation in this area.

I reviewed the U.S.-U.K. Mutual Defense Agreement, on which Joint Committee hearings are at this very moment being held with Commissioner Tape testifying for the AEC.

I then reviewed the status of U.S.-French relations in atomic energy matters and stressed the excellent cooperation we have had for a long period of time with our French nuclear energy colleagues and noted that the CEA Administrator General Robert Hirsch, Bertrand Goldschmidt, CEA's Director of External Relations and Programs, and Maurice Pascal, their Administrative Director, will be visiting me in Washington next Monday, March 17. I mentioned the comprehensive U.S.-French bilateral technical exchange which took place last year and noted our continued desire for good relations with France on peaceful uses of atomic energy.

I reviewed the U.S.-Soviet Memorandum of Cooperation noting that because of the Soviet invasion of Czechoslovakia not much has been done to implement this cooperation. A team of high-energy physicists led by Dr. Wolfgang Panofsky is, however, presently in the Soviet Union to explore unofficially with their counterparts possibilities for cooperation with the Serpukhov accelerator group. I noted that the Serpukhov accelerator at 70 Bev is the largest accelerator in operation in the world and will be until the AEC 200 Bev accelerator near Chicago is built. I also commented on the plans for the European 300 Bev accelerator in which both Germany and France are still quite interested.

I noted receipt of NSSM 28 (copy attached).

I had lunch in the AEC dining room with Julie Rubin, Justin Bloom and Bill Perkins.

I received a letter from Lewis Strauss (copy attached) thanking me for sending him copies of my Rosenfield lectures and calling to my attention an error in an item that appeared in a recent issue of the Bulletin of the IAEA.

Deleted

I called Lee DuBridge regarding the Space Review Committee. He said that this ad hoc committee was established by the President and would consist of four members: the Vice President, Tom Paine, Bob Seamans, and DuBridge; also represented would be AEC by me, State by Richardson or Johnson and BOB by Mayo. Also, there will be a working group of staff directors from these agencies. I said that George Kavanagh would be the one from the AEC.

THE WHITE HOUSE  
WASHINGTON

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March 6, 1969

National Security Study Memorandum 28

TO: The Secretary of State  
The Secretary of Defense  
The Director, Arms Control and Disarmament Agency  
The Director of Central Intelligence  
The Chairman, Atomic Energy Commission  
The President's Science Adviser

SUBJECT: Preparation of U. S. Position for Possible Strategic Arms Limitation Talks.

The President has directed the preparation of a U. S. position for possible strategic arms limitation talks with the Soviet Union.

Alternative options that should be considered in preparing the U. S. position will be developed by a steering committee under the chairmanship of the Arms Control and Disarmament Agency and including representatives of the Secretary of State, the Secretary of Defense, the Chairman, Joint Chiefs of Staff, the Director of Central Intelligence, the Chairman, Atomic Energy Commission, Assistant to the President for National Security Affairs, and the President's Science Adviser.

The options should be accompanied by an evaluation of the strategic balance that will result, as well as a discussion of possible Soviet reactions to each and likely U. S. responses. A statement of principles and objectives should be developed for each option, together with proposed tactics for its use in relation to the proposal.

The study should be forwarded to the NSC Review Group by May 15, 1969.

  
Henry A. Kissinger

1250 Connecticut Avenue, N.W.  
Washington, D.C. 20036

UNCL. BY DOE  
NOV 86

Sarasota, Florida  
28 February 1969

BS 3/10/69

Dear Glenn:

Many thanks for your note.

While on vacation in Florida, I have read your Rosenfield lectures with great interest and was happy to see your reference to former President Eisenhower (and myself) in connection with the history of the Atoms-for-Peace program.

It was a timely coincidence for the reason that in a recent issue of the Bulletin of the International Atomic Energy Agency the following appeared:

"... He [H.D. Smyth] was also one of the two men (the other being Dr. John A. Hall, now a Deputy Director General of the Agency) who advised President Eisenhower in preparing his 'Atoms for Peace' speech to the UN in 1953 from which the Agency developed..."

Since neither Dr. Smyth nor John Hall "advised President Eisenhower in preparing his Atoms-for-Peace speech", or had anything to do with it, I was not very much amused, and *appreciated your remark all the more.*

With warm regards, I am

Yours faithfully,

*Lewis*

Lewis L. Strauss

Dr. Glenn T. Seaborg  
Chairman  
U.S. Atomic Energy Commission  
Washington, D.C. 20545



I said that there has been a leak on Tape's appointment to AUI; so it will be announced this week. DuBridge said that isn't serious. He is working on the necessary clearances for Theos Thompson, and so far everything is fine. He has had two other suggestions for the Tape position: Sidney Drell of Stanford and Murph Goldberger of Princeton. I asked that, before it goes too far, he let me know so that I can ascertain whether Thompson would accept if named.

I said that there is some feeling here that maybe AEC should be involved on the Environmental Quality Council. He said that the President is anxious to keep the central group as small as possible but with a wide group for consultation. He said it is still under consideration and has not yet been firmed. We discussed the best way to handle the release of the Pitzer Panel report and the AEC report. He said that one possibility would be to issue the Pitzer report and have the AEC issue its report at the same time.

At 2:10 p.m. I presided over Information Meeting 884 (notes attached) at which the Commission approved the draft letter soliciting industry comments on uranium enrichment activities. At 4:15 p.m. I presided over Regulatory Information Meeting 332 (notes attached).

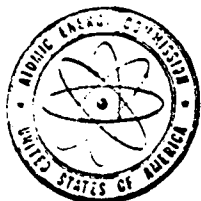
Milt Shaw briefed the Commission on the relationship of positive sodium void effects to the overall safety of liquid metal fast breeder reactors.

Helen and I attended the reception at the Army & Navy Club given by the Trustees and President of the University of Southern California for Mrs. Richard Nixon and Secretary Robert Finch. We arrived after Mrs. Nixon had left. Among the people that we saw, besides USC President and Mrs. Norman Topping and Secretary and Mrs. Finch, were Mr. and Mrs. Packard, Mr. and Mrs. Brooker and Mr. and Mrs. Dart (the latter two, USC trustees), HUD Secretary George Romney, Senator Murphy, Congressman Hosmer and DuBridge.

Tuesday, March 11, 1969 - D.C.

The Commissioners and Julius Rubin met with Harold Price in order to have an in-depth exploration of his problems and plans in the Regulatory area. Price went over his organization in detail to describe the strengths and weaknesses of his key people and emphasized an urgent need for additional manpower in order to handle the increasing regulatory load. McCool joined us, and we went on to talk about the future role of the Advisory Committee on Reactor Safeguards; the question of the regulation of products produced in underground nuclear explosions, such as natural gas; the question of an eventual separate agency to assume the regulatory function; the matter of metropolitan siting of reactors where we emphasized that we should immediately begin to develop criteria for this; the question of the safety of fast breeder reactors; and the overall matter of the difficult problem of adequate planning to handle an incredible accident involving a nuclear power reactor.

I sent a letter to Dr. Thomas Paine (Administrator of NASA) in response to his letter concerning the need for radioisotope thermoelectric generator (RTG) electric power in connection with outer planetary exploration missions planned by NASA for the 1970's. I advised him that RTG studies have been initiated by the AEC, in concert with NASA, planning for Pioneer F and G launches in 1972 and 1973.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL BY DOE COPY NO. 2  
1988 March 10, 1969

INFORMATION MEETING 884

2:10 p.m., Monday, March 10, 1969, Chairman's Conference Room, D. C.

1. Commissioners' Meeting with the Atomic Industrial Forum, May 29, 1969, Airlie House :

Scheduled. A check re AIF organizational plans is requested.  
(IP-Rubin-SECY)

2. Nominees for the Advisory Committee on Reactor Safeguards

The Committee plans to proceed with Mr. Hibbert Hill and requests a delay in the action on an additional nominee. (SECY)

3. March 6 National Security Study Memorandum 28 re Preparation of U.S. Position for Possible Strategic Arms Limitation Discussions

Noted. (SAD)

4. National Security Council Meeting, 10:00 a.m., Wednesday, March 12, 1969

The Chairman will attend the discussion re preparations for the ENDC. (SAD)

5. Review Committee for the U.S. Space Program

An appropriate staff liaison will be designated after this week's meeting.  
(AGMR)

6. Chairman's Morning Briefing for Secretary of State Rogers
7. Commissioner Tape's Oral Report on the JCAE Hearing This Morning re Fuel for UK Nuclear Submarines
8. JCAE Hearing re March 3, 4, and 5 US-UK London Discussions on Gas Centrifuge

Commissioner Tape said an Executive Hearing will be scheduled. (Congr.)

9. Commissioner Costagliola's Report on His March 3-7 Trip to Tokyo and Manila
10. March 4 Letter from Alex Radin, APPA, re Task Force of APPA Requesting Briefing from AEC

An appropriate response is requested. (AGMP&P)

11. February 24 Letter from Senator Edward Kennedy re Agency Procedures

A draft will be circulated for consideration on Wednesday, March 12. (SEC)

12. Lawrence Award Ceremony, 4:00 p.m., April 30, 1969, the Carnegie Institution

Scheduled. (SECY)

13. Cape Keraudren Nuclear Excavation Project and the Limited Test Ban Treaty (March 9, 1969, Department of State Draft)

Mr. Bloch requested the Commissioners' comments by morning in preparation for the Interdepartmental staff discussion at 3:00 p.m., March 11, 1969. (SAD-PNE)

14. Mr. Labowitz' Oral Report on the March 6 Meeting of the ENDC Review Group

15. Executive Session (See General Manager's March 6 Memorandum re Person Item)

Approved in part with a request for additional information. (AGMLA)

16. AEC 459/65 - Draft Letter Soliciting Industry Comments on Uranium Enrichment Activities (See also Mr. Quinn's March 5 Memorandum re Future Ownership and Management of Uranium Enriching Facilities)

Approved with a revision. Mr. Robert Ellsworth, Assistant to the President, is to be informed. Commissioner Johnson is to be provided available material for use at the Palm Springs AIF Senior Management Seminar. (AGMP&P-Rubin-Helfrich)

17. Commissioner Johnson's March 5 Draft Statement re Uranium Enrichment Services to the Nuclear Power Industry

Noted. (SECY)

18. AEC 720/201 - Change in Effective Date of In Situ Toll Enrichment

Mr. Bloch reported briefly on the Joint Committee solicitation of reaction from uranium producers. (AGMP&P)

19. AEC 141/124 - Underground Nuclear Testing: Summary Report on Activities for Assuring Safety

Approved with revisions for release during the week of March 17. (AGMMA)

20. Utah House Resolution re Nuclear Test

21. Staff Discussions with the DOD and the BOB re the Test Readiness Program

22. Request for Staff Briefing of the Senate Preparedness Subcommittee re ABM

23. AEC 460/109 - Proposed SINB-AEC Conference on Environmental and Siting Considerations Associated with Nuclear Power Plants

Noted. (AGM)

24. Pending Contractual Matters Report No. 298 and Supplement to PCMR 298

Noted. (PAR)

25. Request from Dr. Lee DuBridge for a Plowshare Briefing for the PSAC,  
Tuesday, March 18, 1969

W. B. McCool  
Secretary

4:15 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

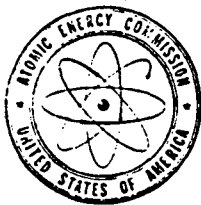
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Rosen\*  
Mr. Kratzer\*\*  
Mr. Labowitz\*\*  
Mr. Kelly\*\*  
Mr. Schoenhaut\*\*  
Mr. Quinn\*\*  
Mr. Tesche\*\*  
Gen. Giller\*\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Partial Attendance

\*\*Attendance by Topic (s)



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

March 10, 1969

REGULATORY INFORMATION MEETING 332

4:15 p.m., Monday, March 10, 1969, Chairman's Conference Room, D. C.

1. AEC-R 8/35 - Amendment of Reporting Requirement in 10 CFR 20.408

Approved. (ADRA)

2. Dr. Beck's March 4 Memorandum re Schedule for Rotterdam Dry Dock Inspection

Noted. (DDR)

3. Dr. Beck's March 4 Memorandum re Regulatory-ACRS Reactor Safety Discussions with the UK and German Authorities

Reduction of staff representation is requested and the Executive Secretary, ACRS, is to be informed. (ADRA)

4. Mr. Price's March 7 Memorandum re Air Force License for a Sub Orbital Flight

Approved. (DML)

5. Mr. Price's February 28 Memorandum re Speech - The Development of Regulatory Criteria for Control of Radiation Exposures to the Population from Consumer Products Produced by Plowshare Applications

The Chairman requested review by the Commissioners and reconsideration. Additionally, Commissioner Johnson requested a legal opinion. (ADRA-GC-SECY)

6. AEC 1299/2 - Proposed Legislation to Permit AEC to Charge Federal Agencies License Fees for Power Reactors and Mr. Price's March 7 Memorandum)

The Commissioners noted Mr. Price's report on his discussion with Mr. Wessenauer of TVA and affirmed their approval of AEC 1299/2. (ADRA-GC-DRL)

W. B. McCool  
Secretary

4:25 p.m.  
207

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Price  
Mr. Henderson  
Mr. Hennessey  
Mr. Rubin  
Mr. Wells  
Mr. McCool  
Mr. Rosen\*

DISTRIBUTION:

Commissioners  
Dir/Regulation  
General Manager  
General Counsel  
Secretary

\*Partial Attendance

I had lunch in the dining room with Allan Labowitz, Tom Clark and Julie Rubin to discuss the forthcoming NSC meeting.

I participated in a symposium of the Annual Meeting of the National Research Council, at the National Academy of Sciences, on the "Progress in Non-Military Applications of Nuclear Energy" under the chairmanship of Commissioner Tape. After the lead-off speaker, I talked on the Transuranium Elements with emphasis on the superheavy Transactinide Elements and with a short account of the practical applications of the Actinide Elements. Following my talk, Alvin Weinberg spoke on the Nuplex and Norman Anderson on the Molecular Biology Program at Oak Ridge. After I left Glenn Werth spoke on the Plowshare program and Amasa Bishop on Controlled Thermonuclear Research. As I left the Academy building Frank Carey, the AP reporter, who had heard my talk, queried me on the Soviet work on Elements 104 and 105, the prospects of finding Element 110 in nature and the underground nuclear explosion method of synthesizing new isotopes and new elements.

I sent my first biweekly status report on significant developments in the atomic energy program to Lee DuBridge and Robert Ellsworth (copy attached). This is done under a different system from that used by Presidents Kennedy and Johnson, to whom I sent my status reports directly.

Wednesday, March 12, 1969 - D.C.

I received a call at 8 a.m. at home from Spurgeon Keeny who told me that the NSC meeting scheduled for this morning at 10 a.m. has been postponed until Saturday.

I sent a letter to Dr. R. L. Smith, President of Michigan Technological University, advising him that their proposal for a research grant has been turned down because it didn't have the high merit required, particularly in view of higher merit proposals we have had to turn down because of a lack of funds. This was in response to his letter sent as a follow-up to Dr. Charles Mandeville's visit to my office on February 10.

I responded to George White's (President of Nuclear Exchange Commission) letter of February 28, advising him that the Commission has advanced the date for the initiation of in situ toll enriching to April 1, 1969.

We received word today that President Nixon has approved our recommendations for the Lawrence Awards.

Julie Rubin, Justin Bloom and I had lunch in the dining room.

After lunch I met with Admiral Will, president of the First Atomic Ship Transport, Inc. He was accompanied by Roy Mehan (Executive Vice President), Franklin G. Hunt, their attorney, and Pool C. Christensen of the American Export Isbrandtsen Lines, Denmark. They were here to talk to me as a follow-up to the invitation I extended in a letter I sent last fall in reply to Will's telegram of September 5, 1968. The problem remains that they cannot receive permission from the Japanese Government for the NS SAVANNAH to dock in Japanese ports because of a disagreement over the application of the Price-Anderson indemnity provision. I said that I would look into the matter but didn't promise that I would be able to straighten it out in a short time.



AEC BIWEEKLY STATUS REPORT FOR MARCH 11, 1969

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1. A delegation of U.S. physicists visited the USSR from February 28 to March 5 to discuss possible future experiments involving collaboration of U.S. and Soviet scientists using the Soviet's new 76 BEV proton accelerator at Serpukhov. The Soviets took the position that a major equipment contribution by the U.S., preferably in the form of a large computer, would be required before large-scale cooperative experiments could take place.
2. AEC endorsed the proposed Water Quality Improvement Act of 1969 (H.R. 3511, S.7) as a significant step toward solving the complex problems of water quality in testimony before the Senate Committee on Public Works, Subcommittee on Air and Water Pollution (on March 3) and the House Committee on Public Works (on March 6). The Act would require that before a construction permit or operating license for a nuclear power plant can be issued AEC must receive reasonable assurance that the plant activity will be conducted in a manner that will insure compliance with water quality standards established by the states and approved by the Secretary of Interior in accordance with the Water Quality Act of 1965.
3. Among my activities during the past two weeks were my appearance before the Senate Armed Services Committee on February 28 to support the Non-Proliferation Treaty and a visit to the Lawrence Radiation Laboratory on March 6 to participate in the dedication of a new Bio-Medical Laboratory.
4. Secretary of State Rogers, in his testimony before the Senate Foreign Relations Committee on February 18, stated in response to a question by Senator Mansfield that the Department of State, the Atomic Energy Commission, and the Arms Control and Disarmament Agency would be involved in the review of the deployment of the anti-ballistic missile system.
5. Arrangements are in progress for E. I. duPont de Nemours, Inc., a major AEC operating contractor, to provide limited technical assistance to Deuterium of Canada, a company engaged in constructing a heavy water plant, which has been experiencing difficulties in the startup of the plant.

6. Congressional hearings on uranium mining radiation standards will be held by the Joint Committee on Atomic Energy on March 17-19. AEC testimony will be given on the first day, together with that from the Federal Radiation Council and the Departments of Labor and Interior. Representatives from labor and the uranium mining industry will be heard on the second day. The hearings will be conducted in open sessions by the Subcommittee on Research, Development, and Radiation.
7. AEC presented testimony on March 10 in an Executive Session of the Joint Committee on Atomic Energy concerning renewal of our agreement with the United Kingdom to provide enriched uranium for use in military propulsion reactors.
8. Senate consideration of AEC's appropriations will now begin in the full Subcommittee on Public Works Appropriations instead of in the AEC-TVA component of the Subcommittee.
9. The new chairman of AEC's General Advisory Committee (which advises on scientific and technical matters relating to materials, production, and research and development) is Howard Vesper, a retired Director and Vice President of Standard Oil of California.
10. The Western Interstate Nuclear Compact became effective last week. California, Colorado, Idaho, Washington, and Wyoming have ratified the Compact, which establishes an interstate board for promoting the development of nuclear technology and commerce within the region. The Compact could eventually include 13 western states. It will be necessary to enact Federal legislation if the Compact is to have official Federal recognition, as has been done for the Southern Interstate Nuclear Board.
11. The new Inspector General of the International Atomic Energy Agency is Rudolph Rometsch (a Swiss), who thus becomes the primary official for the IAEA's safeguards program for assuring that nuclear materials supplied for peaceful uses are not diverted for military purposes. The IAEA now has 40 safeguards agreements involving 69 reactors and other facilities in 30 countries. The Agency's safeguards function would be greatly expanded under the Non-Proliferation Treaty.

12. Three representatives of the French Government will meet with the Commission on March 17 for a general exchange of views on cooperation in the civil applications of atomic energy and a briefing on AEC programs. They will then visit the Linear Accelerator Center at Stanford University and a number of atomic industrial groups.
13. The West German Government has decided to accelerate development of the advanced fast breeder reactor with the goal of improving the international competitive position of that country's nuclear power reactor industry.
14. Of ten claims submitted for alleged minor damage from the BENHAM weapons test conducted in Nevada last December, two were withdrawn, and five were found not attributable to the event. Three others involving cracks in walls and a shifted roof line were settled for a total of \$575 after investigators decided it was credible that the damage could have resulted from the approximately one megaton underground detonation.

I sent a letter to Hibbert Hill telling him we are deeply appreciative of his willingness to serve on the Advisory Committee on Reactor Safeguards.

I sent a letter to John Badalich of the Minnesota Pollution Control Agency, advising him that we are reviewing their report on Radioactive Pollution Control in Minnesota which purports to set more stringent levels on radioactive discharge than allowed under AEC standards; I pointed out that this will probably be interpreted as encroaching on AEC's authority.

At 2:30 p.m. I was interviewed by Howard L. Lewis, Assistant Research Editor for Business Week. Justin Bloom was present. I discussed with Lewis the current status of the transuranium elements for a story he is writing for Business Week. I emphasized three areas: (1) the large extent of the elements now known, namely through atomic number 103 or 104; (2) their rather fantastic production in large quantities, present and planned; and (3) the prospects for islands of stability among the superheavy elements and the calculations for the electronic structure all the way up through many of the superactinides.

I received a memo from Vice President Agnew (copy attached) telling me that a Space Task Group (STG) has been formed to prepare for the President a coordinated program and budget proposal for the Post-Apollo period. I am to serve on the Task Group as an observer.

I called Theos Thompson at MIT to ask him whether he would consider being nominated for a position on the Commission, as a commissioner; I told him that Jerry Tape is leaving and that I would like to have someone with his qualifications as a colleague. I told him that his background in reactors and his experience at Los Alamos and with the ACRS would contribute to the future program of the AEC in a manner that is almost unique. He said he would want to talk to some people first, and also he would very much like to discuss with me the future of the Commission and to get a little better understanding of the politics of it which are not clear to him. He asked if this offer had been discussed with the entire Commission and I assured him it had and that everyone was agreeable to it. He decided he would come down tomorrow to talk with me.

Thursday, March 13, 1969 - D.C.

We have received word that the President's visit to our AEC headquarters in Germantown has been postponed.

In the morning I met with Dr. Theos Thompson to urge him to accept a commissionership on the Atomic Energy Commission and to discuss with him in some detail the duties involved and the general situation. Commissioner Tape was present part of the time.

Shirley Shanahan of the Voice of America interviewed me on nuclear power, nuclear ships and nuclear medicine.

We received by phone a reply from the Bureau of the Budget on our request for additions to the FY 1970 budget sent over on February 10. A summary of this is appended. In short, the Hanford reactors were not allowed; the production contingency for two tactical weapons systems was not allowed; the additional



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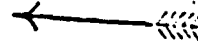
OFFICE OF THE VICE PRESIDENT

WASHINGTON

March 10, 1969

MEMORANDUM FOR

Secretary of State  
Director, Bureau of the Budget  
Chairman, Atomic Energy Commission



SUBJECT: Space Task Group

A Space Task Group (STG) has been formed to prepare for the President, by September 1, 1969, a coordinated program and budget proposal for the Post-Apollo period. This program will recommend the scope, direction and goals of the Space Program for the next decade. The President has requested that I chair this group, with the Secretary of Defense, the Administrator of NASA, and the Science Advisor to the President as principals. In addition, I hereby request the Secretary of State, the Director of the Bureau of the Budget and the Chairman of the Atomic Energy Commission to participate on the Task Group as observers.

There will be a Staff Director's Committee, chaired by the Staff Director from the Office of Science and Technology, for the purpose of coordinating staff studies and other support for the Task Group. I am asking each principal and each observer to designate a Staff Director to serve on the Staff Director's Committee. It is intended that Staff Directors attend Space Task Group meetings unless notified otherwise. I request that you provide me, by March 17, 1969, the name of the individual you select for your Staff Director and the name of his alternate.

The next meeting of the Space Task Group will be on Friday, March 14, 1969, at 2:30 p.m. in my office, Room 275, Executive Office Building. At this meeting, I will expect to review the manned space flight issues raised by Dr. Paine in his memorandum to the President of February 26, 1969, and to discuss recommendations to the President from the STG on these issues.

SK

FY 1970 AMENDMENTS  
(In Millions)

|  | REQUEST   |           | BOB ACTION      |                |
|--|-----------|-----------|-----------------|----------------|
|  | NOA       | Exp.      | NOA             | Exp.           |
| X Reactors <u>1/</u> (Including Tank) .....        | \$+12.2   | \$+8.4    | \$ -0-          | \$ -0-         |
| SXV Operating .....                                | -3.2      | -2.4      | -3.2            | -2.4           |
| Weapons Production .....                           | +30.4     | +22.8     | +30.4           | +22.8          |
| Prod. Contingency for two systems <u>1/2</u> ..... | +15.0     | +11.2     | -0-             | -0-            |
| One Year Deferral of ABM <u>2/</u>                 |           |           |                 |                |
| <u>Operating</u>                                   |           |           |                 |                |
| STS .....  | -13.3     | -10.0     | -13.3           | -10.0          |
| Production .....                                   | -6.9      | -5.2      | -6.9            | -5.2           |
| Subtotal .....                                     | -20.2     | -15.2     | -20.2           | -15.2          |
| <u>Construction</u>                                |           |           |                 |                |
| 6S-2-a .....                                       | -13.0     | -10.0     | <u>3/</u>       | -10.0          |
| Total .....  | -33.2     | -25.2     | -20.2           | -25.2          |
| Test Readiness Program <u>1/</u> .....             | +21.7     | +16.3     | +13.3           | +10.0          |
| Reduction in Underground Tests .....               | -13.3     | -10.0     | -13.3           | -10.0          |
| MSBR .....   | +4.0      | +3.0      | -0-             | -0-            |
| HTGR .....   | +2.7      | +2.0      | -0-             | -0-            |
| LWR Termination .....                              | -         | -         | -18.0           | -18.0          |
| MWD .....  | -13.8     | -3.0      | -13.8           | -3.0           |
| Israeli Desalting <u>1/</u> .....                  | <u>4/</u> | <u>4/</u> | -0-             | -0-            |
| Plowshare .....                                    | +20.2     | +15.15    | -0- <u>5/</u>   | -0- <u>5/</u>  |
| 200 Bev .....                                      | -6.0      | -0-       | -6.0            | -0-            |
| Berkeley HILAC .....                               | +2.65     | +5        | +2.65           | +5             |
| TE&I .....   | -         | -         | -1.3            | -1.0           |
| PD&A and Other Manpower .....                      | -         | -         | -5              | -5             |
| Equipment and GPP .....                            | -         | -         | -5.0            | -2.0           |
| Total .....  | <u>\$</u> | <u>\$</u> | <u>\$-34.95</u> | <u>\$-28.8</u> |

1/ Not a formal amendment.

2/ AEC cited in letter for illustrative purpose only; not as a budget amendment.

3/ Excludes deferral of construction obligations.

4/ Range of \$10 - \$15 million.

5/ Recognize possibility of a supplemental if Keraudren goes.

NOTE: -- BOB considered increasing revenues resulting from Use Charge increase but in view of uncertainty in toll enriching estimates decided not to force further reductions in NOA and expenditures by increasing revenues.

-- BOB also expressed concern regarding validity of \$20 million reduction in Raw Materials program based on voluntary curtailment of U<sub>3</sub>O<sub>8</sub> deliveries to Commission.

March 13, 1969

money for weapons production due to new requirements was not allowed; there was a cut in the production of the ABM warhead due to the stretchout of this program; the test readiness program was allowed at a decreased level; the addition for the molten salt breeder reactor and the high temperature gas cooled reactor was not allowed; the light water breeder reactor was terminated; no addition for Plowshare was allowed; the improvements to the Berkeley HILAC were allowed; there was a \$1 million cut for technical education and information, a \$500,000 cut in manpower and a \$2 million cut in equipment and general plant production.

In my capacity as President of Science Service I called Peter Clark, Publisher of the Detroit News, to ask him to become a member of the Science Service Board of Trustees. I said we are aware of his interest in the Detroit Science Fair. He said he appreciated our thoughtfulness in considering him for this position and he would be honored to be involved with Science Service. I said that Ted Sherburne would be in touch with him concerning the details.

At 12:01 p.m. I watched Astronauts James McDivitt, David Scott and Russell Schweickart ride their Apollo 9 spacecraft into the Atlantic Ocean, east of the Bahamas, after a ten-day earth orbital flight setting the stage for the first moon landing.

I sent to Bob Ellsworth information on the Commission study of the question of whether the responsibility for the uranium enriching function should, in the future, be assumed by private industry.

I had lunch in the dining room with Theos Thompson and Julie Rubin.

Howard Vesper came in to see me. He said he is sorry to learn that Jerry Tape is leaving but is glad to hear that there is a possibility that Theos Thompson might be his replacement. He mentioned Larry Hafstad and Manson Benedict as other good prospects for a commissionership. He said he has talked to Lee DuBridge and suggested that perhaps President Nixon might like to meet with the GAC. DuBridge indicated that this might very well be possible. There may be an attempt to set up such a meeting, which would also involve the Commissioners, at the time of the next GAC meeting in Washington, April 23-25. We both recalled that there had been one other occasion when the President met with members of the GAC, and I said that I was present at that meeting which took place with President Truman in January, 1950. He said that the GAC is in the process of coming up with recommendations for the Fermi Award and indicated to me, confidentially, that they have in mind Norris Bradbury, Wally Zinn and Alvin Weinberg with possibly some further consideration of General Leslie Groves.

At 2:45 p.m. I took Theos Thompson over to meet Lee DuBridge in his office. I explained that Thompson has outstanding qualifications in the field of weapons, reactors, accelerators, and university relations and is admirably suited to be a commissioner. DuBridge, who had talked to a number of people about Thompson, agreed, and we decided that he would proceed with White House clearance. After the clearance is obtained we would inform the pertinent members of Congress. In the meantime Thompson would try to arrange for a leave of absence from MIT since he would be taking a term that expires June 30, 1971, and this would give him an option to leave at that time and return to MIT, if this should be his wish.

DuBridge and I discussed the possible meeting of the GAC and Commissioners with the President during the time of the forthcoming GAC meeting and decided that April 23 or April 24 might be best. DuBridge told me that the President is planning to address the meeting of the National Academy of Sciences the following week, possibly around noon after the election of members on Tuesday, April 24. I mentioned also that we will have our Lawrence Award Ceremony at 4 p.m. on Wednesday, April 30 and would like to have DuBridge attend that and, of course, also the President if this should be possible. DuBridge indicated that if the President addressed the National Academy of Sciences he probably wouldn't find it possible to also participate in the Lawrence Award Ceremony. I did take this occasion, however, to mention that we would like the President's participation in the Fermi Award Ceremony this coming December 2.

I told DuBridge that we would have the report on the safety of nuclear weapons testing ready next week and then we will show him a copy at that time so that we could determine how it will be issued in relations to the Pitzer Panel report.

DuBridge told me that the President's announcement tomorrow regarding the deployment of the Sentinel ABM system will be along the lines that it will be a greatly reduced system.

DuBridge suggested that Larry Hafstad might be a good candidate for Commissioner to replace Costagliola when his term expires on June 30 of this year.

At 4:15 p.m. I presided over Commission Meeting 1712, at which the commission approved a draft telegram to Mr. Travis, manager of the AEC Richland Operations Office, to be sent by me if I deem it necessary, in regard to Hanford labor contract negotiations.

The Senate today ratified the Non-Proliferation Treaty by a vote of 83-15.

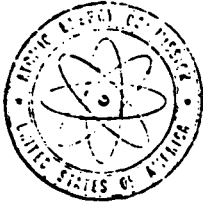
Eric, Suki and I went for a hike in Rock Creek Park, starting at Nebraska and Oregon Avenues, going north on the White Horse Trail to Cross Trail No. 2, then south on Black Horse Trail to Cross Trail No. 3, and back to our starting point.

Friday, March 14, 1969 - D.C.

I presided over Information Meeting 885 (notes attached) at 9:55 a.m. We decided to appeal the denials of additional funds for the molten salt breeder reactor and the high temperature gas cooled reactor, appeal the termination of the light water breeder reactor, and appeal the cut in funds for technical education and information and part of the funds for Plowshare. We also decided to request Mayo to be sure that the matter of the shutdown of the two reactors at Hanford and the inadequate Plowshare budget are called to the President's personal attention.

I was called out of the Information Meeting to take a call from Bob Ellsworth. He wanted to brief me on the President's decision (copy of President's statement attached) on the ABM system before his noon press conference (copy of transcript attached) since I might be a likely contact for Congressmen, reporters and others after the announcement is made on this





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

COPY NO. 2  
March 14, 1969

INFORMATION MEETING 885

9:55 a.m., Friday, March 14, 1969, Chairman's Conference Room, D. C.

1. Delay in the President's Visit to AEC Headquarters
2. Dedication of General Electric Fuel Fabrication Plant, March 20, 1969, Wilmington, North Carolina

Commissioner Ramey plans to attend.

3. Atomic Industrial Forum Organization

The Chairman said the AIF has no plans for changes.

4. FY 1970 Budget Amendments (See Controller's March 13 Summary and Mr. Kelly's March 14 Memorandum)

The following will be appealed:

- a. Plowshare
- b. TE&I
- c. MSBR
- d. HTGR
- e. LWBR

Impact statements are also requested. (OC)

5. Commissioners' Meeting with the Director, BOB, to Discuss FY 1970 Budget Amendments, 4:00 p.m., Monday, March 17

Tentatively scheduled. (OC-SECY)

6. March 5 Letter from the Maryland Congressional Delegation re SNAP 29 Program

Preparation of a reply is requested. (AGMR)

7. March 7 Letter from Ralph Davis, Puget Sound Power and Light Company, re Gas-Cooled Fast Breeder Reactor Concept

A meeting is to be scheduled. (SECY)

8. March 10 Memorandum from the President re Summer Hires

Affirmative action is requested. (PER)

9. AEC 374/206 - DOD Nuclear Weapons Development Guidance, 1969 (U)

Noted and to be reviewed with Commissioners Ramey and Tape. (AGMMA-Ryan-Rosen-SECY)

10. NTS Events (See General Giller's March 10 Memorandum)

The delay is noted. (AGMMA)

11. AEC 374/204 - High Yield Testing

Approved with revisions subject to comments from Commissioners Ramey and Tape. (AGMMA-Ryan-Rosen-SECY)

12. Agenda for the Week of March 17, 1969

Approved. (SECY)

13. Lawrence Award Press Release (See Secretary's March 12 Memorandum)

Approved. (SECY-PI)

14. AEC 610/162 - UK Gas Centrifuge Report to JCAE

Approved subject to comments from Commissioners Ramey and Tape. (AGMIA-Ryan-Rosen-SECY)

15. AEC 751/417 - N. S. C. Policy Statement on Peaceful Uses of Atomic Energy (NSC 5725)

Approved subject to Commissioner Ramey's comments. (AGMIA-Ryan-SECY)

16. AEC 89/131 - Proposed Assignment of Swedish National to LASL

Approved. (AGMIA)

17. AEC 783/113 - AEC Comments on S. 418 - Proposed National Nuclear Museum

Approved. (GC)

18. AEC 544/98 - Proposed Testimony for Commissioner Tape Before the JCAE Subcommittee on Research, Development and Radiation

The revised draft is circulated for the Commissioners' comments today.  
(AGMO-SECY)

19. AEC 1283/45 - Hanford's SX (Redox) Tank Farm

Noted. (OC)

20. AEC 720/202 - Implementation of Restrictions on Enriching Foreign Uranium

Deferred. (EAGM)

21. AEC 979/77 - Visit to the U.S. by Brazilian Nuclear Power Team

Noted. (AGMIA)

22. AEC 979/76 - Visit of Administrator General of French CEA

Noted. (AGMIA)

23. AEC 460/110 - Proposed Conferences Involving Sensitive Installations and/or Information

Noted. (AGMA)

24. Pending Contractual Matters Report No. 299

Noted. (PAR)

25. Executive Session

Staff views are requested. (AGM)

26. AEC 783/112 - Opinion as to AEC Preemption Under the Atomic Energy Act

Approved. (GC)

W. B. McCool  
Secretary

11:55 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Ryan  
Mr. Rosen  
Mr. Kull  
Mr. McCool  
Mr. Abbadessa\*  
Mr. Corso\*  
Mr. Vinciguerra\*  
Gen. Giller\*  
Mr. Kelly\*  
Mr. Kratzer\*  
Mr. Erlewine\*  
Mr. Parks\*  
Mr. Riley\*  
Mr. Wells\*  
Mr. Price\*  
Mr. Henderson\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

Office of the White House Press Secretary

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THE WHITE HOUSE

STATEMENT OF THE PRESIDENT

Immediately after assuming office, I requested the Secretary of Defense to review the program initiated by the last Administration to deploy the Sentinel Ballistic Missile Defense System.

The Department of Defense presented a full statement of the alternatives at the last two meetings of the National Security Council. These alternatives were reviewed there in the light of the security requirements of the U. S., and of their probable impact on East-West relations, with particular reference to the prospects for strategic arms negotiations.

After carefully considering the alternatives, I have reached the following conclusions: (1) the concept on which the Sentinel program of the previous Administration was based should be substantially modified, (2) the safety of our country requires that we should proceed now with the development and construction of the new system in a carefully phased program, (3) this program will be reviewed annually from the point of view of (a) technical developments, (b) the threat, (c) the diplomatic context including any talks on arms limitation.

The modified system has been designed so that its defensive intent is unmistakable. It will be implemented not according to some fixed, theoretical schedule, but in a manner clearly related to our periodic analysis of the threat. The first deployment covers two missile sites; the first of these will not be completed before 1973. Any further delay would set this date back by at least two additional years. The program for Fiscal Year 1970 is the minimum necessary to maintain the security of our Nation.

This measured deployment is designed to fulfill three objectives:

1. Protection of our land-based retaliatory forces against a direct attack by the Soviet Union;
2. Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade.
3. Protection against the possibility of accidental attacks from any source.

In the review leading up to this decision, we considered three possible options in addition to this program: A deployment which would attempt to defend U.S. cities against an attack by the Soviet Union; a continuation of the Sentinel program approved by the previous Administration; and indefinite postponement of deployment while continuing Research and Development.

I rejected these options for the following reasons:

Although every instinct motivates me to provide the American people with complete protection against a major nuclear attack, it is not now within our power to do so. The heaviest defense system we considered, one designed to protect our major cities, still could not prevent a catastrophic level of U. S. fatalities from a deliberate all-out Soviet attack. And it might look to an opponent like the prelude to an offensive strategy threatening the Soviet deterrent.

MORE

The Sentinel system approved by the previous Administration provided more capabilities for the defense of cities than the program I am recommending, but it did not provide protection against some threats to our retaliatory forces which have developed subsequently. Also, the Sentinel system had the disadvantage that it could be misinterpreted as the first step toward the construction of a heavy system.

Giving up all construction of missile defense poses too many risks. Research and Development does not supply the answer to many technical issues that only operational experience can provide. The Soviet Union has engaged in a build-up of its strategic forces larger than was envisaged in 1967 when the decision to deploy Sentinel was made. The following is illustrative of recent Soviet activity:

1. The Soviets have already deployed an ABM system which protects to some degree a wide area centered around Moscow. We will not have a comparable capability for over four years. We believe the Soviet Union is continuing their ABM development, directed either toward improving this initial system, or more likely, making substantially better second-generation ABM components.
2. The Soviet Union is continuing the deployment of very large missiles with warheads capable of destroying our hardened Minuteman forces.
3. The Soviet Union has also been substantially increasing the size of their submarine-launched ballistic missile force.
4. The Soviets appear to be developing a semi-orbital nuclear weapon system.

In addition to these developments, the Chinese threat against our population, as well as the danger of an accidental attack, cannot be ignored. By approving this system, it is possible to reduce U. S. fatalities to a minimal level in the event of a Chinese nuclear attack in the 1970's, or in an accidental attack from any source. No President with the responsibility for the lives and security for the American people could fail to provide this protection.

The gravest responsibility which I bear as President of the United States is for the security of the Nation. Our nuclear forces defend not only ourselves but our Allies as well. The imperative that our nuclear deterrent remain secure beyond any possible doubt requires that the U. S. must take steps now to insure that our strategic retaliatory forces will not become vulnerable to a Soviet attack.

Modern technology provides several choices in seeking to insure the survival of our retaliatory forces. First, we could increase the number of sea- and land-based missiles and bombers. I have ruled out this course because it provides only marginal improvement of our deterrent, while it could be misinterpreted by the Soviets as an attempt to threaten their deterrent. It would therefore stimulate an arms race.

A second option is to harden further our ballistic missile forces by putting them in more strongly reinforced underground silos. But our studies show that hardening by itself is not adequate protection against foreseeable advances in the accuracy of Soviet offensive forces.

The third option was to begin a measured construction on an active defense of our retaliatory forces.

I have chosen the third option.

The system will use components previously developed for the Sentinel system. However, the deployment will be changed to reflect the new concept. We will provide for local defense of selected Minuteman missile sites and an area

defense designed to protect our bomber bases and our command and control authorities. In addition, this new system will provide a defense of the continental United States against an accidental attack and will provide substantial protection against the kind of attack which the Chinese Communists may be capable of launching throughout the 1970's. This deployment will not require us to place missile and radar sites close to our major cities.

The present estimate is that the total cost of installing this system will be \$6-\$7 billion. However, because of the deliberate pace of the deployment, budgetary requests for the coming year can be substantially less -- by about one half -- than those asked for by the previous Administration for the Sentinel system.

In making this decision, I have been mindful of my pledge to make every effort to move from an era of confrontation to an era of negotiation. The program I am recommending is based on a careful assessment of the developing Soviet and Chinese threats. I have directed the President's Foreign Intelligence Advisory Board -- a non-partisan group of distinguished private citizens -- to make a yearly assessment of the threat which will supplement our regular intelligence assessment. Each phase of the deployment will be reviewed to insure that we are doing as much as necessary but no more than that required by the threat existing at that time. Moreover, we will take maximum advantage of the information gathered from the initial deployment in designing the later phases of the program.

Since our deployment is to be closely related to the threat, it is subject to modification as the threat changes, either through negotiations or through unilateral actions by the Soviet Union or Communist China.

The program is not provocative. The Soviet retaliatory capability is not affected by our decision. The capability for surprise attack against our strategic forces is reduced. In other words, our program provides an incentive for a responsible Soviet weapons policy and for the avoidance of spiraling U. S. and Soviet strategic arms budgets.

I have taken cognizance of the view that beginning construction of a U. S. ballistic missile defense would complicate an agreement on strategic arms with the Soviet Union.

I do not believe that the evidence of the recent past bears out this contention. The Soviet interest in strategic talks was not deterred by the decision of the previous Administration to deploy the Sentinel ABM system -- in fact, it was formally announced shortly afterwards. I believe that the modifications we have made in the previous program will give the Soviet Union even less reason to view our defense effort as an obstacle to talks. Moreover, I wish to emphasize that in any arms limitation talks with the Soviet Union, the United States will be fully prepared to discuss limitations on defensive as well as offensive weapons systems.

The question of ABM involves a complex combination of many factors:

- numerous, highly technical, often conflicting judgments;
- the costs;
- the relationship to prospects for reaching an agreement on limiting nuclear arms;
- the moral implications the deployment of a ballistic missile defense system has for many Americans;
- the impact of the decision on the security of the United States in this perilous age of nuclear arms.

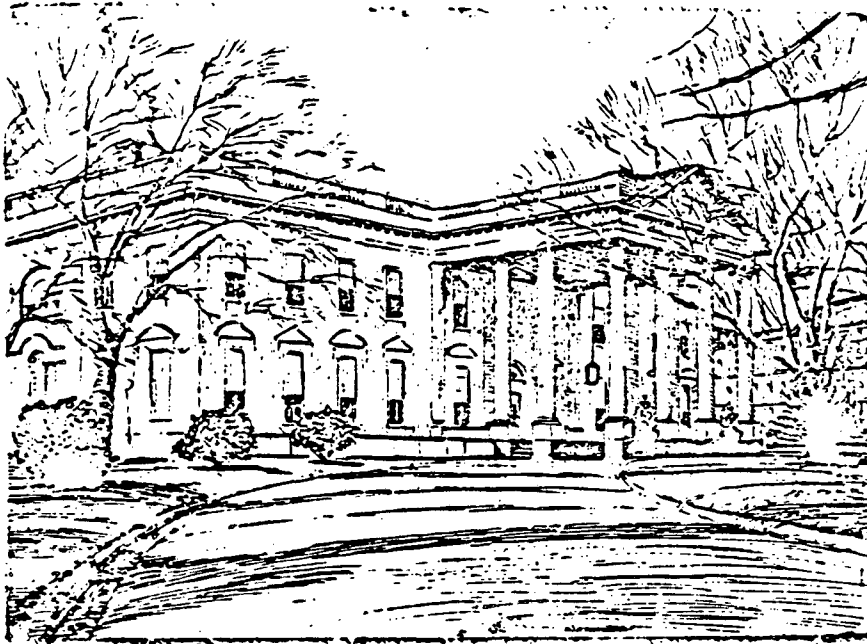
-4-

I have weighed all these factors. I am deeply sympathetic to the concerns of private citizens and Members of Congress that we do only that which is necessary for national security. This is why I am recommending a minimum program essential for our security. It is my duty as President to make certain that we do no less.

# # #



STENOTYPE TRANSCRIPT  
OF  
PRESS CONFERENCE



PRESS STENOTYPISTS ASSOCIATION

*Specialized Press Reporting*

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PRESS CONFERENCE NO. 4

of the  
PRESIDENT OF THE UNITED STATES

12:00 Noon  
March 14, 1969  
Friday

In The East Room  
At The White House  
Washington, D. C.

THE PRESIDENT: Ladies and gentlemen, today I am announcing a decision which I believe is vital for the security and defense of the United States, and also in the interest of peace throughout the world.

Last year a program, the SENTINEL antiballistic missile program, was adopted. That program, as all listeners on television and radio and readers of newspapers know, has been the subject of very strong debate and controversy over the past few months.

After long study of all of the options available, I have concluded that the SENTINEL program previously adopted should be substantially modified. The new program that I have recommended this morning to the leaders, and that I announce today, is one that perhaps best can be described as a safeguard program.

It is a safeguard against any attack by the Chinese Communists that we can foresee over the next 10 years.

It is a safeguard of our deterrent system, which is increasingly vulnerable due to the advances that have been made by the Soviet Union since the year 1967 when the SENTINEL program was first laid out.

It is a safeguard also against any irrational or accidental attack that might occur of less than massive magnitude which might be launched from the Soviet Union.

The program also does not do some things which should be clearly understood. It does not provide defense for our cities, and for that reason the sites have been moved away from our major cities. I have made the decision with regard to this particular point because I found that there is no way, even if we were to expand the limited SENTINEL system which was planned for some of our cities to a so-called heavy or thick system -- there is no way that we can adequately defend our cities without an unacceptable loss of life.

The only way that I have concluded that we can save lives, which is the primary purpose of our defense system, is to prevent war, and that is why the emphasis of this system is on protecting our deterrent, which is the best preventive for war.

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The system differs from the previous SENTINEL system in another major respect. The SENTINEL system called for a fixed deployment schedule. I believe that because of a number of reasons, we should have a phase system. That is why, on an annual basis, the new safeguard system will be reviewed, and the review may bring about changes in the system based on our evaluation of three major points.

First, what our intelligence shows us with regard to the magnitude of the threat, whether from the Soviet Union or from the Chinese; and, second, in terms of what our evaluation is of any talks that we are having by that time, or may be having, with regard to arms control; and, finally because we believe that since this is a new system, we should constantly examine what progress has been made in the development of the technique to see if changes in the system should be made.

I should admit at this point that this decision has not been an easy one. None of the great decisions made by a President are easy. But it is one that I have made after considering all of the options, and I would indicate before going to your questions two major options that I have overruled.

One is moving to a massive city defense. I have already indicated why I do not believe that is, first, feasible, and there is another reason: Moving to a massive city defense system, even starting with a thin system and then going to a heavy system, tends to be more provocative in terms of making credible a first-strike capability against the Soviet Union. I want no provocation which might deter arms talks.

The other alternative, at the other extreme, was to do nothing, or to delay for six or twelve months, which would be the equivalent, really, of doing nothing, or, for example, going the road only of research and development.

I have examined those options. I have ruled them out because I have concluded that the first deployment of this system, which will not occur until 1973, that that first deployment is essential by that date if we are to meet the threat that our present intelligence indicates will exist by 1973.

In other words, we must begin now. If we delay a year, for example, it means that that first deployment will be delayed until 1975. That might be too late.

It is the responsibility of the President of the United States, above all other responsibilities, to think first of the security of the United States. I believe that this system is the best step that we can take to provide for that security.

There are, of course, other possibilities that have been strongly urged by some of the leaders this morning -- for example that we could increase our offensive capability, our submarine force, or even our MINUTEMAN force or our bomber force. That I would consider to be, however, the wrong road

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because it would be provocative to the Soviet Union and might escalate an arms race.

This system is truly a safeguard system, a defensive system only. It safeguards our deterrent and under those circumstances can, in no way, in my opinion, delay the progress which I hope will continue to be made toward arms talks, which will limit arms, not only this kind of system, but particularly offensive systems.

We will now go to your questions.

Mr. Smith?

QUESTION: Mr. President, the war in Vietnam has been intensifying recently, and if there has been any notable progress in Paris it has not been detectable publicly. Is your patience growing a little thin with these continued attacks, particularly such as came out of the DMZ today?

THE PRESIDENT: Mr. Smith, you may recall that on March 4 when I received a similar question, at an earlier stage of the attacks, I issued what was interpreted widely as a warning. It will be my policy as President to issue a warning only once, and I will not repeat it now. Anything in the future that is done will be done. There will be no additional warning.

As far as the Paris talks are concerned, I have noted the speculation in the press with regard to whether we will have, or should have, or are, for example, approving private talks going forward. I will not discuss that subject. I trust there will be private talks.

I think that is where this war will be settled -- in private rather than in public. This is in the best interest of both sides, but public discussion of what I think is significant progress which is being made along the lines of private talks, I will not indulge in.

Mr. Cormier?

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QUESTION: Mr. President, will you make your own State of the Union address, and what will your legislative program encompass?

THE PRESIDENT: I do not plan a State of the Union address in the traditional manner. I will, within approximately a month, however, state a general domestic program. By that time the program will be at the point that I think it should be completely summarized and set forth, not only for the Nation, as to what we have done, but particularly to the Congress as to what we expect for the balance. I would not want to anticipate now what will be in that program.

QUESTION: Mr. President, there has been a great deal of criticism in Congress against deployment of any type of antiballistic defense system. What kind of reception do you think your proposal this morning will receive there?

THE PRESIDENT: It will be a very spirited debate, and it will be a very close vote. Debates in the field of national defense are often spirited and the votes are often close. Many of my friends in Congress who were there before I was there remarked that the vote on extending the draft in 1941 won by only one vote.

This might be that close. I think, however, that after the Members of the House and the Senate consider this program, which is a minimum program, and which particularly provides options to change in other directions if we find the threat is changed, or that the art has changed, our evaluation of the technique has changed, I think that we have a good chance of getting approval. We will, of course, express our views, and we hope that we will get support from the country.

QUESTION: Mr. President, I understand that your first construction or deployment of antimissile systems would be around two MINUTEMAN retaliatory operations. Do you think that deploying around these two provides enough deterrent that would be effective?

THE PRESIDENT: Let me explain the difference between deploying around two MINUTEMAN bases and deploying around, say, 10, cities.

Where you are looking toward a city defense, it needs to be a perfect or near perfect system to be credible because, as I examine the possibility of even a thick defense of cities, I have found that even the most optimistic projections, considering the highest development of the art, would mean that we would still lose 30 million to 40 million lives. That would be less than half of what we would otherwise lose. But we would still lose 30 million to 40 million.

When you are talking about protecting your deterrent, it need not be perfect. It is necessary only to protect enough of the deterrent that the retaliatory second strike will be of such magnitude that the enemy would think twice before launching a first strike.

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It has been my conclusion that by protecting two MINUTEMAN sites, we will preserve that deterrent as a credible deterrent, and that that will be decisive and could be decisive insofar as the enemy considering the possibility of a first strike.

QUESTION: Mr. President, there have been charges from Capitol Hill that you have stepped up the war in Vietnam. Have you?

THE PRESIDENT: I have not stepped up the war in Vietnam. I actually have examined not only the charges, but also examined the record. I discussed it at great length yesterday with Secretary Laird.

What has happened is this: For the past six months, the forces on the other side have been planning for an offensive, and for the past six months they not only have planned for an offensive, but they have been able, as a result of that planning, to have mounted a rather substantial offensive.

Under those circumstances, we had no other choice but to try to blunt the offensive. Had General Abrams not responded in this way, we would have suffered far more casualties than we have suffered, and we have suffered more than, of course, any of us would have liked to have seen.

The answer is that any escalation of the war in Vietnam has been the responsibility of the enemy. If the enemy de-escalates its attacks, ours will go down. We are not trying to step it up. We are trying to do everything that we can in the conduct of our war in Vietnam to see that we can go forward toward peace in Paris.

That is why my response has been measured, deliberate and, some think, too cautious. But it will continue to be that way, because I am thinking of those peace talks every time I think of a military option in Vietnam.

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QUESTION: Mr. President, your safeguard ABM system, I understand, would cost about \$1 billion less in the coming fiscal year than the plan which President Johnson sent up. Would this give you the opportunity to reduce the surcharge or will the continued high level of taxation be needed for the economy?

THE PRESIDENT: That question will be answered when we see the entire budget. Secretary Laird will testify on the defense budget on Wednesday.

Incidentally, my understanding at this time, and I have seen the preliminary figures, is that the defense budget that Secretary Laird will present will be approximately \$2-1/2 billion less than that submitted by the previous Administration.

Whether after considering the defense budget and all of the other budgets that have been submitted, we then can move in the direction of either reducing the surcharge or move in the direction of some of our very difficult problems with regard to our cities, the problem of hunger and others -- these are the options that I will have to consider at a later time.

QUESTION: Mr. President, last week you said that in the matter of Vietnam you would not tolerate heavier casualties and a continuation of the violation of the understanding without making an appropriate response.

Is what we are doing now in Vietnam in a military way that response of which you were speaking?

THE PRESIDENT: This is a very close decision on our part, one that I not only discussed with Secretary Laird yesterday, but that we will discuss more fully in the Security Council tomorrow.

I took no comfort out of the stories that I saw in the papers this morning to the effect that our casualties for the immediate past week went from 400 down to 300. That still is too high. What our response should be must be measured in terms of the effect on the negotiations in Paris. I will only respond as I did earlier to Mr. Smith's question. We issued a warning. I will not wamagain. If we conclude that the level of casualties is higher than we should tolerate, action will take place.

QUESTION: Mr. President, do you have reason to believe that the Russians will interpret your ABM decision today as not being an escalating move in the arms race?

THE PRESIDENT: As a matter of fact, Mr. Kaplow, I have reason to believe, based on the past record, that they would interpret it just the other way around.

First, when they deployed their own ABM system, and, as you know, they have 67 missile ABM sites deployed around Moscow, they rejected the idea that it escalated the arms race on the ground that it was defensive solely in character, and, second, when the United States last year went

forward on the SENTINEL system, four days later the Soviet Union initiated the opportunity to have arms limitation talks.

I think the Soviet Union recognizes very clearly the difference between a defensive posture and an offensive posture.

I would also point this out, an interesting thing about Soviet military and diplomatic history: They have always thought in defensive terms, and if you read not only their political leaders, but their military leaders, the emphasis is on defense.

I think that since this system now, as a result of moving the city defense out of it, and the possibility of that city defense growing into a thick defense, I think this makes it so clearly defensive in character that the Soviet Union cannot interpret this as escalating the arms race.

QUESTION: Mr. President, last week at your press conference you mentioned negotiations with the Russians at the highest level being in the wind. Could you tell us if since then we have moved any closer to such a summit meeting?

THE PRESIDENT: I should distinguished between negotiations at what you call the highest level, and what I said was the highest level, and talks. Talks with the Soviet Union are going on at a number of levels at this time, on a number of subjects.

However, those talks have not yet reached the point where I have concluded, or where I believe they have concluded, that a discussion at the summit level would be useful. Whenever those talks, preliminary talks, do reach that point, I anticipate that a summit meeting would take place.

I do not think one will take place in the near future, but I think encouraging progress is being made toward the time when a summit talk may take place.

QUESTION: Mr. President, there have been several reports from your staff members that Kennedy and Johnson hold-over people who made policy have sown themselves into civil service status and this may mean some problem for you people in personnel. I wonder if this means that you will transfer a lot of these people or abolish jobs?

THE PRESIDENT: I have heard a lot from some of my Republican friends on Capitol Hill on this point, as well as from, of course, Republican leaders in the Nation. It seems that this is a rather common practice, when one Administration goes out and the other one comes in. We will do what we think will best serve the interest of effective Government, and if the individual who has been frozen in can do the job, we are going to keep him.

However, we are moving some out, but we wouldn't do it through subterfuge. We will try to do it quite directly.



QUESTION: Mr. President, in your recent European trip, did you find any willingness on the part of our allies to increase their military and financial contribution to the alliance?

THE PRESIDENT: Well, that matter was discussed with all of our allies, and particularly will be a subject for discussion when we have the 20th Anniversary meeting of NATO here in April.

I think it might be potentially embarrassing to allies to suggest that we are urging them, any one specifically, to do one thing or another in this field. I think it is best for me to leave it in these terms:

Our allies do recognize the necessity to maintain NATO's conventional forces. They do recognize that they must carry their share or that the United States, and particularly our Congress, representing our people, will have much less incentive to carry our share. I believe they will do their share, but I think we are going to do the best through quiet conversation rather than public declaration.

Yes, sir?

QUESTION: In any talks with the Soviet Union, would you be willing to consider abandoning the ABM program altogether if the Soviets showed a similar willingness or, indeed, if they showed a readiness to place limitations on offensive weapons?

THE PRESIDENT: Mr. Scali, I am prepared, in the event that we go into arms talks, to consider both offensive and defensive weapons. As you know, the arms talks, that at least preliminarily have been discussed, do not involve limitations or reduction. They involve only freezing where we are.

Your question goes to abandoning. On that particular point, I think it would take two, naturally, to make the agreement. Let's look at the Soviet Union's position with its defensive deployment of ABM's. Previously, that deployment was aimed only toward the United States. Today their radars, from our intelligence, are also directed toward Communist China.

I would imagine that the Soviet Union would be just as reluctant as we would be to leave their country naked against a potential Chinese Communist threat. So the abandoning of the entire system, particularly as long as the Chinese threat is there, I think neither country would look upon with much favor.

QUESTION: Mr. President, do you think these developments of the Soviet Union and the United States are compatible with the aims of the NPT?

THE PRESIDENT: I considered that problem, and I believe that they are compatible with the NPT. We discussed that in the leaders' meeting this morning and I pointed out that as we consider this kind of defensive system, which enables the United States of America to make its deterrent

capability credible, that that will have an enormous effect in reducing the pressure on other countries who might want to acquire nuclear weapons.

That is the key point. If a country doesn't feel that the major country that has a nuclear capability has a credible deterrent, then they would move in that direction.

One other point I wish to make, and make an announcement with regard to the NPT: that I was delighted to see the Senate's confirmation or consent to the treaty, and this announcement -- I hope President Johnson is looking. I haven't talked to him on the phone. I am going to invite President Johnson, if his schedule permits, to attend the ceremony when we will have the ratification of the treaty, because he started it in his Administration and I think he should participate when we ratify it.

Mr. Lisagor?

QUESTION: Mr. President, I wonder if I could turn to the campus disorders and unrest. They are continuing and we haven't had an opportunity to ask you your views of them. But particularly, would you favor the cutting off of Federal loans to the offenders?

THE PRESIDENT: Mr. Lisagor, I have asked the Attorney General and the Secretary of Health, Education, and Welfare to examine this problem, particularly in view of a Congressional report that 122 of the 540 who had been arrested at San Francisco State were direct recipients of Federal funds.

I will have a statement on that that I will be making either Monday or Tuesday, in detail. I would prefer not to go into it now.

Mr. Semple?

QUESTION: To follow up Mr. Bailey's question on Vietnam earlier, is there any evidence that your measured response to the enemy attacks in South Vietnam has produced or yielded any results in Paris or in the attitudes of the North Vietnamese leaders in Hanoi?

THE PRESIDENT: Our measured response has not had the effect of discouraging the progress, and it is very limited progress, toward talks in Paris. That is the negative side in answering your question.

As to whether or not a different response would either discourage those talks or might have the effect of even encouraging them is the decision that we now have to make.

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QUESTION: Mr. President, on Vietnam, in connection with Secretary Laird's visit, we have heard for sometime predictions that American troop levels could be cut as the South Vietnamese capabilities improve, and again last week, while he was in Vietnam, we were getting similar reports from Saigon despite the high level of the fighting that is going on now.

Do you see any prospect for withdrawing American troops in any numbers soon?

THE PRESIDENT: Mr. Bailey, in view of the current offensive on the part of the North Vietnamese and the Viet Cong, there is no prospect for a reduction of American forces in the foreseeable future.

When we are able to reduce forces as a result of a combination of circumstances -- the ability of the South Vietnamese to defend themselves in areas where we now are defending them; the progress of the talks in Paris; or the level of enemy activity -- when that occurs, I will make an announcement. But at this time there is no foreseeable prospect.

Mr. Theis?

QUESTION: What effect, if any, will your safeguard program have on the shelter program? Can you tell us anything about your long-range plans?

THE PRESIDENT: Congressman Holifield in the meeting this morning strongly urged that the Administration look over the shelter program and he made the point that he thought it had fallen somewhat into disarray due to lack of attention over the past few years.

I have directed that General Lincoln, the head of the Office of Emergency Preparedness -- I had directed him previously to conduct such a survey. We are going to look at the shelter program to see what we can do there in order to minimize American casualties.

QUESTION: Mr. President, if I recall correctly, at the last press conference when you were discussing the meeting with General de Gaulle, and the Middle East situation, you said you were encouraged by what he told you, because he was moving closer to our position.

I wonder if you can tell us what our position is in the Middle East, and if it has changed significantly in the last year?

THE PRESIDENT: We have had bilateral talks not only with the French, but also with the Soviet Union, and with the British, preparatory to the possibility of four-power talks. I would not like to leave the impression that we are completely together at this point.

We are closer together than we were, but we still have a lot of yardage to cover. And until we make further progress in developing a common position, I would prefer not to lay out what our position is.

I don't think that would be helpful in bringing them to the position that we think is the right position.

THE PRESS: Thank you.

highly controversial subject. He said whatever help and support I can give to the President will be greatly appreciated.

He said President Nixon's system will be the least provocative thing that can be done at the present time and will be designed to dampen the heat of the arms race. Whereas President Johnson's system was designed primarily to protect the cities against a Chinese attack, President Nixon's system will be designed to (1) protect our land-based retaliatory forces against direct attack by the Soviets, (2) protect our cities against Chinese attack through the 1970's, and (3) protect against an accidental attack from any source. The Sprints will be moved from the cities to the Minuteman missile sites. He said this system will be the least provocative because whereas President Johnson's system suggests a defense against Soviet retaliation, which by definition would be in response to a U.S. first strike, President Nixon's system, by emphasizing the defense of our Minuteman retaliatory forces, stresses our ability to retaliate against what would be a Soviet first strike.

Ellsworth said that next year's actual expenditures on President Nixon's system would involve a cut of between eight million and one billion dollars. The program will be limited to R&D, site acquisition and the construction of two sites, one in Montana and one in North Dakota. The total cost, through 1976, will be between six and seven billion dollars. In addition, the President is directing the Foreign Intelligence Advisory Board to conduct each year a systematic review with a view to global threat, technical capacity and diplomatic context. I told Ellsworth I am writing to him to suggest that he might want to send Dr. Whitehead to a briefing on underground testing being given to the governors of the Western States in Las Vegas on April 1 and 2.

I attended a State Department luncheon in honor of Dr. Sigvard Eklund at Blair House. Present were: Dr. Eklund, Harry Smyth, Alexis Johnson (the host), Congressmen Holifield and Hosmer, Dave Freeman, Donovan Zook, Herman Pollack, Sam DePalma, Bob Duffield, Myron Kratzer, Ed Bauser and Gerard Smith. During the luncheon we talked in general about the increasing stature of the IAEA. I recalled that during the first conference (in 1961) I attended a dinner given by the Indians at the Indian Embassy at which they worked hard to convince me that I should drop my support for Eklund as Director General. They argued that if I didn't, and he were elected, this would be the end of IAEA. Eklund described the nature of the IAEA professional staff and his plans to increase the number engaged in the safeguards function.

I saw Sam DePalma on the side and expressed my appreciation to him for succeeding in obtaining the State Department's agreement to (1) base our cash contributions on the \$2 million target figure rather than on the cash contributions received, using the same percentage as our assessed contribution under the regular budget, and (2) increase our contributions-in-kind to \$800,000. DePalma thanked me and said he is now counting on my helping to justify the proposals to Congress when they come up for consideration.

I congratulated Gerard Smith on the ratification of the NPT.

I met with four Brazilian teachers who have been taking the course at Oak Ridge for teachers who participate in the Atoms in Action Exhibit. They were: Mr. Gelson Pinto, Mr. Louival Mendes, Mr. (and Mrs.) Roberto Silva, Mr. (and Mrs.) Luis Gomez. We talked about the exhibit in Brazil and had our pictures taken.



Visit of Professors from Sao Paulo, Brazil; March 14, 1969.  
L to R: Mr. Gelson Pinto, Mr. Roberto Silva, Mrs. Elsa Silva, Dr. Seaborg,  
Mrs. Dirce Gomes, Mr. Luis Gomes, and Mr. Louival Mendes.

Eric, Suki and I took a hike in Rock Creek Park. We started at Nebraska and Oregon Avenues, went north on the White Horse Trail to Cross Trail 2, then south on the Black Horse Trail to Cross Trail 3 and back to our starting point.

Saturday, March 15, 1969 - D.C.

I attended a meeting of the National Security Council, in the Cabinet Room at the White House, from approximately 10 to 11:15 a.m.

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I had lunch at the Pot-O'-Gold with Allan Labowitz, Warren Heckrotte and Julie Rubin. We discussed the results of this morning's NSC meeting. Heckrotte is on his way to Geneva where he will be the AEC representative, as part of the ACDA group, to the ENDC negotiations.

In the morning Helen participated at Murch School with the first session of the Inter-Neighborhood Creative Arts Program (INCAP) which was very successful. This is the program that she has helped organize and raise money for during the last few months; this program also takes place at two other schools.

Eric, Suki and I took a hike in Rock Creek Park. We started at Nebraska and Oregon Avenues, went north on the White Horse Trail to Cross Trail 2, then south on the Black Horse Trail to Cross Trail 3 and back to our starting point.

Sunday, March 16, 1969

I spent a good part of the day reading AEC papers. In the afternoon Eric, Suki and I went on a group hike in Rock Creek Park, starting at the Nature Center. About 90 people started on the hike, under the leadership of Ranger Naturalist James M. Meyerle, but some took optional, less difficult trails. We hiked south on the White Horse Bridle Trail to Pierce Mill and then back north on the Black Horse Bridle Trail to the starting point at the Nature Center. Among the people in the group were: Malcolm Lawrence (who was the escort officer for Helen and me, the Tapes, Kratzer and Rubin during our visit to Bern, Switzerland in September, 1967) and his two daughters; Mr. and Mrs. Bruce Lee (he is with General Electric and was chairman of the Space symposium sponsored by the American Astronautical Society at which I spoke on March 14, 1967), their two daughters and little son Brian; and Mr. and Mrs. Curt Nelson and their daughter.

At 6 p.m. I watched Walter Cronkite's program, "The 21st Century" on the general subject of pollution, which included a short interview with me on the disposal of radioactive waste which I recorded at CBS in New York in 1967. To my disgust, a background view of leaking, wartime, radioactive waste tanks at Hanford was superimposed on the interview scene.

Helen and I attended a black tie dinner at the French Embassy, given by Ambassador and Mrs. Lucet in honor of Robert Hirsch (Administrator), Bertrand Goldschmidt (Director for External Relations and Programs) and Maurice Pascal (Administrative Director for Industrial Policy) of the French CEA and for the presentation of the title of Commander in the Legion of Honor to Dr. Isidor Rabi. Among those present, besides the Lucets, Hirsch, Goldschmidt, Pascal and the Rabis, were the Holifields, the Bouchauds (Counselor, French Embassy), the Kratzers, the Levys (Scientific Attache, French Embassy and professor of physics, Sorbonne University), Congressman Craig Hosmer, the Pollacks, the Haworths, the DuBridges, the David Becklers, the Bronks and the Jean Dards (Atomic Energy Attache, French Embassy). During the evening Hirsch and Goldschmidt raised the question of German participation in the tripartite arrangement for developing the gaseous centrifuge to produce enriched uranium-235 and expressed great concern that this might lead to a capability for Germany to produce nuclear weapons and, hence, contribute to the proliferation of nuclear weapons.



Reception at French Embassy; March 16, 1969.

L to R: Dr. Seaborg, Robert Hirsch (Administrator, French AEC), and Dr. Isidor Rabi.

Monday, March 17, 1969 - D.C.

At 9:15 a.m. I received a call from Egil Krogh at the White House (Assistant to John D. Ehrlichman, General Counsel to President Nixon). He said he was



calling at Mr. Ehrlichman's request to clarify a letter dated March 15 (copy attached to March 18 journal) from Ehrlichman, requesting us to provide them, by tomorrow night, in a narrative form, a description of the legislative programs that we will undertake this year. He stressed that he was talking only about new programs, not continuing or old programs. He said it didn't have to be too specific, just some guidelines. He said they are preparing a comprehensive domestic package for the President's study.

From 11:30 a.m. to 12:30 p.m. the Commissioners met with representatives of the French CEA. Present were: Robert Hirsch (Administrator, CEA), Bertrand Goldschmidt (Director for External Relations and Programs, CEA), Maurice Pascal (Administrative Director for Industrial Policy, CEA), Jean Dard (Atomic Attache, French Embassy), Commissioners Johnson, Tape and Costagliola, Myron Kratzer, Abe Friedman, Milton Shaw, Julius Rubin, and I.

I opened the meeting with some welcoming remarks in which I reviewed the history of the U.S.-French cooperation in the peaceful uses of atomic energy. Hirsch made a short response and then we started on the agenda. We first discussed Plowshare, and Hirsch and Goldschmidt said that they have had underground nuclear weapons testing, especially in granite, which might include information in which we would be interested. They suggested bilateral cooperation in the Plowshare field. I emphasized that the IAEA would probably have to play a role and said that in any case we could not give them an immediate answer on this. They said they have no objection to giving the information to the IAEA, but they would probably have to give it to Algeria first. They also indicated that they could become a supplier of Plowshare services.

We then discussed uranium enrichment, and they continued to express their concern over the tripartite arrangement for the development of the gas centrifuge process, involving the U.K., West Germany and the Netherlands. I indicated that the gas centrifuge would not be economically competitive in the U.S. for some time, but that we couldn't speak for the members of the tripartite consortium because they may want to develop an independent, even though small, capability in order to have a fallback capability. Thus, they might get most of their enrichment services from the U.S. but be ready with some experience in case they felt they needed to be independent at some stage. I pointed out that Europe has higher cost power than the U.S., lower requirements than the U.S., and perhaps has made some advances which make them interested in the gas centrifuge. I indicated, however, that there probably had not been any breakthrough in gas centrifuge technology by these three countries.

We then discussed the philosophy of nuclear power development in the United States. They were concerned about the slowdown in the ordering of reactors by U.S. utilities, and I indicated that this is normal and that we still project 150 million kilowatts for 1980. We discussed the matter of safeguards in fabrication plants in France. We said that we still feel that we must insist on continuous inspection with respect to Euratom. They asked whether the toll enrichment agreement with the U.S. might be delayed, if we don't succeed in reaching agreement, or if there is difficulty in reaching an Euratom-IAEA agreement on safeguards; I indicated that this might indeed be the case.

As a final item we discussed U.S.-French technical cooperation and expressed concern that their industrial picture might impede the exchange of information regarding fast reactors; they assured us that this wouldn't be so. They asked

whether we might supply some 300 to 500 tons of heavy water for their heavy water power reactor that they are planning; and we indicated that, since we are not in the heavy water supply business, we couldn't assure this but that we would look into it. They need the heavy water by 1974.

We decided that the next U.S.-French Technical Cooperation meeting on the staff level, similar to the one held in the United States last November, would probably be held in Paris in the autumn.

Robert Hirsch, Bertrand Goldschmidt, Myron Kratzer and Julius Rubin rode with me to a luncheon we were giving for the French officials at the Mayflower Hotel. We discussed progress on the Euratom-IAEA safeguards agreement in connection with the implementation of Article III of the NPT. Goldschmidt agreed that there should be actual inspection by the IAEA in Euratom countries and that minor verification by the IAEA of Euratom safeguards would not be sufficient. He said that France has no objection to the five other countries meeting to discuss the possible terms of the Euratom-IAEA safeguards agreement. When I asked him if France would be willing to assure the other countries of this, he indicated that this isn't necessary. I said that I think it is because the other five countries are hesitating to proceed in the absence of such French assurance. Goldschmidt said he regarded that as just delaying action on the part of Germany. I said the stalemate has to be broken and I hope the French will give the countries the assurance they want.

Goldschmidt again emphasized the apprehension that France has concerning Germany's participation in the tripartite gas centrifuge project. He said that on the last two occasions he had talked to him, de Gaulle expressed great concern about this and said that he would not agree to the French participating with the West Germans in such a project, because of the possibility of contributing to West Germany's nuclear weapons capability.

Just before the luncheon I had a conversation with Goldschmidt and Abe Friedman. Goldschmidt said that at the last meeting of the Science Advisory Committee to the U.N. in New York, U Thant indicated that he thought the makeup of the Science Advisory Committee needs to be changed in order that some of the developing countries might find it satisfactory. As it is now, it includes only nations with nuclear capability such as the U.K., France, the United States and Canada and those with near-nuclear capability like Brazil and India. He suggested either a reconstitution of the Committee or a substantial expansion of its membership.

The reception was held in the Maryland Room and the luncheon in the Pennsylvania Room of the Mayflower Hotel. Present were: Robert Hirsch, Bertrand Goldschmidt, Maurice Pascal, Ambassador Lucet, Jean Dard (French Atomic Energy Attache), Commissioners Ramey, Tape (for reception only), Johnson, Costagliola and I, George Murphy, Adrian Fisher, Herman Pollack, Donovan Zook, Bob Hollingsworth, Ed Bloch, Clifford Beck, Howard Brown, Myron Kratzer, Algie Wells, Abe Friedman, Julius Rubin, Milton Shaw and Bill Yeomans. Hirsch sat on my right and Ambassador Lucet sat on my left. Following the lunch I made a few remarks concerning the long and fruitful history of cooperation between the United States and France in the peaceful uses of atomic energy. Robert Hirsch responded in the same vein.

I had a phone call from Theos Thompson advising me that he has decided that he would be honored to accept an appointment to the Commission. I explained that the next move is up to DuBridge and the White House but that I would follow it.

We received a letter from President Nixon approving the proposed amendment to the Agreement for Cooperation between the Government of the United States and the Government of Iran in the peaceful uses of atomic energy.

At 4 p.m. Commissioners Tape, Costagliola, Johnson and I met for a briefing by Dr. Wolfgang Panofsky on his trip to Russia to work out arrangements for U.S. cooperation on the use of the Serpukhov accelerator. A good deal of progress was made in working out the cooperative arrangements. He said the following conclusions were reached:

(a) That the AEC through its Division of Research write a letter to the AEC-supported laboratories publicizing the opportunities now available;

(b) That prompt AEC approval for visits proposed by Laboratory Directors in either direction under the present agreement be granted unless there are specifically stated reasons;

(c) That the AEC should seek increased funding for foreign travel and other expenses in connection with this program;

(d) That the AEC consider renegotiating the portion of the July 1968 Seaborg/Petrosyants Agreement which provides that the sending party always pay the travel expenses and salaries of its scientists. The CERN agreement, dated July 4, 1967, dealing with CERN/Serpukhov collaboration (Tab J), provides (page 5, paragraph 4) that "Each contracting party shall pay for the travel and living expenses of its staff when visiting the laboratories of other contracting parties." Such a modification would permit the flexibility necessary so that both parties could conserve their highly limited foreign travel funds or their foreign currency supply. He feels that the present inflexible formulation is a serious obstacle towards implementation of the present agreement.

In particular, Panofsky suggested that we furnish Serpukhov with a rather large computer in order to make them willing to undertake the cooperative arrangements. The interesting aspect of this is that the Soviets, even up to the level of the Chairman of the State Committee, Petrosyants, agree that there could be U.S. inspection or even actual U.S. operation of the computer in order to assure that its use is not devoted to work other than that concerning the processing of data for the accelerator at Serpukhov.

At 5:30 p.m. the other Commissioners and I met with Robert Mayo (Director, Bureau of the Budget) in Room 248 of the Executive Office Building. Others present were James Schlesinger, Fred Schuldt, Dan Taft, John Young and Dave Lawhead of the Bureau of the Budget and Bob Hollingsworth, George Quinn, John Abbadessa and Vic Corso of the AEC. Admiral Rickover, Dave Leighton and Marvin Greer were there for the first item.

We had five appeal items and four discussion items. The first appeal item was the Light Water Breeder Reactor which had been eliminated in the FY 1970 budget. Rickover made a strong appeal for this, beginning with a description of the history of nuclear power in the United States and describing forcefully the important role that the Light Water Breeder Reactor would play in the future.

I then went on to the second item which was a request to restore \$2 million to the High Temperature Gas Reactor, and the third item which was a request to restore \$3 million to the Molten Salt Breeder Reactor. The next item was a request to restore \$1 million to the Training, Education and Information program and here I emphasized the tremendous loss if nuclear training

equipment grants, the traveling science exhibits, etc. were cut out or eliminated.

We then went on to the Plowshare program where we made our case for the restoration of \$5 million required in order to go ahead with the Australian Cape Keraudren project.

In the area of discussion items we explained the need for a presidential decision on the two Hanford reactors and on the delayed test readiness date (1973 instead of 1972). We also described the dire consequences of our inadequate staff from the standpoint of our needs in the program direction area and of great need for the restoration of \$1 million in the Equipment and General Plant category. This meeting lasted until 7:10 p.m.

I received a letter from Norman Ramsey enclosing the Canadian 200 GeV study group report.

Tuesday, March 18, 1969 - D.C.

I attended a meeting of the President's Science Advisory Committee in Room 208 of the Executive Office Building, from 8:30 a.m. to 1:30 p.m. Dr. Lee DuBridge presided.

The first item was a briefing by AEC people on Plowshare for which John Kelly (Director, Division of Peaceful Nuclear Explosives), Dr. Michael May (Director, LRL, Livermore), Glenn Werth (Associate Director, LRL, Livermore), Gary Higgins (Director, Division of Peaceful Nuclear Explosives, LRL, Livermore), Ted Cherry, Dave Dorn and Carl Gerber were present. Dr. Tape was present part of the time. After a general introduction of the Plowshare topic by me, Kelly and May described the program broadly. Dorn described developments in the special explosives required, and Cherry described the dynamics of cratering. Higgins described the fallout pattern, and, in connection with this, PSAC members requested that we release the data on fallout in the Western States to the authorities in those states. Higgins, May and Werth then described the Cape Keraudren Australian project and the Panama Canal project. I concluded with a general description of the problems concerning the interpretation of what constitutes radioactive debris in connection with possible violations of the Limited Test Ban Treaty and described our proposed interpretation which regards radioactive debris as being not present when the concentrations fall below the definitions of not present used by the International Radiological Commission.

Following this briefing we were rejoined by Dr. Tape and joined by Paul McDaniel, Herb Kinney, William Wallenmeyer and other members of the Division of Research for a discussion of the status of funding in the fields of high energy, medium energy and low energy nuclear physics. Weisskopf gave an overview of the field and Panofsky outlined the status of current methods of experimentation. There was a broad discussion of the inadequacy of funding with a great deal of talk as to whether more flexibility for exchanging funds between operations and equipment would help. However, it was clear that the main problem is lack of funds. I emphasized the large number of low energy accelerators that have been requested and for which we have not been able to obtain funding. DuBridge suggested the creation of a PSAC-GAC panel to study the situation and make recommendations in all of these areas of nuclear physics.

A sandwich lunch was served at noon so that the meeting could continue without interruption.

Upon my return from the PSAC meeting I learned that we had received word from the Bureau of the Budget that they have, on the basis of our meeting yesterday, restored the Light Water Breeder Reactor with the very difficult condition that we find a compensating amount of funding to subtract. They turned us down on the High Temperature Gas Reactor and the Molten Salt Breeder Reactor, restored \$500,000 in Training, Education and Information and allowed only \$500,000 for the study of the Cape Keraudren project. They restored \$2 million in Equipment and General Plant Fund. They agreed to inform the President on the shutdown of the Hanford reactors and on the reduced scope of the test readiness program. We got in touch with Rickover and told him that he should find the compensating cuts in his program if he wishes to have the Light Water Breeder Reactor.

At 4 p.m. I went to the State Department for the signing of the Amendment to the Agreement for Cooperation between the Government of the United States and the Government of Iran (the first under the Nixon Administration). The signers were Joseph J. Sisco (Assistant Secretary of State for Near Eastern and South Asian Affairs), His Excellency Hushang Ansary (the Iranian Ambassador) and I. Mr. Kiyoomars Vazeen (Minister, Embassy of Iran) was also present. Others present were John P. Trevithick, Thomas O'Leary, Charles I. Bevans, Eleanor C. McDowell and Theodore L. Elliot, Jr. (USIA photographer) from the State Department and Barbara H. Thomas (Division of International Affairs) from the Atomic Energy Commission.



Signing of the Amendment to the Agreement for Cooperation between the Government of the United States and the Government of Iran.  
L to R: Seated; Hushang Ansary, Ambassador of Iran, Joseph J. Sisco, Assistant Secretary of State for Near Eastern & South Asian Affairs, Seaborg, Chairman, U.S. Atomic Energy Commission. Standing; Jean Cope, Treaty Affairs, State Department, Eleanor C. McDowell, Treaty Affairs, State Department.

We sent a response (copy attached) to Mr. Ehrlichman's request of yesterday (copy attached) for a report on legislative programs that we will undertake this year.

I sent a letter to Attorney General Mitchell calling his attention to the fact that we are amending, in the routine manner, the license of the corporation that I identified, in my conversation with him on February 25, as having materials accountability problems with respect to enriched uranium-235. The purpose of this letter was merely to inform Mr. Mitchell of this routine action in order to offer him the opportunity to comment, if he wishes to do so.

At 2:40 p.m. I received a telephone call from Dr. Kidd (OS&T). Kidd said that William B. Fretter of Berkeley is very interested in being named Assistant Director General for Science of UNESCO, a position which will probably become open to the U.S. He asked my opinion of Fretter. I said that Fretter was my Vice Chancellor at Berkeley and he is terrific; I said he couldn't do better. Kidd explained that this would be for at least three years.

Eric, Suki and I took a short hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north on the White Horse Trail and then across on Cross Trails 3 and 4 to the Police Headquarters and then around to our starting place on the White Horse Trail. We assisted a lady on horseback who was completely lost and trying to find her way in the dark back to the Meadowbrook Stables.

Wednesday, March 19, 1969 - D.C.

I presided at Information Meeting 886 (notes attached) at 9:50 a.m. The Commission informed Bob Hollingsworth that they have voted to present him with a Distinguished Service Award; it was agreed that an appropriate day for the ceremony would be Tuesday, May 6, a day when the AEC Field Office managers will be in Washington. We discussed Deputy Secretary of Defense Packard's letter of March 15th which expresses the view that Israel has embarked on a program to produce nuclear weapons. We approved the Rickover plan to shift \$10 million from Shippingport, etc. (slowing down the work) in order to enable him to continue with the light water breeder reactor in FY 1970; we hope that this will meet the requirements that the BOB spelled out for us yesterday as a result of our meeting on Monday. We also discussed the increasingly serious problem of the temporary losses of fissionable material in the shipping process. There have been three such incidents in the last week, apparently due to the American Airlines strike, the East Coast dock strike, and the bad weather along the Eastern seaboard. We are adopting more stringent rules covering the security aspects of such shipments.

I sent a letter to Bob Ellsworth advising him of the problem of temporary losses of fissionable material and our review of present requirements for the physical protection of special nuclear material which could result in additional requirements.

I had lunch at the Pot-O'-Gold with Justin Bloom, Stan Schneider and Bill Perkins. After lunch we walked around the periphery of Lafayette Square.

Henry Kissinger sent me a memo (copy attached) advising that the President shares my concern about the National Nuclear Test Readiness Program but

THE WHITE HOUSE  
WASHINGTON

March 15, 1969

Dear Mr. Chairman:

The President has asked me to secure from you, by the close of business on Tuesday, March 18, in narrative form, a description of activity by your agency since January 20, 1969, present activity and reasonably probable future activity in the following areas:

- (1) Programs involving legislative enactment
- (2) Programs to be undertaken pursuant to existing legislative authority
- (3) Reorganization within your agency of notable significance either because of substantive or formal results

We ask that you include in your description some indication of the priority of these programs with relation to one another and the price tag.

We will be happy to learn of long-range programs which you contemplate but we are also particularly interested in programs which involve the current legislative year.

Hereafter we ask that you keep this office regularly informed of developing plans in these areas.

We propose to present to the President not later than Friday, March 21, the rough draft of an omnibus description of domestic activity which will include your reports. Therefore, it is most essential that we have your material not later than Tuesday.

In the future, would you please continually keep us in mind on an "early warning" basis of programmatic and reorganizational developments?

This is very much appreciated.

Yours sincerely;

A handwritten signature in cursive script that reads "John D. Ehrlichman".

John D. Ehrlichman  
Counsel to the President

Glenn T. Seaborg, Chairman  
Atomic Energy Commission  
Washington, D. C. 20545

cc:

Dr. Arthur Burns  
Dr. Lee DuBridge  
Dr. Pat Moynihan



MAR 18 1969

John D. Ehrlichman, Esq.  
Counsel to the President

Dear Mr. Ehrlichman:

I am pleased to respond to your letter of March 15 requesting information concerning the planned or probable initiation of programs and reorganization actions by the Atomic Energy Commission.

Under the provisions of the Atomic Energy Act, the total annual program of the Commission is subject to authorization by the Congress. We have submitted to the Bureau of the Budget our proposed Authorization Bill for FY 1970 and I am enclosing a copy of that bill and the bill analysis. While the proposed program represents largely a continuation of the Commission's ongoing activities in the fields of weapons production and testing, production of nuclear materials and research and development, there are a few new programs represented that you may find of interest.

The bill proposes an authorization of \$4,000,000 for the initiation of the project definition phase of a cooperative demonstration program for the liquid metal-cooled fast breeder reactor. The Commission has been conducting research and development work on this reactor type for a number of years and has concluded that it shows sufficient promise of providing an improved and more economic source of electric energy to warrant the development of a program for the construction and operation of demonstration reactors in cooperation with private industry. We contemplate that there may be three of these demonstration plants to be authorized in future fiscal years and that the Government's participation in the first plant may run as high as \$80,000,000.

John D. Ehrlichman, Esq.

- 2 -

Under a previous authorization of \$32,333,000 we have begun construction of a 200 BEV (billion electron volt) accelerator at Weston, Illinois. The bill requests authorization of an additional \$217,667,000 to provide full authorization of funds for completion of that project.

In connection with our Plowshare Program (use of nuclear explosives for peaceful industrial and engineering activities), we have had under consideration a proposal for a cooperative development project with the Australian government involving the excavation of a new harbor at Cape Keraudren in Western Australia. We are now engaged in a study to determine the feasibility of that project. If a positive conclusion is reached as to feasibility, we would plan to proceed with the project and would request additional funds for that purpose either as a supplemental FY 1970 appropriation or in a subsequent appropriation. The Commission's financial participation in the project would be in the range of \$5,000,000 to \$7,000,000.

We consider each of the projects mentioned as having a very high priority.

Apart from our proposed Authorization Bill, the Commission has adopted a legislative program for presentation to the Congress this year. The legislative proposals involve primarily proposed changes in the Atomic Energy Act that we consider desirable in carrying out our responsibilities under the Atomic Energy Act. Some of these proposals have already been approved by the Bureau of the Budget for consistency with the President's program. The balance will be submitted for approval. I am enclosing a summary of the legislative program as a matter of possible interest.

John D. Ehrlichman, Esq.

- 3 -

I think you will be interested in another study now under way which may lead to a legislative proposal at a later date. At the present time, all of the facilities in the United States for the enrichment of uranium (the fuel for nuclear power plants) are owned and operated by the Atomic Energy Commission and financed through the annual appropriation process. We are now engaged in a study to determine whether it would be desirable to alter the present system of ownership, operation and financing and are considering a number of alternatives involving possible private participation in ownership and control and possible changes in the present system of Government operation and financing. This will probably be the subject of Congressional consideration later this year. I am enclosing for your information some background material that we prepared in connection with a recent solicitation of an expression of views from a representative group of interested organizations and individuals.

There has been no significant reorganization within the Atomic Energy Commission since January 20, 1969 and we have none planned at the present time.

We shall be happy to keep you regularly informed of programmatic and reorganizational developments on a timely basis.

Cordially,

(Signed) Gen. I. S. ...

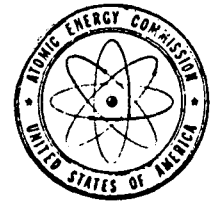
Chairman

Enclosures:

1. Cy of proposed Auth. Bill for FY 1970, analysis
2. AEC Legislative Prog. for 1969
3. Background material on study re possible changes in Gov. ownership of uranium facilities

Gen. Counsel  
Hennessey/  
lsa  
3-18-69

Gen. Mgr. & Controller  
concurring in draft 3/18/69



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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AEC LEGISLATIVE PROGRAM FOR 1969

1. Amendment of the Atomic Energy Act to provide for safety review of foreign nuclear-powered merchant ships entering the ports and waters of the United States, and to authorize financial protection requirements and agreements of indemnification under the Price-Anderson Act.

2. Amendment of the Atomic Energy Act to modify the present provision of Section 182 b. of the Atomic Energy Act of 1954 which requires that the Advisory Committee on Reactor Safeguards review and report on each application for a construction permit or an operating license for certain facilities. The proposed legislation would provide that unless the Commission specifically requests a review and report, the Advisory Committee may dispense with them.

3. Amendment of the Atomic Energy Act to provide authority to impose civil monetary penalties for violations of licensing requirements.

4. Amendment of the Atomic Energy Act to increase the criminal penalties for diversion of special nuclear material to unauthorized uses and certain other offenses, and to allow life imprisonment as the maximum penalty in certain circumstances.

5. Amendment of the Atomic Energy Act to provide authority for rewards for information concerning the diversion of special nuclear material.

6. Amendment of the Price-Anderson Act to authorize the Commission to enter into additional agreements with its indemnified licensees and contractors within the United States, to permit indemnification from public liability arising in the transportation of nuclear materials on the high seas on a ship of United States registry.

7. Amendment of the Atomic Energy Act to eliminate the requirement for a formal finding of "practical value" specified by Section 102 of the Atomic Energy Act, and to eliminate the distinction between commercial licenses and certain research and development licenses for facilities.

8. A clarifying amendment of Section 161 i.(2) of the Atomic Energy Act to provide more explicit authority in the Commission to adopt regulations against the loss or diversion of source material (uranium and thorium).

9. Amendment of the Atomic Energy Act to clarify the authority of the Commission to establish a personnel security program for persons having access to significant quantities of special nuclear material and source material.

10. Amendment of the Atomic Energy Act to clarify the authority of the Commission to make byproduct material available to licensees of the States, and to enter into long-term arrangements to provide services and materials to State licensees as presently authorized for AEC licensees.

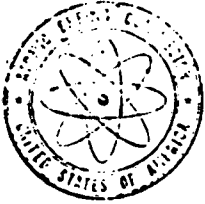
11. Amendment of the Atomic Energy Act to authorize the Commission to enter into long-term arrangements to provide toll irradiation of materials for foreign and domestic customers.

12. Amendment of the Atomic Energy Act to authorize the Commission to charge Federal agencies license fees for the construction and operation of power reactors.

13. Amendment of the Atomic Energy Act to extend for another five years from September 1, 1969, the authority to require the compulsory licensing of inventions of "primary importance" in the production or utilization of special nuclear material or atomic energy.

14. Amendment of the Atomic Energy Act to provide for additional transfers of municipal installations to Los Alamos County, New Mexico.

15. Legislation to retrocede to the State of New York exclusive jurisdiction over the Brookhaven National Laboratory site, while reserving proprietary authority in the Commission.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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COPY NO. 12  
March 19, 1969

INFORMATION MEETING 886

9:50 a.m., Wednesday, March 19, 1969, Chairman's Conference Room, D. C.

1. Distinguished Service Award Ceremony, May 6, 1969

Scheduled. (SECY-PER)

2. Chairman's Report on the March 18 PSAC Meeting

The Chairman and Commissioner Tape reported briefly on the items discussed at yesterday's meeting. Staff action on the following is requested:

- a. Release of Information on Nuclear Tests. (AGMMA-PI)
- b. PSAC-GAC Panel on High Energy Physics. (R)
- c. U.S. Provision of a Large Central Computer Facility to Serpukhov. (AGMIA-R)

3. Article in March Issue of Natural History, "The Myth of the Peaceful Atom"

4. Illinois Governor Ogilvie's March 12 Letter of Invitation to the April 10, 1969, 200 BEV Luncheon Ceremony

The Chairman will consider attending. (Rubin-AGMO)

5. BOB Mark-up - Fiscal Year 1970 Budget Amendments (See Mr. Corso's March 18 Memorandum to the File and Controller's Handout dated March 19)

The Commission:

- a. Approved a program level of \$15.4 million for the LWBR in response to the BOB mark-up.
- b. Requested the BOB be informed the President should be advised the Plowshare Program does not include the Cape Keraudren shot.

(OC)

6. Commissioner Tape's report on Canadian Participation in the Batavia 200 BEV Accelerator (See Dr. Norman Ramsey's February 18 Letter to Professor Edward Hincks and Report of the Canadian 200 GeV Study Group)

The Commissioners will review the report prior to its transmittal to Dr. DuBridge and the JCAE. The Committee is to be advised there should be no interaction with the project budget. (AGMO-Congr.-SECY-AGMIA)

7. UK Gas Centrifuge Report

In response to Commissioner Ramey's query, Commissioner Tape said a new draft is forthcoming. (AGMIA)

8. March 15 Letter from John D. Ehrlichman, Counsel to the President, re Report on AEC Programmatic and Reorganizational Developments and March 18 Response

To be circulated. (Rubin-SECY)

9. Briefing for Mr. Robert Ellsworth, Assistant to the President, on Future of the AEC Enrichment Program

The Chairman said he would brief Mr. Ellsworth tomorrow. (Rubin)

10. AEC 901/417 - Proposed ORNL Visit by Yugoslav National

Approved. (AGMIA)

11. AEC 476/31 - German Offset Payments

Approved. (AGMIA)



12. US-European Cooperation in Gaseous Diffusion Plant Technology  
To be scheduled. (AGMIA-SECY)
13. Attendance by Dr. Clay Whitehead, Staff Assistant to Mr. Ellsworth, at April 1 and 2 Governors' Briefing, Las Vegas  
Mr. Brown will accompany Mr. Whitehead. (AGM)
14. AEC 1096/100 - Universities Research Association, Inc., Scholarship Program  
Approved with a request. (DC)
15. March 14 Memorandum from Robert Finch re Establishment of Interagency Group to Review Council Guidance on Occupational Radiation Exposure of Uranium Miners  
Commissioner Tape is designated. (Rosen-AGMO)
16. March 14 Memorandum from Robert Finch re Designation of AEC Staff Member to Discuss Federal Radiation Council Procedures  
Mr. Erlewine is designated. (AGMO)
17. AEC 783/114 - Proposed AEC Comments on H. J. Res. 49 and H.R. 488 - Bills Relating to the Impact of Overhead Transmission Lines  
Approved. (GC)
18. AEC 881/110 - NFS Request for Additional Load for West Valley Facility  
Approved. (EAGM)
19. AEC 1179/13 - HTGR Cooperative Arrangement with Public Service Company of Colorado and Gulf General Atomic  
Approved with a change. (GC)
20. AEC 942/35 - Extended Operations of Peach Bottom with Core 2  
Staff advice to PE and GGA is approved. (RDT)

21. AEC 1191/1 - Contract Proposal Evaluation Board: Multi-Hundred Watt Radioisotope Thermoelectric Generator Program

Approved. (DC)

22. AEC 1000/133 - Terrestrial Isotope Power Programs: SNAP-21 and SNAP-23

Deferred. (EAGM-SECY)

23. AEC 1000/132 - Apollo Lunar Radioisotope Heater Safety Approval Recommendations

Approved. (SNS)

24. Mr. Smith's March 19 Memorandum re Execution of Contract with Austral Oil Company, Inc., and CER Geonuclear, Inc., for Project Rulison

The Chairman is authorized to sign the contract and the Commissioners are to be kept informed re the delayed date for the signing ceremony.  
(PNE-GC-Rubin-SECY)

25. AEC 181/142 - Revision of Special Research Support Agreement for Research at Educational Institutions

Noted. (DC)

26. Mr. Vinciguerra's March 3 Memorandum re International Exhibits

Exhibit rescheduling possibilities are to be checked. (AGMA)

27. Mr. Price's Report on Misrouting of Material and His March 18 Memorandum re Misrouted Shipment

Revisions in the proposed response to inquiries are requested. (PI)

28. AEC 132/145 - Proposed Response to Senate Subcommittee on Administrative Practice and Procedure's Questionnaire

Approved for the Chairman's signature. The Commissioners will also send individual replies to Senator Kennedy. (GC-Congr.-Comm. Assts.)

W. B. McCool  
Secretary

12:30 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Abbadessa\*  
Mr. Corso\*  
Mr. Smith\*  
Mr. Kratzer\*  
Mr. Erlewine\*  
Mr. Kavanagh\*  
Mr. Shaw\*  
Mr. Klein\*  
Mr. Davy\*  
Mr. Vinciguerra\*  
Mr. Price\*  
Mr. Henderson\*  
Mr. Crowson\*  
Mr. Wells\*  
Mr. Harris\*  
Mr. Schur\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

THE WHITE HOUSE  
WASHINGTON

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NOV 86

March 18, 1969

MEMORANDUM FOR

The Chairman, Atomic Energy Commission

In response to your letter dated February 25, 1969, on the National Nuclear Test Readiness Program, the President has asked me to tell you that he shares your concern about this program and appreciates being informed by you about it. He believes, however, that the question of the actual level of funding of the program should be pursued with the Bureau of the Budget as part of the present budget review.

  
Henry A. Kissinger

believes that the question of the actual level of funding for the program should be pursued with the Bureau of the Budget as part of the present budget review.

I received a letter (copy attached) from President Nixon thanking me for my letter informing him of the possibilities for peaceful uses of atomic energy. In connection with the joint feasibility study of the Cape Keraudren proposal, the President said he has directed that a review of all aspects be undertaken and that an ad hoc National Security Council study group will report on the relationship of the project to the Limited Test Ban Treaty and the NPT.

Suki and I took a short hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north on the White Horse Trail and then across at Cross Trails 3 and 4 to the Police Headquarters and back to our starting place on the White Horse Trail.

Thursday, March 20, 1969 - D.C.

This morning I gave a talk at the Madeira School in Greenway, Virginia. (I spoke here in response to a request by ex-AEC Commissioner John Graham, who has a daughter Susie attending the school.) I arrived there at 11 a.m. with Helen and Stan Schneider. We were met at the Main Building entrance by Miss Gonzales, Spanish instructor at the school, who escorted us to the Gym where I was to give my talk. At the Gym I met Mrs. Gates, one of the school's administrators, and Mrs. Ayers, who introduced me to the audience for my talk. I gave my talk on the Peaceful Uses of Nuclear Energy using 35mm color slides. I spoke until 11:55 a.m. and answered a few of the girls' questions such as, "Is the radiation of radioisotopes used in medicine harmful to the patient?" and "Is fallout still dangerous?" I left a selection of booklets from the "Understanding the Atom" series and some samples of wood-plastic for the girls. We had lunch with the girls. At the table were Miss Boner, chemistry and biology teacher, Mrs. Lukas, physics teacher who had heard me lecture at Berkeley in the 1950's, Mrs. Campbell, a teacher and programs director, Miss Gonzales, Helen and Stan. We left the school a little after 1 p.m. and were back in the H Street office about 1:30 p.m.

I sent a letter to DuBridge, setting forth the principal issues that are expected to come up at the IAEA Conference in September. In addition to inviting him to attend the Conference this year I gave him some background information on the IAEA.

I received National Security Study Memorandum No. 30 from Kissinger regarding water development and Middle East policy (copy attached).

I wrote to General Eisenhower, congratulating him on being named to receive this year's Atoms for Peace Award (copy attached).

In response to a request from Bob Ellsworth, Bob Hollingsworth, George Quinn and I met with Ellsworth, Tom Whitehead and Daniel Hofgren in Room 100 of the Executive Office Building from 2:30 to 4:15 p.m. The purpose of the meeting was to brief Ellsworth, Whitehead and Hofgren on the uranium enrichment picture, both domestic and foreign. George Quinn gave them a complete briefing, using projection charts of the basics of the gaseous diffusion and gas centrifuge processes for the enrichment of U<sup>235</sup>; it included the

THE WHITE HOUSE

WASHINGTON

March 18, 1969

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NOV 86

Dear Glenn:

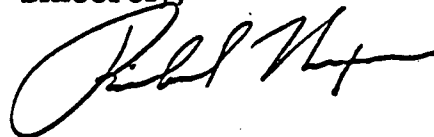
I am most appreciative of your prompt and responsive letter of February 5 informing me of some of the possibilities for peaceful uses of atomic energy.

I am pleased that the joint feasibility study of the Cape Keraudren proposal by the governments of the United States and Australia has gotten underway. As you indicated in your letter, there are many complex issues that must be resolved before we undertake such a project. I have therefore directed that a review of all aspects of the project be undertaken. An ad hoc National Security Council study group will report on the relationship of the project to the Limited Test Ban Treaty and the Treaty on the Nonproliferation of Nuclear Weapons. Also, the Bureau of the Budget will coordinate a study on the economic and technological benefits of the project. The Commission will, of course, be included in both studies, and your feasibility study will be important to both.

The other projects you describe are fascinating examples of the possibilities for peaceful and constructive uses of atomic energy. Any proposals you put forward for active development will receive the fullest attention.

I look forward to the prompt conclusion of our studies on the Cape Keraudren proposal and to the opportunity to learn more about the other projects.

Sincerely,



Honorable Glenn T. Seaborg  
Chairman  
Atomic Energy Commission  
Washington, D. C. 20545

NATIONAL SECURITY COUNCIL  
WASHINGTON, D.C. 20506

March 19, 1969

National Security Study Memorandum 30

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TO: The Secretary of State  
The Secretary of Defense  
The Secretary of the Interior  
The Secretary of Agriculture  
The Chairman, Atomic Energy Commission  
The Director of Central Intelligence  
The Administrator, Agency for International Development

SUBJECT: Water Development and Middle East Policy

The President has requested a paper covering the economic and technological aspects of the following:

- the pros and cons in current thinking about the applicability of large-scale desalting in the Middle East;
- the pros and cons of proceeding with a 40-million-gallon-per-day desalting plant in Israel;
- the alternative approaches to water development in the Middle East.

This paper should identify ways in which the U.S. private sector is involved in programs now dealing with these matters.

In addition to the above report on the economic and technological aspects, a paper should present alternative strategies for relating the technological track to our political strategy in the area.

The President has directed that the study be prepared by the NSC Inter-departmental Group for Near East and that the Secretary of the Interior, the Secretary of Agriculture, the Chairman of the Atomic Energy Commission and the Administrator of AID each designate a representative to sit on the Group for this purpose.

These papers should be forwarded to the NSC Review Group by May 23.

cc: The Director, Bureau of the Budget  
The Science Advisor to the President

Henry A. Kissinger

March 20, 1969

Dear General Eisenhower:

I just learned that you have been named to receive this year's Atoms for Peace Award. I am very enthusiastic over this choice and feel that it could not have been awarded to anyone more worthy.

It is most appropriate that we honor your role in the formation of our Atoms for Peace program and the establishment of the International Atomic Energy Agency at this time when the Nuclear Nonproliferation Treaty is furthering the efforts you began to assure the peaceful use of nuclear energy around the world.

I was reminded of your leadership in these activities in the course of preparing the Rosenfield Lectures, delivered at Grinnell College in January, which reviewed the important role of the international atom.

Congratulations and best wishes.

Respectfully,

(Signed) Glenn T. Seaborg

Glenn T. Seaborg

General Dwight D. Eisenhower  
Walter Reed General Hospital  
Washington, D. C.

GTS:MJ

bcc: Dr. Lee A. DuBridge



relative status and costs in the United States and other countries, such as France and the Soviet Union. He described our plans for increased capacity through future improvements and projected costs, both in the United States and in other countries. He emphasized the possibilities for the gaseous centrifuge process for the production of nuclear fuel by smaller countries and described in particular the tripartite project being put together by the U.K., the Netherlands, and West Germany.

Following this briefing I raised three policy issues: (1) I described the question of the future of the gaseous diffusion plants and the possible alternatives and indicated that I thought an intermediate arrangement involving a government corporation would probably be the best way to proceed, this to be followed in some 5, 10 or 15 years, perhaps with other intermediate steps, toward the ultimate of complete private ownership. I said I thought that the Joint Committee on Atomic Energy would go along with this. (2) I raised the question of whether it wouldn't be better to share our gaseous diffusion plant technology with our European friends and thus make it unnecessary for them to develop the more expensive gas centrifuge process. I said that I thought this course of action would meet with some resistance among the Commissioners and surely would be resisted by the JCAE, who probably wouldn't be ready to take this step, which would appear very drastic to them, without further education as to its advantages. (3) I identified the problem of whether the U.K., as a member of the tripartite group (with the Netherlands and West Germany), would transfer gas centrifuge information obtained from us prior to 1965. I also identified the whole problem of our attitude toward this tripartite arrangement. I said that on the whole I think we shouldn't oppose it, and that it probably has advantages from the standpoint of the U.S. and the Netherlands keeping an eye on West German progress and perhaps insisting on IAEA safeguards and that West Germany adhere to the NPT. Thus, rather than increase the possibilities for proliferation, the tripartite arrangement might in fact decrease the possibilities. I said there are problems with the Joint Committee in this area with some thinking that we should prevent, by any means possible, the U.K. transferring U.S. information to its tripartite partners. I said that, in view of the obsolescence of this information and the advantages that would accrue to the U.K. in cooperating with European countries, I think we shouldn't try to oppose the tripartite arrangement.

Ellsworth asked that we keep him informed on these three policy areas and indicated that at some stage we might involve Kissinger in the considerations.

Upon my return to the office I was interviewed by Tom Vinciguerra of Fort Lauderdale. He asked me questions about Nova University, such as what I thought its future might be to which I replied that it could become the "Caltech of the South" with a lot of work and a lot of money. He also asked me about the growth of nuclear power, and I gave him copies of several speeches I have given on this subject.

I transmitted to Senator Edward Kennedy the Commission's response to a questionnaire received from the Senate Subcommittee on Administrative Practice and Procedures, chaired by Senator Kennedy. The detailed questions and answers were concerned with citizen involvement in the administrative process and procedures for promoting more responsive agency decision-making.

I wrote a sympathy note to my aunt over the loss of my uncle, Lawrence Seaborg.

Helen and I attended the James Forrestal Memorial Award Dinner (black tie) given by the National Security Industrial Association (NSIA) at the Washington Hilton Hotel. Preceding the dinner we attended a reception in the Terrace Room, where we talked to Dave Packard (who didn't stay for the dinner), Senators Richard Russell, Margaret Chase Smith, and John Stennis, Representative George Mahon, General William C. Westmoreland, Vice Admiral William F. Raborn, John M. Martin (Vice President of Hercules, Inc. and Chairman of the James Forrestal Memorial Award Committee), General and Mrs. Lauris Norstad (Chief Executive Officer, Owens-Corning Fiberglass Co.), and many others. Charles H. Weaver (Vice President for Governmental Affairs,



Forrestal Memorial Award Dinner at the Washington Hilton Hotel, Washington, D.C.; March 20, 1969.

L to R: Glenn T. Seaborg and General Lauris Norstad.

Westinghouse) was the Master of Ceremonies. I sat between A. P. Clow (vice President, Western Electric Company) to whom John Hornbeck (Director of the AEC Sandia Corporation laboratory) reports and General Norstad; H. J. Horner (Past Chief Executive Officer, United Aircraft Corporation) sat next to Norstad. This gave Clow, Norstad, Horner and me opportunity to converse during the dinner. After dinner Martin made the presentation of the 1968 James Forrestal Memorial Award to Senator Russell. Russell responded in a speech amounting to a rousing defense of the military-industry complex in the United States. Helen sat at a table next to Mrs. Martin and found out that she is a good friend of Bill and Bidy Jenkins who live in Wilmington.

Friday, March 21, 1969 - Germantown

Bob Mayo called me at 9:15 a.m. to tell me about yesterday's budget meeting with the President and the Cabinet. He said he is sorry I had not been present to get the full flavor of it. He said after he presented the figures the President emphasized the need for a further cut of several billion dollars to get under the Johnson budget. The President issued a directive to Mayo to

contact each agency, tell them how much more they must cut and present them with a list of specifics. He said our additional cut would amount to \$60 million in expenditures, broken down as follows: Termination of the Meson facility, \$10 million; reduction of the weapons test activity, \$10 million; termination of the nuclear rocket engine program, \$30 million; and termination of the light water breeder reactor, \$5 million. He wasn't sure just what the other \$5 million was for but said we would be getting the figures on paper. He said we do have the option, if we can think of a better way of cutting, to submit a list of first and second choices.

At 10 a.m. I presided over Information Meeting 887 and at 11:10 a.m. the Regulatory Information Meeting 334 (notes attached). We discussed the further cut of \$60 million in our FY 1970 budget, as communicated to me by Mayo, and an additional \$40 million contingency cut in the event it is decided to cut a total of \$100 million.

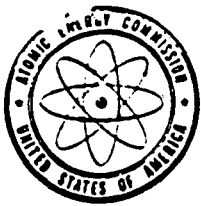
I sent a letter to Dr. Tom Paine, Administrator of NASA, advising him that the Apollo Lunar Radioisotopic Heater is ready for delivery to the Kennedy Space Center.

I signed a memo to the President, which is being jointly sent by DOD and AEC, requesting authorization to provide to Canada certain classified information about nuclear weapons effects. This information is necessary in connection with our decision to deploy an ABM system. This is my first participation in a joint letter with the new Secretary of Defense, Melvin Laird.

At 12 noon Howard Brown and I drove out to CIA Headquarters where we had lunch with CIA Director Richard Helms in his private dining room. I described project TROLL and explained its implications and security sensitivity. I noted that I had personally briefed the President on the matter.

Deleted

We then discussed the overall trends abroad in uranium enrichment for the civilian nuclear fuel cycle. I described the proposed tripartite cooperation in gas centrifuge development between the U.K., the Netherlands, and West Germany. I noted that by enriching uranium up to 3 or 4 percent one had already gone halfway--in terms of effort and financial investment--toward weapons grade U-235. On the other hand, a multi-lateral venture provides some



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WASHINGTON, D.C. 20545

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COPY NO. 2  
March 21, 1969

INFORMATION MEETING 887

10:05 a. m., Friday, March 21, 1969, Room A-458, Germantown Headquarters

1. FY 1970 Budget Estimates
2. National Security Study Memorandum No. 30 dated March 19, 1969, re Water Development and Middle East Policy

Commissioner Ramey is designated and appropriate staff support is requested. A policy chronology is also requested. (AGMIA-Rubin-Ryan-SECY)

3. Commissioner Johnson's March 5 Statement of Proposed Policy Regarding the Future Means of Providing Uranium Enrichment Services to the Nuclear Power Industry

The Chairman requested the Commissioners' comments be addressed to Commissioner Johnson who will prepare a new draft for review by the staff. (AGMP&P-Helfrich-SECY)

4. General Manager's Report on BOB Consideration of AEC Option for TVA Power
5. Agenda for the Week of March 24, 1969

Approved. (SECY)

6. AEC 1282/40 - Bowline IV Underground Test Program

Approved. (AGMIA)

7. AEC 181/144 - February 10, 1969 GAO Report No. B-146810, "Need for Improved Guidelines in Contracting for Research with Government-Sponsored Nonprofit Contractors"

Approved with a change. (DC)

8. AEC 87/129 - Contract with Richland School District for School Construction

Approved. (AECA)

9. AEC 181/143 - Correspondence on Proposed Revision to ASPR 15-205. 8, Contributions and Donations

Noted. (DC)

10. Pending Contractual Matters Report No. 300

A staff report on the proposed contract for Radioisotope Heat Source Subsystem for the Circulatory Support System Project is requested. (DC-ID)

11. PSAC Panel on High, Intermediate, and Low Energy Physics

Participation by Messrs. Ramsey and Friedman was noted. (R-SECY)

W. B. McCool  
Secretary

10:50 a. m

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Tesche\*  
Mr. Peterson\*  
Mr. Smith\*  
Mr. Corso\*  
Mr. Griffin\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)



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March 21, 1969

REGULATORY INFORMATION MEETING 334

11:10 a. m., Friday, March 21, 1969, Room A-458, Germantown Headquarters

1. Mr. Price's March 4 Memorandum re Operator Licensing Considerations Involving Commonwealth Edison Refueling Crews

Approved with a request. (ADRA)

2. Mr. Price's March 14 Memorandum re Disposal of "Davy Crockett" Spotting Rounds

A waiver is granted. (ADRA)

3. Mr. Beck's March 20 Memorandum re Preliminary Report of AEC Survey Team Visit to Rotterdam Dock Yard Company (RDM) Netherlands

Noted.

4. Mr. Price's March 17 Memorandum re Issuance of Export Licensing for Special Nuclear Material

Approved. (DML)

5. March 12 Letter from Governor Peterson, State of New Hampshire, re April 23 and 24 Conference on Natural Resources

Commissioner Johnson will plan to attend. A confirming letter is requested. (ADRA-Helfrich-Rubin)

6. AEC-R 2/74 - Proposed Amendment to 10 CFR Parts 2 and 50 - Backfitting of Facilities: Elimination of Provisional Construction Permits and Provisional Operating Licenses

Approved. (DRL)

7. AEC-R 4/59 - Amendment of 10 CFR Parts 1, 2, 50 and 115: Establishment of Atomic Safety and Licensing Appeal Board

The AIF request for an extension of the public comment period to April 30, 1969, is approved. Commissioner Ramey requested a report on Administrative-Organizational plans. (GC-Chm. AS&LBP)

W. B. McCool  
Secretary

11:35 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson

STAFF:

Mr. Price  
Mr. Beck  
Mr. Mann  
Mr. Henderson  
Mr. Wells  
Mr. Henderson  
Mr. Rubin  
Mr. McCool

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General Counsel  
Secretary

inherent safeguards. In addition, in this case, the three countries plan to adopt NPT-like safeguards.

Deleted

At the end of our luncheon, Helms leaned back in his chair and observed: "What you have been telling me this afternoon is that proliferation isn't all that difficult anymore, that it is no longer a matter of a secret scientific formula locked in the safe. Rather, the fundamental scientific information is available and more and more countries have the capability of developing nuclear weapons, however crude and inefficient. We live in a frightening age."

At 2:30 p.m. I presided over Commission Meeting 2364 (action summary attached). The main item was a detailed discussion of how to make an alternate list of cuts amounting to \$60 million in the FY 1970 budget that we think might be preferable to the specifics given to me by Mayo this morning. Mayo's reduction figures are: ROVER, \$40 million; and Space Electric, \$3 million. The figures we came up with are as follows: ROVER, \$30 million (close out of NERVA program); Weapons Program, \$8 million, Naval Reactors, \$4 million; Food Irradiation, \$1.5 million; SNAP Program, \$1 million; Physical Research, \$4 million; Biology & Medicine, \$500,000. Added to \$11.4 million from the sale of 200 tons of heavy water, the above adds up to the required total cut of \$60 million.

I wrote to President Nixon requesting approval of the Bowline IV underground test program in the fourth quarter of the FY 1969 underground nuclear weapons testing program.

Steve, Eric, Suki and I took a hike in Rock Creek Park, starting at Nebraska and Oregon Avenues, going north on the White Horse Trail to Cross Trails 3 and 4, returning to the White Horse Trail and to our starting point.

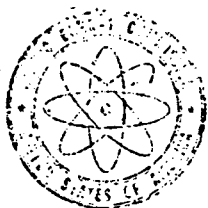
Saturday, March 22, 1969 - Louisville, Kentucky

Steve, Eric and I flew to Louisville, Kentucky, on Eastern Airlines Flight 653, leaving National Airport at about 8:10 a.m. and arriving in Louisville at about 9:30 a.m.

We took the limousine to the Brown Hotel and checked in (Room 1216). We then took a taxi to Churchill Downs where we visited the museum and the race track. (See picture.) We took a taxi back to the Brown Hotel and had lunch in the Tea Room there.

We met Ernie Wolf (of the Wolf Travel Agency near UCLA) and Don Bowman (acting Executive Officer of the UCLA Alumni Association) in front of the hotel. We then boarded a bus full of UCLA supporters and rode to Freedom Hall, the site of the NCAA Basketball Final Championship Game. We sat in Section U, Row A, seats 1, 2 and 3, just behind the UCLA team. We met J. D. Morgan (Athletic Director at UCLA) and Tom Harmon. (I told Tom I had seen him in Memorial Stadium in Berkeley in 1940 when, on his 21st birthday, he led the University of Michigan to a 40-0 victory over Berkeley.) We saw the game between North Carolina and Drake University, being played for third place. During halftime I saw Professor Paul Farrington of the UCLA Department of Chemistry who was there substituting for Tom Jacobs who is now the Faculty Athletic Representative for UCLA. Drake won, 104-84.





UNITED STATES  
 ATOMIC ENERGY COMMISSION  
 WASHINGTON, D.C. 20545

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March 21, 1969

Approved \_\_\_\_\_

R.E.H.

Date \_\_\_\_\_

R. F. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2364, FRIDAY, MARCH 21, 1969, 2:45 P.M., ROOM A-410, GERMANTOWN, MARYLAND

SECY:WLU

Executive Session

1. FY 1970 Budget Estimate

The Commission approved the following case for submission to the BOE, totaling \$60.0 million in reductions:

|   | <u>(Millions)</u>  |
|---|--------------------|
| Weapons Program.....                                      | \$ 8.0             |
| Naval Reactors.....                                       | 4.0                |
| Rever Program.....  | 30.0               |
| Food Irradiation Program.....                             | 1.45               |
| (Isotopes Development...\$ .750 million                   |                    |
| B&M..... .700 million)                                    |                    |
| Biology & Medicine.....                                   | .500               |
| Physical Research.....                                    | 3.65               |
| RDT/S&S.....  | 1.0                |
| Sale of reserve loading of heavy<br>water (250 tons)..... | 11.4 (in revenues) |

The Chairman will sign the letter of transmittal on his return. (OC/SECY)

2. Proposed Letter to the President's Science Advisor re Pitzer Panel Report

Commissioner Tape will discuss with Dr. duBridg on Saturday, March 22, 1969.

Commission Business

1. Minutes of Meetings 2344, 2345, 2346 and 2347

Approved, as revised, subject to comments by Commissioner Ramey. (SECY)

2. WASH 1087 - An Evaluation of Advanced Converter Reactors  
Approved. (RDT)
3. WASH 1088 - An Evaluation of Steam Cooled Fast Breeder Reactors  
Approved. (RDT)
4. WASH 1089 - An Evaluation of Gas-Cooled Fast Breeder Reactors  
Approved. (RDT)
5. WASH 1090 - An Evaluation of Alternate Coolant Fast Breeder Reactors  
(See Mr. Shaw's January 28 Memorandum)  
Approved. (RDT)
6. AEC 1000/134 - Use of SNAP-27 Generators on the NASA Apollo Spacecraft  
Deferred. (SECY)
7. AEC 588/76 - LMFBR Demonstration Plant Program  
Discussed, and to be rescheduled. (SECY)
8. AEC 1253/53 - Initiation of Construction Planning & Design on Future Year Projects  
Approved. (OC)
9. AEC 1299/6 - Proposed Amendments to Section 81 and Subsections 161 m. & t. of the Atomic Energy Act  
Deferred. (SECY)
10. AEC 87/128 - Proposed Legislation to Authorize Transfer of a Municipal Installation at Los Alamos  
Approved, subject to a Congressional check. (GC)

March 21, 1969

11. AEC 1299/7 - Retrocession to New York State of Exclusive Jurisdiction Over the Brookhaven National Laboratory Site

Approved. (GC)

12. AEC 116/66 - Official Announcement of Certain Event Yields Useful in Seismic Studies (See also AEC 116/67)

Deferred. (SECY)

13. Briefing on Expenditure Limitations (See AEC 1253/54 - Status of FY 1969 Expenditure Limitation)

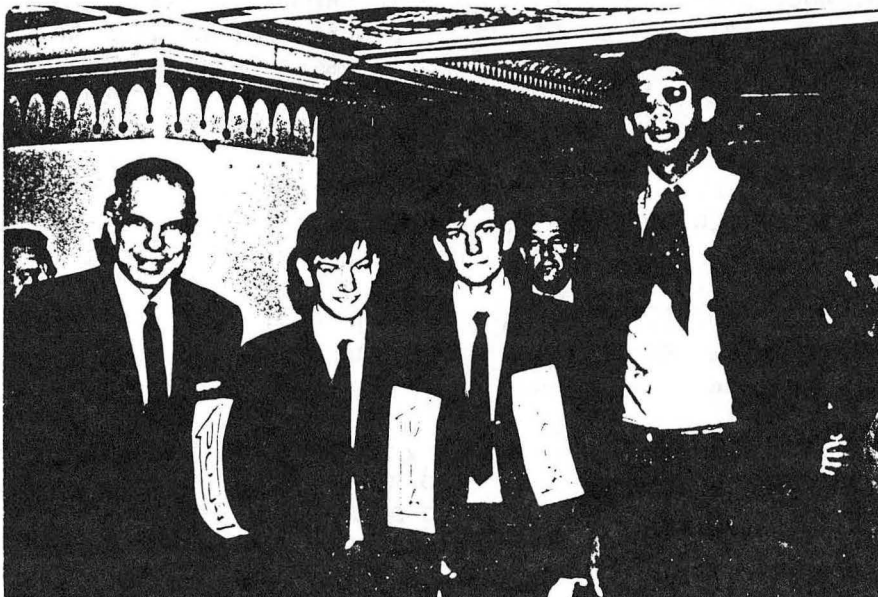
Deferred. (SECY)

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola



Churchill Downs, site of the Kentucky Derby; March 22, 1969.  
L to R: Eric and Steve Seaborg.



National Basketball Championship, Louisville, Kentucky; March 22, 1969.  
L to R: Glenn, Eric, and Steve Seaborg; Lew Alcindor.

I talked to Don Bowman about the UCLA Alumni Committee of 50 between the two games. This is the Committee for the 50th Anniversary Celebration of which I am chairman.

UCLA beat Purdue, 92-72, for its third consecutive NCAA Basketball Championship.

We took the bus back to the Brown Hotel and attended a UCLA reception in the South Room. (See picture previous page.) Here we met a number of people including Mr. and Mrs. Herron (of Herron Northwest, a brokerage firm in Seattle--Doug Kinsey is now working for this firm in New York), Mr. and Mrs. Lindroth (their daughter is engaged to John Vallely of the UCLA team--Vallely is in the boat business on Balboa Island), Mr. and Mrs. Ham of San Diego, Ernie Wolfe and many others. After an hour or so we were joined by members of the UCLA basketball team--Alcindor, Vallely, Heitz and Rowe (we didn't see Shackelford)--J. D. Morgan, Coach John Wooden, assistant coaches Denny Crum and Gary Cunningham and their wives, and trainer Ducky Drake. Wooden spoke briefly and introduced his assistants.

Steve, Eric and I had dinner at Jerry's Restaurant, across the street from the Brown Hotel. We spent the night at the Brown Hotel.

Sunday, March 23, 1969 - Louisville, Kentucky and Fort Lauderdale, Florida

Steve, Eric and I took a taxi to the Louisville Airport, where we had breakfast in the dining room. I left Louisville on Delta Flight 803 to Atlanta, leaving about 8:50 a.m. and arriving about 9:40 a.m. I then took Delta Flight 5 to Miami, leaving about 11:10 a.m. and arriving about 12:30 p.m.

Steve and Eric took Eastern Airlines Flight 508, leaving Louisville about 9:30 a.m. and arriving at Washington National Airport about 11 a.m.

I was met at the Miami Airport by Professor Joel Warren of Nova University. Professor Warren, who joined Nova University in January, is a microbiologist and served as the U.S. Scientific Attache in Stockholm from 1954 to 1956. He spent a number of years at the National Institutes of Health, and just before coming to Nova he completed eleven years with the Pfizer Laboratories in Terre Haute. He will start a Life Sciences Center at Nova, moving a Germ-Free Laboratory from Tampa as a starting nucleus.

I rode to Fort Lauderdale with Professor Warren in his Fiat. We had lunch at an Arby's Roast Beef place on the 17th Street causeway. We drove along Route A-1A through the heart of the Fort Lauderdale beach area where we saw the crowds of students (10,000, they say) who are there for the traditional spring vacation gathering. I checked into the Ocean Manor Hotel (Room 426) at the north end of Fort Lauderdale (4040 Galt Ocean Drive).

For an hour I hiked along the beach. Upon my return to the hotel I was interviewed on the telephone by Rick Barnard of the Fort Lauderdale Sun Sentinel concerning the future and the value of Nova University, the status of student interest in science as a career, and the medical uses of nuclear energy, as in the artificial heart and the eight million administrations of radioactive isotopes per year.

Glen Gordon came by and we discussed the relative merits of his offers for positions at Nova University, Oak Ridge National Laboratory and the University of Maryland.

We had dinner at the Mai-Kai at 3599 North Federal Highway on Route 1. The group consisted of Dr. and Mrs. Arthur W. Wishart, Warren Winstead (President of Nova University), Athelstan Spilhaus, Hans Jensen (University of Heidelberg in Germany), Glen Gordon and me.

When I returned to the hotel I returned a call I had received from Bob Hollingsworth. He said that Tom Paine of NASA has found enough money to keep NERVA in the budget and wanted us to find the \$30 million needed to provide our share of it in our budget. Because we would have to cut a compensating \$30 million from our already decimated FY 1970 budget, I said we should consider this very carefully.

I spent the night at the Ocean Manor Hotel.

Monday, March 24, 1969 - Fort Lauderdale, Florida

I had breakfast in the Surf Room of the Ocean Manor Hotel with Cy Young (host and owner of Ocean Manor Hotel), President Winstead, Jim Farquhar (Chairman of the Board of Trustees, Nova University), Abe Fischler (Dean of Graduate Studies, NU), Robert B. Gilmore (Cal Tech, member of the NU Advisory Board), Athelstan Spilhaus (member, NU Advisory Board), J. Hans D. Jensen (University of Heidelberg, member, NU Advisory Board), Glen Gordon, Phil Handler (member, NU Advisory Board), Professor Warren, Roy C. Herndon (Associate Professor of Physics, NU, formerly of the Berkeley Radiation Laboratory), Dick Folsom (President, RPI; member, NU Advisory Board), Charles S. Yentsch (Associate Professor of Marine Biology, NU), Dayton E. Carritt (Vice President-Provost, NU), and Henry Kinney (Director of University Relations, NU).

At the beginning of breakfast, Certificates and Keys to the City were presented to Gilmore, Jensen, Handler, Folsom, Spilhaus and me by Peter Clements, the Mayor of Fort Lauderdale.

Before breakfast I was interviewed by John Woodward of Channel 4 - WTVJ on the artificial heart and nuclear power, which was broadcast at 6 p.m., and by Jed Drews of the Fort Lauderdale News on the artificial heart.

I rode out to Nova University with Winstead and Gilmore. On the way we passed the Lago-mar, a hotel on the ocean owned by Sidney Banks who also owns the Cavalier Club, a hotel in Virginia Beach. I also learned about the 4,000 acre estate in Ocala of Mrs. Bernard (Teresa) Castro, owner of Castro Convertibles Corporation (furniture); her son has a collection of snakes. Norton Cooper, owner of Seaways of Toronto, Canada, also has a ranch at Ocala; his wife owns Revenue Properties, the largest developer in the Americas. (I am interested in Ocala because of our visit there last summer.)

On arriving at the University we had a briefing session in Winstead's Conference Room in the Louis W. Parker Physical Sciences Center. Present were Folsom, Gilmore, Jensen, Handler, I (Spilhaus joined us later), Carritt, Lee McLean, Fischler, Gordon, Warren, and William S. Richardson (Director of the Environmental Sciences Center, NU).

Winstead described the operation of Nova University and its severe financial problems. Carritt described the interdisciplinary character of the curriculum. There are four Centers: (1) Social and Behavioral Sciences (Fischler); (2) Physical Sciences (Carritt); (3) Life Sciences (Warren); and (5) Environmental Sciences (includes oceanography) (Richardson). Research is done in these four centers and the faculties are separate. The idea is to break down the traditional barriers between disciplines. The present seventeen students are all graduate students with some previous graduate

experience. "Cost of instruction" is waived for all but one student and \$3,000 annually in aid for each of their students is carried by the University. Ideally, in 1975, they plan for 500 students at the graduate level including the master's degree, 255 faculty members and a \$10,000,000 operating budget. The students are and will be students of the "Centers." Nova University will exist in the future largely on grants and contracts. Faculty promotion comes through the Center and the Faculty Academic Senate, which consists of 20 faculty members at present; Carritt is chairman of the Academic Senate which runs the academic part of the University, subject, of course, to the review of the Trustees.

Bill Richardson described the Environmental Sciences (oceanography) Center. They have a floating laboratory at Port Everglades with about 40 participants, about tenth in size in the country with a budget of about \$800,000 that includes support from the AEC, NSF and ONR. They have measured the flow structure of the Gulf Stream. The Federal Water Pollution Agency will support their increasing effort on pollution. Richardson thinks ocean aquaculture is a fraud because it can be done better on land sites by bringing the water to the site; the economics will have to compete with raising chickens for food.

After Fischler described the program of the Social and Behavioral Sciences Center, Warren described the Life Sciences Center. He said he was asked a year ago to assume the directorship of James Rainier's Germ-Free Laboratory at Tampa, Florida. Rainier started this laboratory at Notre Dame some 30 years ago, and it was later moved to Tampa. Warren said he would take the position provided he could move it to a university and change its objective to cancer research. He has accepted Dr. Winstead's invitation to move the laboratory to Nova University.

Warren described the many possibilities for research with the excellent equipment from the Tampa Laboratory and the various present and future funding possibilities.

At this point I took time out to call Bob Hollingsworth about the NERVA budget problem. He was meeting with the Commission and staff when I called and told me they have found they can raise an additional \$12.7 million by selling more heavy water to Canada but are having difficulty in raising the remainder of the \$30 million.

Lee McLean described the fund raising program. Nova University has raised \$9.37 million in four years--an amazing performance these days. Some potential donors want the University to have a football team (which they will never have). It is more difficult to get money for the operating budget than for the buildings; it will be a problem to raise the needed funds in the next few years.

I rode to the Rolling Hills Country Club with Lee McLean. He told me that he may accept a position at Northwestern University, that Winstead may be offered the presidency of Rollins College and that Farquhar still hopes I would accept the presidency of Nova University.

The group, including the six members of the Advisory Board, had lunch at the Country club. Others present were Farquhar, Winstead, McLean, Gordon, Warren, Carritt, Joe Lipson (Professor of Education, NU, and former member of the University of California, Berkeley, Physics Department), and Kuldip P. Chopra

(an Indian scientist and NU faculty member). I also met Jim Broadhead (Director of Development at NU). I and the other Advisory Board members recorded filmed statements for Kinney of the Public Relations Department. I also recorded a radio tape for Bob Krauser of Station WIOD of Miami concerning Nova University, nuclear power, thermal pollution and the artificial heart.

I then rode with Winstead, Spilhaus, Folsom and Jensen to Mrs. Castro's yacht "The Southern Trail," moored in the Intercoastal Waterway, where we had a conference on Nova University problems.

I called Justin Bloom and Jim Ramey in Washington to learn the status of affairs on the budget and other matters.

Winstead, Spilhaus, Folsom, Jensen and I discussed the concept of an Executive Committee of the Board of Trustees of Nova University to aid in the interim role of provost to help recruit faculty, especially physicists and chemists. The committee might consist of six members, including Winstead, Farquhar and three scientists. Spilhaus might be one and I suggested that George Beadle and Maurice Goldhaber might be the other two; I agreed to approach them. Winstead will clear this concept with the Board of Trustees.

We rode back to the Ocean Manor Hotel with Winstead. I then took a half-hour walk on the beach.

Handler, Spilhaus and I rode with McLean to the spot on the Intercoastal Waterway where the yacht "The Southern Trail" was moored. Here we joined Jensen, Gilmore, Folsom, Farquhar, Winstead, Carritt, Gordon and Mrs. Castro. We took a ride on the Intercoastal Waterway to beyond where the Queen Elizabeth is moored and back. We had dinner aboard the yacht, cooked by our hostess, Mrs. Castro.

I rode back with McLean to the Ocean Manor Hotel where I spent the night.

Attached is the action summary of Commission Meeting 2365 (held in my absence).

Pete arrived home from Berkeley to visit us during the interval between the winter and spring quarters.

Tuesday, March 25, 1969 - Fort Lauderdale, Boca Raton

I had breakfast in the Riviera Room of the Ocean Manor Hotel with Professor Jensen. We discussed the plans for the UNILAC at the University of Heidelberg which has been designed by Smelzer. Jensen said that the UNILAC has been funded, will cost about \$10,000,000 and will accelerate heavy ions up to uranium to about 7 to 8 Mev per nucleon. Two sites are under consideration, one at Karlsruhe (25 km away) where it could be built in about three years, the other (considered for political reasons) about twice as far away which would require about two years longer to build. Jensen said that the Hortig heavy ion accelerator at the Max Planck Institute in Heidelberg has second priority but may also be built. He doesn't rule out the existence of a closed shell at  $Z=114$  but thinks the calculated half lives may be off by many powers of ten. He said he had visited Flerov's laboratory at Dubna a year ago and was impressed by the magnitude of the effort; he mentioned especially the laser heavy ion source.





UNITED STATES  
**ATOMIC ENERGY COMMISSION**  
 WASHINGTON, D.C. 20545

UNCL. BY DC  
 NOV 86

March 24, 1969  
 Approved \_\_\_\_\_  
 R.E.H.  
 Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

**ACTION SUMMARY OF MEETING 2365, MONDAY, MARCH 24, 1969, 10:00 A.M., ROOM A-410, GERMANTOWN, MARYLAND**

SECY:WLW

Commission Business

FY 1970 Budget Estimate

The Commission approved the following case for submission to the BOB, totaling \$45.0 million in reductions, and noted this action superseded its action at Meeting 2364:

|   | <u>(Millions)</u> |
|---|-------------------|
| Weapons Testing.....  | \$ 8.0            |
| Naval Reactors.....   | 4.0               |
| Rover Program.....  | 2.175             |
| Food Irradiation Program.....                                       | 1.450             |
| (Isotopes Development.....\$ .750 million<br>B&M..... .700 million) |                   |
| Biology & Medicine.....   | .500              |
| Physical Research.....  | 3.650             |
| Space Electric.....   | 1.0               |
| Sale of heavy water (425 tons).....                                 | 24.225 (in        |
| (OC)  | revenue)          |

The Commission requested staff explore the feasibility of selling uranium with payment to be made in FY 1970, and delivery in FY 1972 or later.

(AGMPP)

The Commission requested staff explore the feasibility of reducing the price of plutonium, with an analysis of the effect a reduced price would have on potential sales. (AGMIA)

The Chairman will sign the letter of transmittal on his return. (OC/SECY)

Original signed  
 W. B. McCool  
 W. B. McCool  
 Secretary

cc:  
 Commissioners

Professor Warren drove me to the Boca Raton Convention Center where I was to give a talk at the 36th Annual Conference of the Southeastern Electric Exchange. On the way we stopped to visit the Pompano Beach spring training headquarters of the Washington Senators.

Upon arrival at the Boca Raton Center I was greeted by William B. Ownes (Executive Director), John M. McGurn (President, Virginia Electric and Power Company) and Julie Rubin. After some brief conversation about the program we entered the Great Hall to listen to the last portion of the second speaker on the morning program. The speaker was Mrs. Sylvie Reice who is the youth editor for McCall's magazine; her talk was entitled, "The Teenage Revolution How to Survive It." I met and talked with her after she finished speaking.

During an intermission preceding my talk I was greeted by a number of people and exchanged brief remarks with the following: Clayton L. Nairne (First Vice President, Southeastern Electric Exchange and Chairman of the Board, New Orleans Public Service, Inc.) who was to introduce me on the program; John Simpson of Westinghouse; John Landis and Art Rolander of Gulf General Atomic; Bill Parker of Duke Power; Don Crawford of Consolidated Edison of New York and soon to be Executive Director of EEI and who indicated he would like to visit me soon with the new President of EEI; R. H. Fite (President, Florida Power and Light Company); George Kinsman (Senior Vice President, Florida Power and Light Company); John M. McGurn (President, Virginia Electric and Power Company); Mr. H. B. Nelson of Pratt & Whitney Aircraft; John L. Oliphant of Oliphant Washington Service; and Carl Horn of Duke Power Company.

After the group reassembled I was introduced by Clayton Nairne (New Orleans Public Service, Inc. and Vice President of the Southeastern Electric Exchange) and gave my talk entitled, "Nuclear Power - A New Overview." My talk lasted about 30 minutes and there were some 300 to 400 people in the audience, which included a number of the wives of people attending the meeting.

Julie and I then rode to the Miami Airport in the airport limousine; we passed Florida Atlantic University on the way. We flew to Washington National Airport on Eastern Airlines Flight 176 (an earlier flight than we were scheduled for), leaving Miami at 1 p.m. and arriving at 3:05 p.m.

I spent the remainder of the day in the H Street office.

Attached is a copy of a letter I signed to Robert P. Mayo, BOB regarding our FY 1970 budget. Also attached is the AEC biweekly status report for March 25, 1969.

Wednesday, March 26, 1969 - D.C.

At 9:55 a.m. I presided over Information Meeting 888 which was followed at 11:35 a.m. by Regulatory Information Meeting 335 (notes attached). One of the main items of discussion was the recent decision of the Sentinel Mining Company to drop out of the feasibility study for the Cape Keraudren Project in Western Australia. As a result of this we decided that I should immediately write a letter to President Nixon (copy attached) informing him of this development in view of his forthcoming discussions with Prime Minister John Gorton of Australia next week. We decided that we would suggest to the



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

MAR 25 1969

Honorable Robert P. Mayo  
Director, Bureau of the Budget

Dear Mr. Mayo:

The Commission has carefully considered the composition of the additional reduction of \$60 million in estimated FY 1970 outlays which you telephoned to me last Friday morning. By Friday evening we had informally advised your staff of several substitute reductions for the ones included in your list, with the total still amounting to \$60 million.

Both your list and our list with its substitutions included a \$30 million reduction for termination of the NERVA Program (Project Rover). However, over the weekend we learned that NASA had decided to restore the NERVA Program within its allowance as an additional option for future space technology development, and NASA urged us to restore our portion of the NERVA Program.

The Commission strongly endorses maintaining a viable NERVA Program, particularly when one considers that through FY 1968 over \$1.1 billion had been invested in the Rover effort by NASA and ourselves. We considered it particularly unfortunate to terminate this effort just as it was on the threshold of coming into fruition. Notwithstanding our desire to continue the NERVA Program, the Commission could find no acceptable alternative reductions aggregating \$30 million to offset the Rover amount. At best, even with a decision to sell our reserve stock of heavy water together with a reduction in the Rover Program, the Commission can identify reductions in outlays totalling \$45 million as compared to the \$60 million you requested. Accordingly, as Commissioner Ramey telephoned you, we strongly urge your reconsideration of the need to reduce Commission outlays by \$60 million and hope that you can find your way clear to accept a \$45 million reduction from the AEC.

I am sure you realize that even the lesser reduction of \$45 million imposes severe penalties on the Commission. It necessitates reductions in the planned level of weapons testing and a slow down in developing

nuclear reactors for the propulsion of naval vessels; both of these items affecting our National Defense posture. It also means the termination of the food irradiation program just at the point where we can see substantial economic benefits evolving from this technology.

The following table compares the items making up the outlay reductions which you telephoned to me last Friday with our present alternative proposal. This information was phoned to your staff on Monday, March 24.

|  | Outlays                                    |                            |
|--|--|----------------------------|
|  | <u>Director's<br/>Call to<br/>Chairman</u> | <u>AEC<br/>Alternative</u> |
|  | (In Millions)                              |                            |
| Weapons Testing .....                  | \$ 10.0                                    | \$ 8.0                     |
| Rover (NERVA) .....                    | 30.0                                       | 2.175                      |
| Naval Reactors Program .....           | -  | 4.0                        |
| LWBR .....                             | 5.0  | -                          |
| Space Electric .....                   | 3.0  | 1.0                        |
| Food Irradiation Program .....         | 1.0  | 1.45                       |
| Artificial Heart .....                 | 1.0  | -                          |
| Physical Research Program .....        | -  | 3.65                       |
| Biology and Medicine Program .....     | -  | .5                         |
| Revenue from Sale of Heavy Water ..... | -  | 24.225                     |
| Terminate Los Alamos Meson Project ... | <u>10.0</u>                                | <u>..</u>                  |
| Total Reduction in Outlays .....       | <u>\$ 60.0</u>                             | <u>\$ 45.0</u>             |

Upon analysis of our proposal you will note that it minimizes disruptive programmatic effects since it avoids the termination of the Rover Program, the LWBR Program, the Los Alamos Meson Project, and the Artificial Heart Project. We believe that avoiding these termination actions has several distinct advantages. First, there are the intrinsic merits of the programs themselves, and second it evidences good faith in carrying out the intent of Congress in its authorization of these programs.

Honorable Robert P. Mayo

- 3 -

I would like to close on a note of appreciation for your willingness to consider alleviating the magnitude of the outlay reduction in view of the severe problems facing the Commission, and for the excellent cooperation of your staff in working with us under circumstances that I know are trying for both you and the Commission.

Sincerely,

(Signed) **Glean T. Seaborg**

Chairman

AEC BIWEEKLY STATUS REPORT FOR MARCH 25, 1969

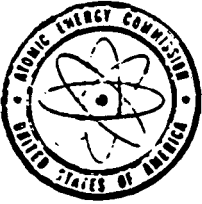
1. The AEC testified on radiation standards for underground uranium miners to a subcommittee of the Joint Committee on Atomic Energy on March 17. Focusing on the safety, technical, and economic aspects of the problem, the testimony reiterated AEC's belief that the scientific and technical data currently available do not provide adequate scientific support for adopting at the present time a standard that would require a level of radiation exposure to miners as low as the standard that the Federal Radiation Council proposes the Government should place in effect on January 1, 1971. AEC supports the FRC guidance on the basis that the contemplated lowering of the permissible exposure level by that date will be carefully reviewed to determine if it should be put into effect.
2. The date on which enriched uranium on lease from the AEC may be purchased by a method called "in situ" toll enriching has been moved from January 1, 1971, to April 1, 1969. "In situ" toll enriching is one of the procedures established to carry out the 1964 Private Ownership of Special Nuclear Materials Act. Under this procedure, lessees of enriched uranium owned by AEC are permitted to purchase it by transferring to AEC required amounts of natural (unenriched) uranium and money. The change in date could result in opportunities for the uranium mining industry to negotiate additional private sales of uranium during 1969 and 1970, and might thereby improve the attractiveness of proposals from the industry being solicited by the AEC which would result in reduction of uranium sales to the AEC. Such proposals were invited earlier this year (as reported in Item 9 of AEC's February 25 report).
3. As part of the consideration being given to the future operation of the nation's uranium enrichment facilities, AEC is seeking comments from a cross section of about 150 industrial executives concerned with the question of possible alternatives to the present system of Government ownership. Uranium enrichment is now performed in three gaseous diffusion plants owned by the Government and operated by private firms. The rapidly growing demand from private industry for the enrichment of nuclear fuel used to generate electricity and the consequent need to expand the nation's uranium enrichment capacity raise the

question of whether this service should continue as a Government function or become a private commercial activity. The executives are being provided with a report by AEC that discusses the principal considerations and with other background information on uranium enrichment. I have sent further details on this subject to the Executive Offices.

4. Ministers of the British, French, and West German Governments met on March 11 about collaborating to develop the gas centrifuge technology for enriching uranium. The result was an agreement in principle to establish two organizations: one to fabricate centrifuges and build enrichment plants and another to operate the separations plants. The first two plants will be built in the Netherlands and United Kingdom. There are no current plans to locate enriching plants in West Germany, although the matter is not foreclosed for the indefinite future. They also agreed in principle to set up an intergovernmental committee to supervise the collaboration and deal with safeguards questions, security procedures, and other sensitive areas. This was not a final commitment to proceed, but instructions were issued to prepare a draft convention for ministerial review. Another ministerial meeting will be held on June 9, 1969. The three countries hope to complete and sign the convention by the summer.
5. AEC endorsed the proposed amendment to the current U.S.-U.K. Agreement for Mutual Defense Cooperation in testimony before the Joint Committee on Atomic Energy on March 10. The amendment would permit the U.S. to transfer additional quantities of enriched uranium for the British nuclear submarine program.
6. Technical briefings on underground nuclear testing for representatives of the Governors of eight western states (Nevada, Arizona, California, Idaho, Oregon, Utah, Alaska, and Colorado) have been scheduled for April 1 and 2 at AEC's Nevada Operations Office. The first day will be devoted to discussions of safety research, policies, and programs. The second day will include a visit to the Nevada Test Site.

7. Australian Atomic Energy Commissioner Maurice C. Timbs is visiting AEC on March 24-26 to discuss the peaceful uses of nuclear explosives and nuclear fuel for research reactors. The President of the Portuguese Atomic Energy Commission, General Kaulza de Arriaga, will visit the U.S. and meet with the Commission on March 27. He will be briefed on the U.S. power reactor and other programs.





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

COPY NO. 2  
March 26, 1969

INFORMATION MEETING 888

9:55 a.m., Wednesday, March 26, 1969, Chairman's Conference Room, D. C.

EXECUTIVE SESSION ITEMS

1. Draft Letter to the Attorney General

To be circulated. (AGM)

2. AEC 568/126 - NATO Espionage Case (See Also AEC 568/127 - Supplement to AEC 568/126)

Noted. The Chairman will mention informally to Secretary of State Rogers. (Rubin)

\*\*\*\*\*

3. Chairman's Attendance at 1:00 p.m. Ceremony Today Honoring the Apollo 9 Crew

4. AEC 811/230 - Economic Analysis of Cape Keraudren Nuclear Excavation

Noted. The Chairman will sign the letter to the President today and inform the White House staff and others telephonically. A draft press release is requested. (PNE-AGMIA-PI-Rubin)

5. March 19 Letter from Mr. E. Creutz, Gulf General Atomic, re Rules for Fermi Award

An acknowledgement is requested. (SECY-Rubin)

6. AEC 858/29 - Exemption from 18 U.S. C. Section 207 (Post Employment Restrictions on the Conflict-of-Interest Statute)

Approved. (EAGM-GC)

7. Report on Radioisotope Heat Source Subsystem for Circulatory Support System Project (See Pending Contractual Matters Report No. 300)

Staff may proceed. Commissioner Johnson requested a briefing. (DC-ID-PAR)

8. AEC 1000/135 - Terrestrial Isotope Power Programs

Deferred. (SECY)

9. AEC 1000/136 - Adequacy of Space Power Programs

Deferred. (SECY)

10. AEC 1000/137 - Proposed Letter to the Chairman, JCAE, Concerning the AEC Space Electric Power Program

Approved. (SNS-Rubin) *Dispatched*

11. AEC 901/422 - Participation by Soviet Bloc Members in Post-Conference Tour of NTS

Approved. (AGMIA)

12. AEC 901/423 - Proposed Visits of Soviet National to LRL, Princeton, and New York University

Approved. (AGMIA)

13. AEC 896/14 - NUMEC Purchase of AEC Plutonium for Export to Japan

Approved. (AGMIA)

14. AEC 89/133 - Proposed Employment of Canadian National at LASL

Approved. (AGMIA)

15. AEC 89/135 - Proposed Employment of Italian National at LASL

Approved. (AGMIA)

16. AEC 23/83 - COCOM List: U.K. Proposal on Artificial Graphite  
Deferred. (SECY)
17. AEC 23/84 - COCOM List: French Proposal on Zirconium  
Deferred. (SECY)
18. AEC 268/34 - Additional Power for Gaseous Diffusion Plants  
The JCAE is to be informed today. (AGMP&P-Congr.)
19. Telephone Call to the Chairman from Mr. Robert Ellsworth, Assistant to the President, re White House Study of Diffusion Plant Disposition
20. AEC 620/63 - Letter from Representative Reuss Concerning Ronnie Mining Claims  
Approved. Staff paper identification is to be removed. (GC)
21. AEC 783/116 - Proposed AEC Comments on H.R. 5970 - Federal Water Pollution Control Administration  
Approved. (GC)
22. March 12 Letter from Governor Peterson, State of New Hampshire, re April 23-24 Conference on Natural Resources  
Staff representation is requested. (ADRA-PI-Rubin)

W. B. McCool  
Secretary

11:35 a.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. McCool  
Mr. Vinciguerra\*  
Mr. Kull\*\*  
Mr. Kratzer\*\*\*  
Mr. Kelly\*\*\*  
Mr. Harris\*\*\*  
Mr. Klein\*\*\*  
Mr. Quinn\*\*\*  
Mr. Price\*\*\*  
Mr. Beck\*\*\*  
Mr. Henderson\*\*\*  
Mr. Wells\*\*\*

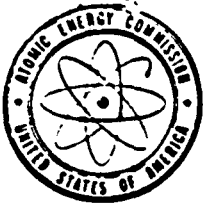
DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Item 2

\*\* Partial Attendance ( )

\*\*\* Attendance by Topic (s)



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

March 26, 1969 INCL. BY DC  
NOV 86

REGULATORY INFORMATION MEETING 335

11:35 a.m., Wednesday, March 26, 1969, Chairman's Conference Room, D. C.

1. AEC-R 38/16 - Proposed Regulation 10 CFR 73 - Physical Protection of Special Nuclear Material

Discussed. (SECY)

2. Mr. Price's March 24 Memorandum re Problems with Reactors

Discussed.

3. Mr. Price's March 21 Memorandum re Consolidated-Edison Company of New York, Inc., Request for Exemption Pursuant to 10 CFR 50.12, from the Provisions of 10 CFR 50.10(b)

Denial is deferred. (ADRA)

4. Mr. Price's March 24 Memorandum re Licensing of NASA's Ames Research Center to Use Byproduct Material at Cape Kennedy

Approved. (DML)

\*\*\*\*\*

5. March 12 Letter from Governor Peterson, State of New Hampshire, re April 23-24 Conference on Natural Resources

Staff representation is requested. (ADRA-PI-Rubin)

W. B. McCool  
Secretary

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Price  
Mr. Beck  
Mr. Henderson  
Mr. Hennessey  
Mr. Rubin  
Mr. Wells  
Mr. McCool  
Mr. Hollingsworth\*  
Mr. Kratzer\*  
Mr. Brenner\*  
Mr. Hammond\*

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Dir/Regulation  
General Counsel  
General Manager  
Secretary

\*Partial Attendance

March 26, 1969

The President  
The White House

Dear Mr. President:

In light of your interest in the USAEC's Plowshare program, in particular the proposed harbor project at Cape Keraudren in Western Australia, and the forthcoming visit of Prime Minister Gorton, I would like to advise you that the industrial participant, the Sentinel Mining Company, has decided not to participate in the Feasibility Study as originally contemplated. The reason cited by the Sentinel Mining Company for their new position is a re-evaluation of the opportunities in the mining and marketing of iron ore (the principal product to be shipped through the harbor) which indicates they are markedly reduced as compared with those a few months ago. The USAEC and the Australian AEC believe that continuation of the study under these conditions is unwarranted.

In the course of your discussions with Prime Minister Gorton, during his visit next week, the USAEC believes you should express regret at Sentinel Mining's unwillingness to participate as expected and reiterate the United States willingness to participate in a similar alternate Feasibility Study.

A more encouraging note in the Plowshare program is the signing today of a contract between the U. S. Government represented by the USAEC and the Department of the Interior and the Austral Oil Company of Houston, Texas for Project Rulison. Rulison will be the second deep underground nuclear explosion to investigate the use of nuclear explosions in "stimulating" unproductive natural gas fields.

Respectfully yours,

Glenn T. Seaborg

President that he discuss with the Prime Minister the possibility that the feasibility study be directed toward another possible Plowshare experiment that might be conducted in Australia.

In a telephone conversation with Lee DuBridge on another matter, I brought up the subject of our budget difficulties and how we are meeting them. He said he has found a difference of opinion on the Los Alamos meson facility. I said I think it is a must; if it were cut now the impact on the laboratory would be catastrophic and Senator Anderson would make a career out of stopping the 200 Bev Accelerator. Lee asked if we are going to make any move with regard to pursuing the discussion that Panofsky had in Russia about our furnishing a computer. I told him the Division of Research is working on it. He said he has mentioned this to the President, noting that this is the first time an agreement on checking and control has been offered by the Russians. He said he thinks the President was interested although they did not discuss it.

At 12:15 p.m., along with Commissioner Tape and Myron Kratzer, I met with Maurice C. Timbs, the Executive Member of the Australian Atomic Energy Commission. We discussed the Sentinel Company's decision to withdraw from the Cape Keraudren feasibility study and agreed that an attempt should be made to direct the study toward another similar project in Australia.

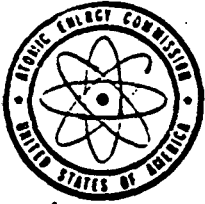
I had lunch in the car on my way to attend an award ceremony for the Apollo 9 astronauts which was being held in front of NASA Headquarters. Vice President Agnew and NASA Administrator Paine awarded citations to astronauts James A. McDivitt, David R. Scott and Russell L. Schweickart. Their families were there and were introduced to the audience by the astronauts. Awards were also made to some of the support personnel for the Apollo 9 mission. Following the ceremony I met McDivitt, Scott and Schweickart.

At 2:30 p.m. I presided over Commission Meeting 2366 (action summary attached). We approved the safety aspects of the launch of SNAP-27 with the Apollo 11 mission. SNAP-27 will be fueled with 3800 grams (45,000 curies) of Pu-238 and will generate 480 watts to be used to keep warm some of the electronic systems that will be left on the moon by the astronauts. Apollo 11 will probably be launched on July 16.

I called Bob Mayo to notify him that the Cape Keraudren project has fallen through and that I have notified the President by letter. I said the Australians are still interested in such a project but at another site. We will still want the \$500,000 for a feasibility study. He said they're still sweating out what to do about the \$15 million AEC appeal. I said we were reluctantly ready to give up on NERVA but NASA wants to go ahead. Mayo said he even asked Paine to absorb our share, but of course he said he couldn't do it. He also mentioned that it has come to his attention that we are disposing of some mercury, and he would go the limit in crediting that to AEC, rather than to GSA. I asked whether he had talked to the President about the Hanford reactors. He said no, that it had slipped his mind, but he would send him a memo right away. In a subsequent call to Abbadessa I reported on my conversation with Mayo.

I received a memorandum from President Nixon to Heads of Executive Departments and Agencies which establishes a procedure to govern compliance with congressional demands for information (copy attached).





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

March 26, 1969

Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2366, WEDNESDAY, MARCH 26, 1969, 2:25 P.M., ROOM 1115,  
D. C. OFFICE

SECY:SBR

Commission Business

1. AEC-R 38/16 - Proposed Regulation 10 CFR 73 - Physical Protection of  
Special Nuclear Material

Approved publication of the provision governing transportation of special nuclear materials to be immediately effective, the Commission having found that good cause existed for immediate effectiveness;

Approved publication of the remaining provisions of the proposed regulation in the Federal Register for public comment.

(DR/NMS)

2. AEC 1000/134 - Use of SNAP-27 Generators on the NASA Apollo Spacecraft

Approved. (SNS)

3. Briefing on Fast Breeder Reactors

The Commission requested staff prepare a paper for internal Commission use which could be used as a vehicle for agreeing on an appropriate Commission posture on questions of fast reactor safety as they relate to the civilian power program. (AGMR)

An early Executive Session on this matter will be scheduled. (SECY)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

THE WHITE HOUSE  
WASHINGTON

UNCL. BY DOP  
NOV 88

March 24, 1969

MEMORANDUM FOR THE HEADS OF

EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: ESTABLISHING A PROCEDURE TO GOVERN COMPLIANCE  
WITH CONGRESSIONAL DEMANDS FOR INFORMATION

The policy of this Administration is to comply to the fullest extent possible with Congressional requests for information. While the Executive branch has the responsibility of withholding certain information the disclosure of which would be incompatible with the public interest, this Administration will invoke this authority only in the most compelling circumstances and after a rigorous inquiry into the actual need for its exercise. For those reasons Executive privilege will not be used without specific Presidential approval. The following procedural steps will govern the invocation of Executive privilege:

1. If the head of an Executive department or agency (hereafter referred to as "department head") believes that compliance with a request for information from a Congressional agency addressed to his department or agency raises a substantial question as to the need for invoking Executive privilege, he should consult the Attorney General through the Office of Legal Counsel of the Department of Justice.
2. If the department head and the Attorney General agree, in accordance with the policy set forth above, that Executive privilege shall not be invoked in the circumstances, the information shall be released to the inquiring Congressional agency.
3. If the department head and the Attorney General agree that the circumstances justify the invocation of Executive privilege, or if either of them believes that the issue should be submitted to the President, the matter shall be transmitted to the Counsel to the President, who will advise the department head of the President's decision.

4. In the event of a Presidential decision to invoke Executive privilege, the department head should advise the Congressional agency that the claim of Executive privilege is being made with the specific approval of the President.
5. Pending a final determination of the matter, the department head should request the Congressional agency to hold its demand for the information in abeyance until such determination can be made. Care shall be taken to indicate that the purpose of this request is to protect the privilege pending the determination, and that the request does not constitute a claim of privilege. :

*Richard Nixon*

The Commission then heard a briefing on the safety of fast breeder reactors; we heard the views of Hugh Paxton of Los Alamos and Carroll Zabel. Paxton and Zabel seem to think that the dangers of an explosion caused by a malfunction in the presently planned breeders would be minimal and that the size of the explosion would be, in any case, very small, in the range of a few tons at most.

At 3:50 p.m. I met with the new German Ambassador, Rolf Friedemann Pauls. He was accompanied by Wolfgang Opferman, the Scientific Counselor at the German Embassy; Myron Kratzer and Julius Rubin were also present. This was mainly a courtesy call and we discussed such things as my trip to Germany last September to visit the Julich Laboratory, DESY and the OTTO HAHN. The possibility of using counterpart funds in connection with heavy ion accelerator work that may be of interest to Germany was briefly mentioned, and this seemed to be of particular interest to the Ambassador.

At 4:30 p.m. I went to the Department of Interior to participate in the signing of the contract for Project Rulison, a joint government-industry gas stimulation project in Colorado. The ceremony took place in the Secretary's office. This project, to be conducted at Rifle, Colorado, involves a detonation of a 50 KT nuclear explosive at a depth of 8400 feet to increase the flow of gas from an otherwise tight gas-bearing formation. It will probably occur in May and the cost is estimated at \$6.5 million, 90% to be borne by industry and 10% by the AEC. Participating in the signing, besides me, were Under Secretary of the Interior Russell E. Train, Mr. C. W. Leisk (Chairman of the Board, Austral Oil Company) and Dr. Herbert Grier (President, CER Geonuclear Corporation). A list of people present for the ceremony is attached.

Mr. Train made short introductory remarks and then introduced me, Mr. Leisk and the congressional representatives. I commented on Rulison's role in the underground engineering part of the Plowshare program and the relation of this project to Gasbuggy; I emphasized the large share of the cost (90%) borne by industry in line with AEC policy of turning over to industry the applications of the peaceful uses of nuclear energy. Mr. Leisk spoke of the cooperative attitude of the Department and the Commission and indicated if Rulison were successful they would like to carry out a second experiment within a few months. Dr. Grier took note of the many people who had been involved in the development of Project Rulison, thanking them all, and commented on the project as having been the occasion for working out an appropriate division of responsibility between government and industry and providing a modus operandi for such industrial-type projects. The contract was then signed and the group, including the congressional representatives, assembled for pictures after which the principals individually entertained informal questions from the press. (See picture.)

I also called Secretary of State Rogers, and at the end of the afternoon Chet Holifield and Craig Hosmer telling them that the Cape Keraudren project fell through as a result of the Sentinel Mining Company's decision to withdraw from the feasibility study. Holifield suggested we direct our attention to North Slope, Alaska; I said I met Representative Howard Pollack at the RULISON signing today, and he invited me to Alaska.

Principal Participants in  
Project Rulison Contract  
Signing

Department of the Interior

Russell E. Train, Under Secretary  
Clarence Lortentzson, Asst. to Secy. for  
Congressional Liaison  
James R. Smith, Asst. Secy, Water & Power  
Development  
Mitchell Melich, Solicitor  
Robert Maynard, Asst. to Solicitor  
Ernest Cohen, Asst. Solicitor, Patents  
John F. O'Leary, Dir., Bureau of Mines  
Earl T. Hayes, Deputy Dir., Bureau of Mines  
Robert O. Swenarton, Dir., Office of Public  
Information, Bureau of Mines  
J. Wade Watkins, Dir., Petroleum Research,  
Bureau of Mines  
Boyd L. Rasmussen, Dir., Bureau Land Mgmt.  
Edwin H. Montgomery, Chief, Br. of  
Mineral Resources, Bureau of Land Mgmt.  
Leroy Olsen, Legal Asst., Br. of Minerals  
Realty, Bureau of Land Mgmt.  
William T. Pecora, Dir., Geological Survey  
Reid Stone, Staff Engineer, Conservation Div.,  
Geological Survey  
James Hamilton, Asst. to Secy.

AEC

Dr. Glenn T. Seaborg, Chairman  
William J. Minsch, OGC  
William L. Oakley, PNE  
J. Keith Davy, PNE  
Raymond Richardson, PNE  
Ronald D. Hauber, PNE  
Frank Ingram, DPI  
Roland Anderson, OGC  
Clifford E. McColley, DIP

Industry

C. W. Leisk, Chairman of the Board,  
Austral Oil Company  
G. Will Frank, Vice President, Austral  
Oil Company  
Gordon Stokes, General Counsel, Austral  
Oil Company  
Robert Kaiser, Austral Oil Company

Industry (continued)

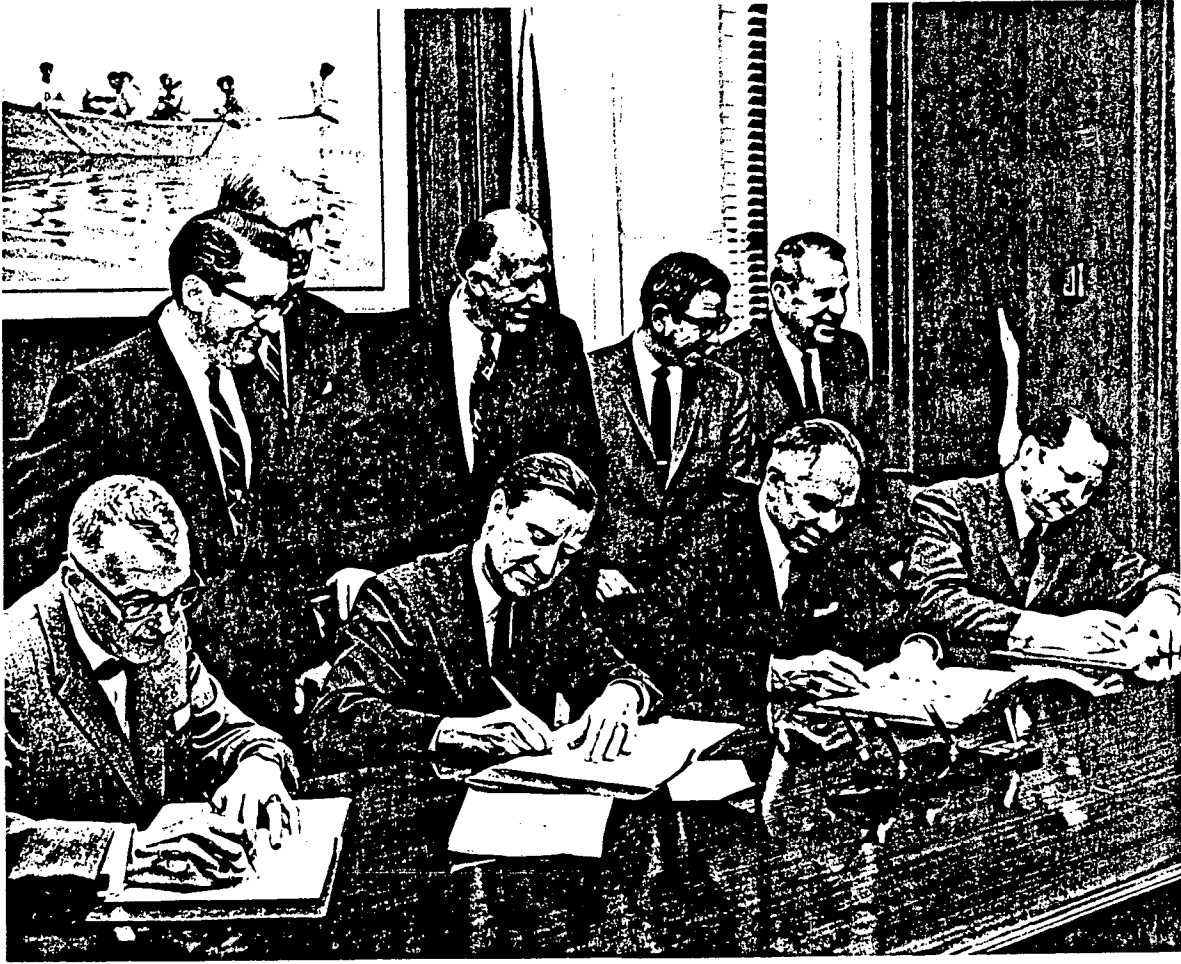
Herbert E. Grier, President, CER  
Geonuclear Corporation  
H. H. Aronson, Vice President, CE  
Geonuclear Corporation

Congress

Clinton P. Anderson, Senator,  
New Mexico  
Paul J. Fannin, Senator,  
Arizona  
Manuel Lujan, Representative,  
New Mexico  
John Camp, Representative,  
Oklahoma  
Howard W. Pollock, Representa-  
tive, Alaska

Press

Miss Helene Monberg, local  
Colorado newspapers  
Albert Sehlstedt, Baltimore Sun  
Stanley Benjamin, Associated  
Press  
Charles Schroth, USIA



Project Rulison contract signing; March 26, 1969.

L to R: Seated; Herbert E. Grier, President, CER Geonuclear Corporation; Russell E. Train, Under Secretary, Department of the Interior; Glenn T. Seaborg, Chairman, U.S. Atomic Energy Commission; and C. Wardell Leisk, Chairman of the Board, Austral Oil Company Incorporated. Standing; Representative Howard W. Pollock, Alaska; Senator Clinton P. Anderson, New Mexico; Senator Paul J. Fannin, Arizona; Representative Manuel Lujan, Jr., New Mexico; and Representative John N. (Happy) Camp, Oklahoma.

Thursday, March 27, 1969 - D.C.

At 10 a.m. the Commissioners met with A. E. Schubert (Vice President, Nuclear Energy Division), E. T. Maher (Counsel, Legal Operations), K. P. Cohen (General Manager, Breeder Reactor Development Operations), R. T. Pennington (Manager, Government Atomic Power Application), and T. R. Clark (Manager, Washington Region, Power Generation Sales Division) of General Electric to hear Schubert and Cohen of the General Electric present plans in connection with their development of the fast breeder reactor. This meeting was in response to Schubert's letter to me dated February 26, 1969 (copy attached). The presentation included the complete background picture for the G.E. fast breeder reactor development program. The question of safety was dealt with in some depth with the conclusion that the worst kind of an accident might

**GENERAL ELECTRIC**

**COMPANY**

175 CURTNER AVENUE  
SAN JOSE, CALIFORNIA 95125

UNCL. BY DOE  
NOV 86

A. EUGENE SCHUBERT  
VICE PRESIDENT  
NUCLEAR ENERGY DIVISION

February 26, 1969

Dr. Glenn T. Seaborg, Chairman  
United States Atomic Energy Commission  
Washington, D. C. 20545

Dear Dr. Seaborg:

In preparation for our meeting on March 27 with you and the other members of the Atomic Energy Commission on the subject of General Electric's breeder development activity, I thought it would be helpful to send you a brief review of our work on advanced nuclear reactor systems, and the prospects for further developments as we now see them.

General Electric Company has been engaged since 1956 in continuing studies of advanced nuclear reactor systems. These studies were motivated in part by the need for the evaluation of competitive reactor systems, and in part to determine what future designs might be introduced to supplement the BWR in order fully to meet the requirements of the utility industry.

These studies benefited from a great depth of intracompany experience in nuclear reactor systems of widely varying types. Experience was available, of course, with boiling water reactors; and, in addition, with gas-cooled reactors; with tube-type graphite-moderated reactors; with sodium-cooled and pressurized water reactors; and with heavy water-moderated reactors from Canadian General Electric Company.

As early as 1959 we had identified the advantages of a nuclear power generation program beginning with the early use of the enriched uranium fueled boiling water reactors, and the subsequent supplementing of this system with fast reactors. The fast reactor fuel cycle would improve the economics of the water reactors, as well as improving the low utilization of uranium, and would through proper choice of fuel, use much of the technology, methods, and facilities already established by the water reactor industry. After a careful comparison of alternative courses of action, the Company adopted this technical policy and has pursued it without interruption for approximately ten years.

Of course we have continued to follow closely developments both here and abroad of competing systems and alternate technical policies. With personnel assigned for this purpose, both in work of our own and in studies of the published data, we follow with interest the progress of high temperature gas-cooled converters, of various homogeneous reactors, of heavy water advanced converters, and so on. While each of these systems have certain merits we remain confident that the technical policy we have chosen, of participating in the development of the nuclear power industry with boiling water reactors and then extending and supplementing this useful product with fast reactors, is the course by which General Electric can contribute most to the future of the U. S. utility industry and thereby to the benefit of its customers.

Although our major effort has been on the sodium-cooled fast reactor, for a long period we also considered as possible alternates both steam-cooled and gas-cooled fast reactors. However, our most recent studies, particularly with the East Central Nuclear Group, of the difficulties of developing an economical fast reactor fuel for a gas-cooled reactor operating under pressure have resulted in our concentrating all our fast reactor activities on the sodium-cooled system.

General Electric's work on sodium-cooled fast reactors has been a cooperative effort with the U. S. Atomic Energy Commission, the American utility industry, and with many nations of the Western World. In continuing Commission-supported work since 1959, we have carried out the brunt of the development of mixed uranium-plutonium oxide as a fast reactor fuel. In this program we pioneered the concept of the long-life, oxide-fueled, Doppler regulated, sodium-cooled power reactor. This concept has become the preferred development objective of all the major industrial nations. Other work for the Commission included further development of sodium coolant technology, picking up the thread of work begun many years earlier at KAPL.

In 1962 we launched the SEFOR program as a cooperative enterprise between the Atomic Energy Commission, the 17 investor-owned utilities of the Southwest Atomic Energy Associates, the Gesellschaft fur Kernforschung of West Germany, Euratom and General Electric Company. Criticality of this reactor, scheduled for March, will mark a milestone of major significance in the world's development of economic fast reactors. General Electric Company accepted broad responsibility, as well as risks, for the execution of this program, which has required substantial resources in the form of funds and the assignment of key management and technical personnel for a prolonged period. To this writing, our contribution in direct costs alone has been some \$5 million.



In 1965 we recognized the desires of the utility industry to participate fully in decision-making on the fast breeder. Accordingly, we proposed a program for utility participation in and support of a study of the feasibility and costs of proceeding with a 300 MWe Demonstration Liquid Metal Fast Breeder Reactor. Pacific Gas & Electric Co., Commonwealth Edison Co., Detroit Edison Co., Duke Power Co., and SAEA participated in this program, and this original group has now been extended to include Iowa-Illinois Gas & Electric Co., Baltimore Gas & Electric Co., Illinois Power Co., and three overseas utilities, the Bernische Kraftwerke (Switzerland), and the Atomkraft-Konsortiet and Stattens Vattenfallsverk (both of Stockholm). The first phase of this work, which was marked by particularly stimulating interchanges with the utilities, has now been concluded.

We understand that the utility industry has also extended its support in this area to other suppliers.

In 1967 the Empire State Atomic Development Associates, consisting of the seven investor-owned utilities of New York State, after a competition, awarded a \$5 million contract to General Electric for a research and development program directed toward the development of certain components for application in a sodium-cooled fast breeder nuclear power plant. The objective of the program is to develop information which will significantly strengthen the basis for a possible demonstration plant commitment in 1969-70. The agreement contemplates an eventual cooperative venture between the U. S. Atomic Energy Commission, on the one hand, and ESADA-GE on the other, for the construction of such a plant.

Our arrangements with ESADA provide that, if General Electric deems it technically feasible and safe to proceed with the construction and operation of a sodium-cooled fast breeder nuclear generation plant, taking account of the results obtained in the SEFOR program and an assessment of the state of development of sodium-cooled fast breeder technology generally, by September 30, 1969 General Electric will submit to ESADA an offer to supply a "turnkey" sodium-cooled fast breeder nuclear power plant with a design target output of approximately 300 MWe, together with the initial two cores of fuel for the plant. If such an offer is made, it is contemplated that, with representatives of General Electric, and by April 1, 1970, ESADA will initiate discussions with the Atomic Energy Commission with respect to financial support, for which the minimum levels are specified, similar to the support furnished under the modified "Third Round Power Reactor Demonstration Program," for assistance in defraying engineering and equipment costs and a plant pre-operational and post-construction research and development program.

February 26, 1969

As part of the ESADA arrangement, we have also agreed that we will not, prior to July 31, 1970 or before the date on which ESADA declines such an offer, whichever is earlier, submit to any other organization such an offer to supply a demonstration sodium-cooled fast breeder power plant.

It will be apparent that, after a decade of continuous development and study, we are near a point of decision on a major step in the development of the sodium-cooled fast breeder; namely, the commitment of a large demonstration plant. We understand that the Atomic Energy Commission, by a related but not identical chain of reasoning, may also be near the conclusion that an LMFBR demonstration plant program should be undertaken.

I trust that this brief resume of our work on breeders sufficiently shows why we will appreciate the opportunity at this time to review with you various policy, technical, schedule, and related questions which may be involved in the early commitment by the Commission and by industry of LMFBR demonstration plants. We look forward to our meeting on the 27th for this purpose.

Sincerely yours,

  
A. E. Schubert

AES:rk

cc: K. P. Cohen  
H. W. Gouldthorpe

correspond to an explosion with an energy release of the order of a ton of TNT. Schubert said that he hopes the AEC would proceed simultaneously with two companies in its support of the construction of the prototype fast breeder reactor. He also indicated that although they would hope that the fast breeder prototype might be authorized and funded for the FY 1971 budget; so far as the AEC portion of the support is concerned, if it were delayed until the FY 1972 budget, it might not be too bad in view of the many matters that G.E. must attend to before they are ready.

At 12 noon I met in my office with General Kaulza de Arriaga, President, Portuguese Junta de Energia Nuclear, and Mr. Adelino da Costa, Director of International Services, Portuguese Junta de Energia Nuclear. Myron Kratzer was also present. General Arriaga began the conversation by inviting me to visit Portugal later this year, and I indicated that this might be possible at the time of my trip to attend the IAEA General Conference in Vienna in September. I inquired as to Portugal's intention with respect to ratifying the NPT, and he suggested that the United States might profitably give them some encouragement in that direction which would help in their decision to take this step. I also asked whether Portugal would be willing to place under IAEA safeguards any uranium they might sell to other countries, and he said he thought they would take this under consideration.

Arriaga asked me whether any American companies might be willing to help Portugal in the exploration for uranium in Angola and Mozambique, and I described the conditions under which U.S. uranium mining companies might do this; I indicated we would look into it. Finally, he asked whether the U.S. had any plans toward cooperating with European countries in their development of uranium enrichment capability. I said that a study of our policy on this will be a part of our larger study of the future of the whole uranium enrichment picture in the United States. We then went down to the Commission Meeting room where Mr. Seabra (Interpreter from the State Department), Commissioners Ramey, Tape and Costagliola and Bob Hollingsworth, Ed Bloch, Milt Shaw and others joined us. We held a brief conversation concerning the present state and future prospects for cooperation in the peaceful uses of atomic energy between Portugal and the United States. I gave General Arriaga an autographed copy of my book, Man-Made Transuranium Elements.

Arriaga then rode with me to the Mayflower Hotel where I hosted a luncheon in his honor. Present at the luncheon, besides Arriaga and me, were Ambassador Vasco Vieira Garin of Portugal, Mr. da Costa, Dr. Herbert Scoville (ACDA), Donovan Zook, George Landau and Mr. Seabra (State), Ed Bauser (JCAE Staff), Commissioners Ramey and Costagliola, Bob Hollingsworth, Ed Bloch, Howard Brown, Myron Kratzer, Justin Bloom, Jack Rosen, Milt Shaw and Bill Yeomans. After the luncheon I spoke briefly, welcoming General Arriaga to the United States. I referred to his previous visits, Commissioner Ramey's visit to Lisbon last November, my possible forthcoming visit to Lisbon in September, the long history of cooperation between Portugal and the United States in the peaceful uses of atomic energy, the role that Ambassador Garin played as one of the founding fathers of the IAEA, and the fine support role that Portugal has played for the IAEA. Ambassador Garin responded briefly and turned to General Arriaga who responded with remarks much the same as mine.

At 3 p.m. I met with Mrs. Caroline Rottsalk, Allen Rosenbaum and Marge Stapleton of the University of Chicago. We discussed the basis for the method that was used in selecting the site for the 200 Bev Accelerator, namely, the solicitation of proposals and the use of the National Academy of Sciences

committee to narrow the selection down to six sites. I emphasized that the selection was left to the Atomic Energy Commission with no interference from President Johnson and that I was very satisfied with the whole procedure and would probably use the same method if another site selection problem faced us. With respect to the civil rights problems at the Batavia site, I emphasized that I thought scientists were more inclined to make every effort to assure progress in the human rights area than most other classes of people.

I was interviewed by Lisa Johnson, a junior at the Bethesda-Chevy Chase High School, for her school paper. She is the daughter of Dr. Everett Johnson, a former employee of the AEC. I briefly covered the general field of the peaceful uses of atomic energy, our research in practical applications and our basic research program, including a number of examples in each category.


At 3:35 p.m. I met in my office with George Bell and John R. West of the White House Staff. Mr. Bell opened the conversation by saying that he and Mr. West are working in Harry Fleming's office on the problem of locating manpower to staff the various Government departments and agencies. He said that, as a result of the appeal of Mr. Nixon for people and the attendant publicity of that appeal, they received more than 40,000 applications of which 8,000 represent qualified people and about 1,500 represent very qualified people. These applications are all set up in the computer in the Office of Emergency Planning so they are able to come up with applications covering the requirements for a particular position in a hurry. He said that when the AEC has positions, especially non-technical, to fill, such as congressional liaison, public information, at the General Manager's level or in his office, they would like to know so that some of their candidates might be considered.

Bell said he will send over a number of applications and then follow this with others as they come in if they seem to represent qualified people. I suggested that he send them to our General Manager, Robert Hollingsworth, but assured him that I would keep in touch with this operation. They mentioned also that they have applicants who indicated they might be qualified at the commissioner level. I told him that we are presently evaluating Commissioner Tape's replacement, looking for a man with knowledge in the nuclear weapons area, in the nuclear power reactor area and possibly in the university relations area. Bell and West conceded that these were very difficult qualifications to fulfill. I emphasized that we have only five presidential appointments, namely, the five commissioners. I also emphasized that we are under a very strict manpower ceiling limitation and, thus, are not able to hire anybody for awhile. I explained that we run our operation through contractors and, thus, some 120,000 contractor employees have their work supervised by only 7,000 AEC employees; that the limitations in our manpower probably costs the Government extra money because of our reduced ability to supervise intricate operations in away that would lead to minimal cost for our manifold operations. I assured them that we would cooperate with their manpower search operations in every way.

Helen and I had dinner at the Herb Friedman's in Arlington. Also present were Dr. and Mrs. Tape, Dr. and Mrs. Robert Frosch (Assistant Secretary of Navy for R&D), and Admiral and Mrs. Tom Owens (Office of Naval Research).

Friday, March 28, 1969 - Germantown

At Information Meeting 889 (notes attached) at 10 a.m. we decided to take the initiative in regard to numerous congressional bills that are devoted to



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. \_\_\_\_\_  
March 28, 1969

INFORMATION MEETING 889

ENCL. BY DOE  
NOV 86

10:00 a.m., Friday, March 28, 1969, Room A-458, Germantown Headquarters

1. Fiscal Year 1970 Budget Estimates

Additional reductions totaling \$15 million as listed below are approved

|                          |                |
|--------------------------|----------------|
| Mercury Credit           | \$ 7.5 million |
| Uranium                  | 5.0            |
| Sale of D <sub>2</sub> O | 1.4            |
| Bonus Reactor Project    | <u>1.1</u>     |
| Total                    | \$15.0         |

The Chairman will sign the letter to the BoB today. (OC)

2. April 22-23, 1969, Hearings by the Subcommittee on Government Research

Preparation of testimony for the Chairman is requested. (AGMR&D-DC-Congr.)

3. Chairman's Discussion with Messrs. George Bell and John R. West, Office of the Assistant to the President for Personnel Affairs, re Applicants for Employment

The Chairman is to be kept informed. (AGM-Rubin)

4. March 24 Letter from Taylor R. Briggs, Plutonium Export Association, re Suggestion that Certain Restrictive Policies on Plutonium Exports be Eliminated

A talking paper is requested for Commissioners Ramey and Johnson to discuss with Chairman Chet Holifield. (AGMP&P-AGMIA)

5. March 25 Memorandum from Robert Ellsworth re Study on Electric Power and Related Environmental Matters

Commissioner Ramey is designated. (RDT-GC-ADRA)

6. Naming of National Accelerator Laboratory

Commissioner Tape will discuss with Mr. Robert Wilson, NAL. (Rosen)

7. Commissioner Costagliola's March 25 Memorandum re Visit to Rome, Italy, March 21, 22, 1969

Noted.

8. Chairman's March 27 Discussion with General Kaulza de Arriaga, Portuguese Junta de Energia Nuclear

Staff views on the following are requested:

a. U. S. Cooperation re Exploration for Uranium

b. The NPT

(AGMIA-RM)

9. Agenda for the Week of March 31, 1969

Approved. (SECY)

10. Menus for the Commission's Official Luncheons

To be discussed. (AGMIA)

11. AEC 47/62 - Proposed SNR Contract for One Prototype Core and Four Shipboard Cores

Approved with a request. (DC)

12. AEC 1000/135 - Terrestrial Isotope Power Programs; and, AEC 1000/136 - Adequacy of Space Power Programs

Additional information from Isotopes, Inc., is requested. A briefing on AEC policy on space electric programs is also requested. (AGMR-SNS-SECY)

13. Appeal to the BOB re Personnel Ceiling (See Chairman's March 27 Letter to BOB Director Mayo)

14. AEC 132/149 - Proposed Addition of Sandia Laboratories to AEC Organization Chart

The General Manager's recommendation is approved. The Commissioners requested preparation of an internal organization chart showing all laboratories. (AGMA)

15. AEC 23/83 - COCOM List: U.K. Proposal on Artificial Graphite

Approved. (AGMIA)

16. AEC 23/84 - COCOM List: French Proposal on Zirconium  
Approved. (AGMIA)

17. Mr. Brown's Oral Report on Allied Chemical Company Representatives Visit to the Netherlands

Noted. (AGM-SECY)

18. Rescheduling of House Appropriations, Public Works Subcommittee Hearings on FY 1970 Budget -- May 12, 13, and 14, 1969

Noted. (SECY)

19. Chairman Chet Holifield's Call to the Chairman re the Malibu Project

Chairman Holifield is to be informed re the effect of an expenditure cut. (OC-Congr.)

20. TVA Power for the Gaseous Diffusion Plants

Commissioner Ramey will call Chairman Chet Holifield. (Ryan-OC-Congr.)

21. AEC 783/117 - Proposed Letter to BOB on H. R. 3848 and 4838 Bills to Establish National Oceanographic Agency

Approved with a change. (GC)

22. Pending Contractual Matters Report No. 301

Noted. (PAR)

23. May 1 Meetings at the National Academy of Engineering

Commissioners Ramey and Johnson will attend. (Ryan-Helfrich-SECY)

\*\*\*\*\*

24. Letters to Attorney General John Mitchell and Chairman Chet Holifield, JCAE

Approved with revisions. (AGM)

W. B. McCool  
Secretary

12:05 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Abbadessa  
Mr. Kull  
Mr. McCool  
Mr. Corso\*  
Mr. Erlewine\*  
Mr. Kohler\*  
Mr. Fournier\*  
Mr. Kavanagh\*  
Mr. Shaw\*  
Mr. Klein\*  
Mr. Kratzer\*  
Mr. Vinciguerra\*\*  
Mr. Parks\*\*  
Mr. Riley\*\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

\*\* Item 24



naming the 200 Bev Accelerator laboratory after Enrico Fermi; as a Commission action we propose to name it, "The Enrico Fermi Laboratory." We also discussed additional reductions totaling \$15 million to make up the \$60 million cut directed by the Bureau of the Budget. I sent a letter to Budget Director Mayo on this today (copy attached). We also decided that the General Manager would make a study of the entire SNAP program in order to be sure that we have an optimum balance in the use of the limited funds among various programs in the various divisions.

President Dwight David Eisenhower died at 12:25 p.m. at the Walter Reed Army Hospital. Later in the afternoon President Nixon declared Monday, March 31 as a national day of mourning. (Attached is a statement I made today on President Eisenhower's death.)

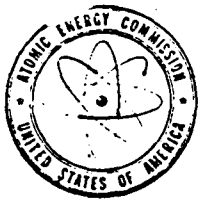
At 1 p.m. I attended a luncheon at Blair House in honor of General Arriaga of Portugal, hosted by Herman Pollack of the State Department. Others present were: Mr. Adelino da Costa (Portuguese JEN), Portuguese Ambassador Vasco Vieira Garin, Atonion Garcia (Minister, Portuguese Embassy), Colonel Manuel Marques (Portuguese Embassy), Vasco Rodrigues (Portuguese Embassy), Arnold Frutkin (NASA), Myron Kratzer, Herbert Scoville (ACDA), William Taft, Donovan Zook, George Springsteen, George Landau and Guy Coriden, all of the State Department. Following the luncheon Pollack said that in view of the sad news of President Eisenhower's death he would forego making the customary remarks and proposed a toast in recognition of President Eisenhower's great career and accomplishments. Ambassador Garin said a few words, noting Eisenhower's long lifetime of accomplishment and great career in international affairs; General Arriaga made similar remarks, eulogizing Eisenhower's career.

I received a memo (copy attached) from Bob Ellsworth saying that his office in conjunction with Dr. DuBridge's office has been asked to bring together representatives of the interested agencies dealing with electric power and related environmental matters to develop an Administration position on the important and interrelated questions of reliability of service, orderly planning, rights of small utilities and environmental protection. He asked me to designate a representative and advised that the first meeting would be held on Monday, March 31.

At 3:30 p.m. I presided over Commission Meeting 2367 (action summary attached). We approved the principles and procedures for the solicitation and selection of contractors (teams of reactor manufacturers and electric utilities) for the project definition phase of our LMFBR Demonstration Plant program. We also discussed the continuing difficulties in meeting the requirements imposed by Congress on the limits in spending in the present fiscal year (FY 1969). Our Controller, John Abbadessa, is keeping a close watch on this and is trying to do it without working too great a hardship on our contractors.

Lynne and Bill arrived this morning from Cambridge, Massachusetts to spend part of their spring vacation with us. Lynne finished her thesis early this morning and submitted it before the due date.

Lynne, Bill, Dianne, Amy Ballou (Dianne's friend), Eric, Suki and I took a hike in Rock Creek Park, beginning at Oregon and Nebraska Avenues, proceeding north along the White Horse Trail to Cross Trails 3 and 4, past the Police Headquarters and going back on the White Horse Trail to our starting point.



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

MAR 28 1969

UNCL. BY DOE  
NOV 86

Honorable Robert P. Mayo  
Director, Bureau of the Budget

Dear Mr. Mayo:

My letter of March 25, in response to the Bureau of the Budget's request to identify an additional \$60.0 million in FY 1970 outlays, set forth program reductions amounting to \$45.0 million and urged your reconsideration of the need to find an additional \$15.0 million of reductions. Since transmittal of that letter, we have been negotiating with the General Services Administration for the transfer of 15,000 flasks of our mercury stocks for disposal to industry. We advised your staff of these negotiations and pointed out that at the current market price the Government would receive receipts of about \$7.5 million. We also indicated that in our judgment it would be equitable to apply this \$7.5 million to our portion of the FY 1970 outlay reduction effort.

We were notified yesterday by your staff that additional outlay reductions of \$15.0 million must be identified but that in so doing we could consider a credit for the amount of mercury sales with the understanding that such sales were, in fact, firmly planned by GSA. We have been in touch with GSA's Assistant Commissioner for Disposal Service and we have been assured that it is the firm intention of GSA to sell this mercury to industrial users in FY 1970. Under these circumstances, we are taking credit for this \$7.5 million in our identification of further outlay reductions.

With respect to the remaining \$7.5 million of reductions, the Commission has reviewed the possibility of further reductions in deliveries of U<sub>3</sub>O<sub>8</sub> in FY 1970 in addition to those previously estimated in response to our invitation for proposals for reductions in uranium deliveries issued last January 15. Based on recent uranium market transactions, it is our firm judgment that

Honorable Robert P. Mayo

- 2 -

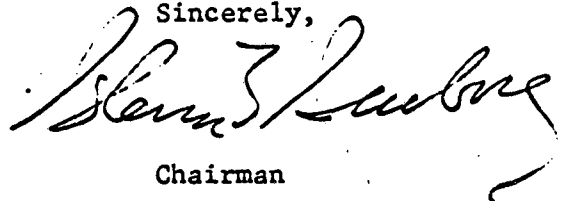
we will be able to reduce originally scheduled U308 deliveries to the Atomic Energy Commission by a total of \$25.0 million as compared to the \$20.0 million reduction estimated in the budget submitted to Congress last January. Therefore, we are applying the additional \$5.0 million reduction in uranium purchases against our assigned portion of outlay reductions.

We have recently received a request from our Embassy in Japan to provide for the sale of 25 tons of heavy water to Power Reactor and Nuclear Fuel Development Corporation, Japan, to be delivered in October or November of 1969. This will increase our revenues in FY 1970 by \$1.4 million.

The final \$1.1 million to meet our quota for outlay reductions, will be achieved by anticipated savings in the methods being used to close out the BONUS project.

We trust the foregoing reductions, in addition to those previously identified, will discharge fully the Atomic Energy Commission's obligations in the Administration's FY 1970 outlay reduction effort.

Sincerely,

A handwritten signature in cursive script, appearing to read "Glenn T. Seaborg".

Chairman

STATEMENT BY AEC CHAIRMAN SEABORG

President Eisenhower's contributions to the peaceful application of nuclear energy were of tremendous importance to the world. In a single speech, made before the General Assembly of the United Nations on December 8, 1953, he initiated the Atoms for Peace program and also the International Atomic Energy Agency.

It was during his administration that the Atomic Energy Act of 1954 was signed into law, providing for a broad program of international cooperation to make available the peaceful benefits of this new force. He also lent his great prestige and support to continuing research in desalting by the United States government, which subsequently was expanded to include nuclear energy.

The field of atomic energy has lost a great and valued friend. President Eisenhower recognized very early that this titanic force must be put in the hands of those who would, in his words, "adapt it to the arts of peace."

THE WHITE HOUSE  
WASHINGTON

UNCL. BY DOE  
NOV 86

March 25, 1969

MEMORANDUM FOR


THE CHAIRMAN  
ATOMIC ENERGY COMMISSION

This office, in conjunction with the Office of Science and Technology, headed by Dr. Lee A. DuBridge, has been asked to bring together representatives of the interested agencies dealing with electric power and related environmental matters to develop an Administration position on the important and interrelated questions of reliability of service, orderly planning, rights of small utilities, and environmental protection.

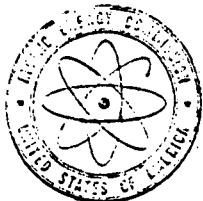
In view of the fact that Congressional activity is already under way on bills relating to these problems, it will be necessary to proceed as promptly as possible. The first meeting will be held at 10:00 a.m., Room 213, Executive Office Building, Monday, March 31. Mr. Freeman, head of the Energy Policy Group in the Office of Science and Technology will be the staff director of the task force. Please inform him at your earliest convenience of the name of the person you wish to designate to represent your agency. Mr. Freeman can be reached at Code 145, Extension 3136.

The following agencies will participate in this study: Federal Power Commission; Department of Interior; Atomic Energy Commission; Department of Justice; Department of Health, Education, and Welfare; Department of Agriculture; and the Tennessee Valley Authority.

The Bureau of the Budget and the Council of Economic Advisers have been asked to participate as observers.



Robert Ellsworth  
Assistant to the President



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 88

March 28, 1969

Approved \_\_\_\_\_

REH

Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2367, FRIDAY, MARCH 28, 1969, 3:25 P.M., ROOM A-410,  
GERMANTOWN, MARYLAND

SECY:LGH

Commission Business

1. Minutes of Meeting 2348, 2349, 2350 and 2351  
Approved, as revised, subject to comments by Commissioner Ramey. (SECY)
2. Commissioner Johnson's March 28, 1969 Memorandum to the Secretary  
Commission Minutes will be scheduled for earlier approval. (SECY)
3. AEC 1299/6 - Proposed Amendments to Section 81 and Subsections 161 m. & t. of the Atomic Energy Act  
Approved. (GC/P)
4. AEC 588/76 - LMFBR Demonstration Plant Program  
Approved, as revised.

Staff will conduct discussions with the EOB during the FY 1971 budget cycle to explore the option of proceeding with more than one LMFBR demonstration plant.

The first sentence of paragraph 4, Attachment 1 to Appendix "A" (page 12) and paragraph 6 of Appendix "C" (page 26) will be revised to read "The Commission desires to secure accomplishment of the demonstration plant program at minimum cost consistent with its other program objectives".

Other editorial revisions in the text will be made in accordance with discussions at the Meeting.

(RDT)

5. AEC 116/66 - Official Announcement of Certain Event Yields Useful in Seismic Studies (See also AEC 116/67)

Discussed. A meeting with Dr. May and others is requested. (C/SECY)

6. AEC 1253/54 - Status of FY 1969 Expenditure Limitation

Discussed. The Commission noted the change in billing dates for AEC-leased material from January and June to May and September.

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

Saturday, March 29, 1969 - D.C.

I worked in the office until early afternoon.

About 12:30 p.m. Roger Revelle called me from Boston to go over with me (as a member of the Membership Committee) the nominations for membership in the American Academy of Arts and Sciences. Since I was not able to attend the meeting today we had previously decided to handle my ratings of the candidates in this manner.

In a telephone conversation with Lee DuBridge I said I have talked to Tape about the possibility of his staying on another extra couple weeks to help us out, and he is willing; however, his letter to the President and the acknowledgment could be interpreted as setting April 15 as a rather definite termination date. I asked DuBridge whether he could get a clarification so that we could keep Tape a little longer if we wished, and also leaving the termination date open. DuBridge said it would probably take a little note from the President to Tape stating that it is hoped he would be willing to continue a few more weeks. (Such a note to Tape was sent on April 1, 1969; copy attached.)

I received a memorandum addressed to Heads of Departments and Agencies from President Nixon emphasizing his official and personal endorsement of a strong policy of equal employment opportunity within the Federal Government. He has directed the Chairman of the Civil Service Commission to review present efforts and report back before May 15, 1969 with recommendations for desirable policy and program changes in regard to those efforts (copy attached).

I had lunch at the Pot-O'-Gold with Jerry Tape and Justin Bloom.

Jodie Cobb (Bill's sister) came to spend part of her Easter vacation with us.

In the afternoon I took a hike in Rock Creek Park with Eric, Scott Luria (Eric's friend), and Suki, starting at Oregon and Nebraska Avenues and going north on the White Horse Trail to a trail near Cross Trail 1, back south on the Jogging Trail, the Black Horse Trail and Cross Trail 3 to the White Horse Trail and back to our point of origin.

Helen and I had dinner at Commissioner Johnson's home in Potomac. The dinner was given in honor of Commissioner and Mrs. Tape in view of his imminent departure from the Commission; Commissioner and Mrs. Ramey and Commissioner and Mrs. Costagliola were also present. After dinner a few remarks of appreciation for Jerry Tape's magnificent service to the Commission and wishing him good luck for the future were made by Bill Johnson and me; Jerry responded with appreciation.

Sunday, March 30, 1969

I worked on my forthcoming talk, "The Environment - And What To Do About It" to be given at the meeting of the Solid State Physics group at Argonne National Laboratory on May 5, 1969.

In the afternoon I took a hike in Rock Creek Park led by Naturalist Gardner with a group of about 25 people. We started at the Nature Center about 2



THE WHITE HOUSE  
WASHINGTON

UNCL. BY DOE  
NOV 201

April 1, 1969

Dear Dr. Tape:

Although I previously accepted your resignation from the Atomic Energy Commission effective April 15, 1969, I am now informed that your services may be needed beyond that date, particularly in connection with the forthcoming Authorization Hearings before Congress and also in view of the fact that your replacement may not be able to come on duty by April 15th.

I understand that you are willing to remain in your post for a few more weeks, and I would appreciate it if you would do so until such date arrives when the transition to a new Commissioner is possible.

Sincerely,



The Honorable Gerald F. Tape  
Commissioner  
Atomic Energy Commission  
Washington, D. C.

THE WHITE HOUSE

WASHINGTON

UNCL. BY DDF  
NOV 86

March 28, 1969

MEMORANDUM TO HEADS OF DEPARTMENTS AND AGENCIES

SUBJECT: Equal Employment Opportunity

The concept of nondiscrimination is inherent in the Civil Service Act of 1883, which calls for a Federal service based on merit and fitness alone. "Nondiscrimination" was broadened by President Eisenhower to "equal employment opportunity" with his issuance of Executive Order 10590 in 1955. In the years that followed, other Executive Orders designed to insure equal opportunity in the employment, development, advancement and treatment of employees of the Federal Government have been issued. This series of Presidential directives reflects continuing support for this program at the highest levels of Government.

I want to emphasize my own official and personal endorsement of a strong policy of equal employment opportunity within the Federal Government. I am determined that the Executive Branch of the Government lead the way as an equal opportunity employer.

Although under the leadership of the Civil Service Commission significant progress has been made towards the goal of equal employment opportunity, much remains to be done. Accordingly, I have directed the Chairman of the Commission to make a thorough review of all present efforts to achieve equal employment opportunity within the Federal Government and to report back to me on or before May 15, 1969, with recommendations for desirable policy and program changes in regard to those efforts.

Meanwhile, I want every reasonable effort made to insure that the Federal Government is an equal opportunity employer. I further urge you, if you have not already done so, to communicate your personal support for this program to all officials and employees of your agency.



p.m. This was the third of three such hikes scheduled on successive Sundays. Included in the group as members of our party were Stan and Rene Schneider, Lynne and Bill Cobb, Jodie Cobb, Eric, Steve, Scott Luria, and Suki. We hiked south on the Black Horse Trail, and generally parallel trails, to Broad Branch Creek near the Pierce Mill and then north on the White Horse Trail, and generally parallel trails, back to our starting point.

Allyne Snyder joined us for dinner. The group included Lynnie, Bill, Jodie and Pete as well as the other members of the family who are living at home.

Monday, March 31, 1969 - National Day of Mourning

I worked at home off and on during the day on my talk, "Prospects for Further Considerable Extension of the Periodic Table" that I will give at the Mendeleev Centennial Symposium at the American Chemical Society meeting in Minneapolis on April 15.

At 4:30 p.m. Helen and I attended the funeral services for former President Dwight David Eisenhower at the Washington Cathedral. Officiating clergy were the Very Reverend Francis B. Sayre, Jr., Dean of Washington Cathedral; The Reverend Edward L. R. Elson, Minister, National Presbyterian Church; and The Right Reverend William F. Creighton, Bishop of Washington. The services were attended by essentially all of present Washington officialdom, some members of the Johnson Administration and state leaders from all over the world. Among those present were several Secretaries of the President's Cabinet, Presidential Assistants such as Kissinger, Ellsworth, DuBridge, Wilkinson, Moynihan and others. Former President Lyndon B. Johnson and former Vice President Hubert Humphrey also attended the funeral. Heads of State attending included President Charles DeGaulle of France, Prime Minister Mariana Rumor of Italy, Foreign Minister Joseph Luns of the Netherlands, Prime Minister John Gorton of Australia, Chancellor Kurt Kiesinger of West Germany, Prime Minister Chung Il Kwon of South Korea, Prime Minister Marcello Caetano of Portugal, Vice President Nguyen Cao Ky of South Vietnam, the Shah of Iran, Lord Mountbatten of Great Britain, President Habib Bourguiba of Tunisia, President Ferdinand Marcos of the Philippines, Prime Minister Suleiman Demirel of Turkey and former Prime Minister Nobusuki Kishi of Japan.

On the way out Helen and I spoke to Governor Nelson Rockefeller, Governor Luis Ferre of Puerto Rico, Mrs. Bob Hope and others.

Tuesday, April 1, 1969 - D.C.

At 10 a.m. I met with Algie Wells (Chairman of the Atomic Safety and Licensing Board Panel) and Julius Rubin to discuss, at Wells's request, a number of items in his area of responsibility. He said that he would like to have Jim Yore appointed as a member of the Atomic Safety and Licensing Board Panel so that he might participate as chairman of future Boards. I indicated agreement with this plan. He also suggested two names as possible candidates to succeed Warren Nyer who has left the position of Vice-Chairman of the Atomic Safety and Licensing Board Panel. They are Dr. John H. Buck and Stu Forbes. I recalled that I had known Dr. Buck through his work with Dr. Lee DuBridges at the University of Rochester in the late 1930's. Wells seems to favor the appointment of Buck and will check his appointment with Hal Price. He noted the status of the Commission's action in appointing a Licensing Appeals Board, which would take a good deal of the burden of this function out of the hands of the Commissioners themselves, and said that he fully supported the idea.

I received a phone call from Sterling Cole who said he had been contacted by Harry Fleming of the White House staff, on my recommendation, about the position of Federal Representative to the Southern Interstate Nuclear Board, and he wondered what information I could give him about the position. I told him it is a part-time job, the time dependent somewhat on the individual, and that it would involve travelling around the area and meeting with the Commissioners occasionally. At his request I told him I would send him whatever information we have.

Helen joined me and we went to the Washington Club at 15 Du Pont Circle where I was to speak at 11 a.m. on their Tuesday Morning Program on "The Nuplex and Other Peaceful Uses of Nuclear Energy." Stan Schneider met us there. The program was opened by Mrs. Young, President of the Washington Club. After a few committee chairmen made their announcements, I was introduced by Mrs. Lillie Olson, Chairperson of the Tuesday Morning Program. I gave my talk to an audience of about 150 people in the club auditorium using slides (shown by Stan), and answered a few questions. Following the talk there was a reception.

Helen and I and Stan then had lunch in the main dining room of the Club at a table with Mrs. Young, Mrs. Olson and about 15 other members. We learned that the Club has about 680 women members. The building was constructed in 1902 by the Patterson family and Cissy Patterson lived in it for many years. Stanford White was the architect. From March to September 1927 the building served as the Temporary White House for Calvin Coolidge during the renovation of the White House. President Coolidge entertained Charles Lindbergh there June 11 and 12, 1927, upon Lindbergh's return from Europe after his famous flight. We were given a tour of the building, conducted by Mrs. Young, Mrs. Olson and Mrs. Robinson. In addition to the many valuable tapestries, jade carvings, paintings, rugs and pieces of antique furnishings, we saw the room where President Coolidge stayed and the bed in which Lindbergh slept (the Coolidge and Lindbergh rooms).

From 2:30 until 4:30 p.m. I attended a meeting of the Federal Council for Science and Technology in Room 208 of the Executive Office Building. This meeting, presided over by Lee DuBridges whose multi-hat capacity includes the chairmanship of the FCST, was the first meeting of the Federal Council for Science and Technology (FCST) under the Nixon Administration.

Present were the following statutory members of the FCST or their representatives: Lee A. DuBridge (Chairman), Secor Brown (Transportation), Donald Dunlop (Interior), Lee Haworth (NSF), Thomas Paine (NASA), Herman Pollack (State), Thomas Rogers (HUD), Myron Tribus (Commerce) and I. Others present were: Richard Ottman (OEO), Saul Nelson (CEA), Hugh Loweth (BOB), Dr. Allen Astin (NBS), Lionel Bernstein (VA), S. W. Betts (Commerce), Dr. Harvey Brooks (Harvard), David Challinor (Smithsonian), Dr. Philip Corfman (NIH), Dr. Charles Falk (NSF), Benson Gammon (NASA), Gerald Garmatz (DOD), Robert Green (NAS), Albert Heyward (DOD), Dr. Norman Hilnar (NIH), Dr. Leon Jacobs (HEW), O. A. Neumann (Commerce), Rodney Nichols (DOD), Sidney Passman (ACDA), Carl Shultz (HEW), Ernest Pierkil (HEW), Rolf Verstieg (NIH), Russell Hale (Space Council), Patrick Moynihan (White House), P. N. Whitaker (NASA), Clifford Berg, Peter Rumsey, Robert Howard (BOB), Dr. Charles Kidd, Dr. Donald King, Colonel Andrew Aines, Dr. John Buckley, Paul Anderson, David Beckler and William Hooper (OST).

DuBridge made an opening summary statement for the purpose of putting into perspective the role of the FCST in the Nixon Administration. He emphasized that the Council would play an important role and that President Nixon is very interested in the status of science and technology and the role they can play in helping to obtain the objectives of his Administration. DuBridge mentioned the importance of such problems as those connected with urban development (Pat Moynihan's area) and foreign aid (John Hannah's area). He also mentioned the importance of arms control activities which is Gerard Smith's area of responsibility; he mentioned Secretary Rogers's interest in the role of science and reminded us that the very first reception in which Rogers participated was one for the scientific attaches from the various embassies in Washington. DuBridge then mentioned the report of the Marine Commission, prepared under the leadership of Julius Stratton and emphasized that the FCST would have a role to play in its implementation.

DuBridge then went on to point out that this administrative interest in science and technology unfortunately comes at a time when budget cuts are necessary. He said that President Nixon has directed that there be minimal cuts in basic science in the course of this exercise.

DuBridge then went on to talk about the future role of the various committees of the FCST, saying that many of these will have different members from that indicated in the 1967 report of the Council (the last report that was issued). He indicated that he would continue the Committee on Academic Science and Engineering (CASE) under the chairmanship of Lee Haworth. He referred to the Committee on Atmospheric Sciences and indicated that perhaps this should be expanded into a Committee on Atmospheric and Marine Sciences in order to accommodate action on the Stratton committee report. He emphasized the importance of the Committee on Environmental Quality and indicated that Vice President Agnew will head a new committee on this. He said there should be coordination in this area. He also mentioned the Committee on Federal Laboratories of which Allen Astin is chairman and indicated, as a goal, further university participation in Federal laboratories. He mentioned the technical Committee on High Energy Physics and asked me whether this might be expanded to include medium and low energy physics; I agreed that it should be. He also indicated that the Committee on International Programs should continue.

DuBridge then called on Pat Moynihan (Assistant to the President for Urban Affairs) to give his report--DOD Programs as a Base for Innovation and R&D on Civilian Problems. Moynihan indicated that an Urban Affairs Council was established by President Nixon's first executive order and that it consists of seven Secretaries (Cabinet officials) representing seven Departments. He indicated that the DOD effort in the urban area is perhaps the most substantial of any. He said that Secretary Clifford uses this as a focus for wider Federal action in the urban development area. Moynihan said this is a good start but we need to do more. He suggested that perhaps the FCST might establish an ad hoc committee in order to help determine the kind of joint projects that might be undertaken by the Department of Defense and various other departments to start during the coming fiscal year. He said that such undertakings must consider the whole area of social science and social policy, an area that began to have substantial effects on a practical scale in the 1960's. He indicated that the real question is how social science theory can be transformed into public policy. He emphasized that getting from a technical solution to a problem to public adoption of that solution is difficult.

As a result of a query from Moynihan, Garmatz (DOD) briefly described the role of the DOD in urban development. He said that DOD has to deal with many relevant problems, such as where to build their defense bases and how to dispose of them. They also build housing on a large scale and have had a great deal of experience in this endeavor.

Nichols expanded on Garmatz's statement by saying that there are a number of cases where joint R&D funding by DOD and another department might be good and he endorses the idea of an ad hoc committee of the type suggested by Moynihan. Tribus said the ad hoc committee would need to be composed of people with technical backgrounds, social scientists and colored people in order to be effective.

Passman (ACDA) called attention to the fact that a number of agencies, such as NASA, AEC, etc. have joint technology utilization programs and advantage should be taken of these in the composition and operation of the ad hoc committee suggested by Moynihan. Paine indicated that NASA does have such technology utilization programs, and I said that AEC also has such programs. I emphasized that DOD is the only agency that appears to have money to carry on activities of the type suggested by Moynihan and that the AEC line item budgeting process wouldn't allow the diversion of much money to such a program. I indicated, however, that the AEC would be glad to cooperate in connection with their technology utilization programs. DuBridge summarized this discussion by saying that he will set up a small working group which will recommend ways of setting up the ad hoc committee referred to by Moynihan.

DuBridge then called on Harvey Brooks, Chairman of the Committee on Science and Public Policy (COSPUP) of the National Academy of Sciences, who was scheduled to present the next item on the agenda--Current and Prospective Activities of COSPUP and Their Relationships with FCST. He pointed out that COSPUP had been formed in 1962, largely as the result of efforts by Kistiakowsky, and he gave a history of its activities in the intervening years. In the course of this he described the many reports that have been issued in the many areas of concern under the aegis of COSPUP and NAS.

DuBridge summarized this area by saying he hopes to be able to continue to count on the efforts of COSPUP and NAS.

At this point DuBridge spoke a little more about the philosophy of the operation of the FCST in the Nixon Administration. He said that the Administration is interested in maintaining an adequate academic science budget. He intends that the FCST should address itself to policy questions and he wants these to be sufficiently important to have the principals attend the meetings in order to be in a position to provide their views and suggestions. He emphasized that we need to tell Congress something about what science does instead of always telling them only about the funding that science needs.

DuBridge then called on Philip Corfman (NIH) who spoke on the next agenda item which had to do with the population problem. He called for comments on the paper concerned with the definition of the population problem, which had been handed out as part of the agenda for the meeting. He also commented briefly on the Stevens report (Nixon's panel on science and technology) on the world population problem, an excerpt of which had also been handed out as part of the preparatory material for the meeting.

DuBridge then called on High Loweth (BOB) who said that the BOB is making a study of the terms and conditions under which research grants and contracts might be made more uniform. They are finally getting around to this as a result of long, continuing pressure from the academic community. He said that letters requesting comments on this have gone out to the agencies and the first step is getting replies from the agencies designating representatives. This representative group would then be concerned with the problem of discussing the desirability or not of unifying these grants and contracts. He said that the BOB has no preconceived notion that there should be a standardized contract but merely wants to make an unbiased study of this as a possibility. He estimates that this study will take about four months. When asked whether the academic community is familiar with this undertaking, he said that it is familiar with it through their business officers group. Various members of the FCST indicated that this might not be a sufficient channel of communication to reach the academic officials and other members wanted better university communication. Loweth then said that he would inform the American Council on Education and use it as a channel to universities. He also said he would use other avenues of approach, such as visits to the universities.

DuBridge then called on Dr. Kidd for some final remarks. Kidd handed out a memorandum on the subject of strengthening biomaterials research and indicated that if the FCST members have any comments on it they should get in touch with Leon Jacobs before the next meeting of the FCST.

DuBridge brought the meeting to a close by saying that the FCST will meet on an average of every two or three months and that the subgroups or committees will hold meetings between FCST meetings.

I sent a letter to Bruce Adkins of the European Nuclear Energy Agency in reply to his letter to me of March 14, 1969 (copies attached). I assured him that not commenting on activities of the ENEA in my Grinnell College lectures was an oversight, that the Commission values its relationships with ENEA and looks forward to continued and close association in the development of the peaceful uses of atomic energy.

Bill, Lynne and Jody flew to Nashville today to visit Bill's and Jody's brother Steve for a few days.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

REF 1 1 1 1

Mr. Bruce M. Adkins  
European Nuclear Energy Agency  
38, Boulevard Suchet  
Paris XVI, France

Dear Mr. Adkins:

This is in reply to your letter of March 14, 1969, in which you called attention to the omission of the ENEA activities in the lectures I gave at Grinnell College in January of this year.

May I assure you that we here at the Commission are well aware of the activities of the ENEA. As you know, we have been cooperating with the Agency as an Associate Member since 1958 and are currently involved in the three joint international undertakings of ENEA and in various of the working groups concerned with the many activities of your Agency. We value these relationships and look forward to continued and close association in the development of the peaceful uses of atomic energy.

I shall have to admit to the oversight in not commenting upon these numerous worthwhile activities of ENEA but wish to add assurance that the omission was unintentional. Your initiative has been well directed and will be borne in mind for the future.

Sincerely,

(Signature) Dean I. Seaborg

Chairman

Chairman Seaborg (2)



AGENCE EUROPÉENNE POUR L'ÉNERGIE NUCLÉAIRE  
EUROPEAN NUCLEAR ENERGY AGENCY

UNCL. BY DOE  
NOV 86

RÉFÉRENCE

38, boulevard Suchet, PARIS-XVI<sup>e</sup>  
Tél. : 870-46-10 - Télégr. : EURONUCLÉAIRE - PARIS  
Télex : 62.160 - OCIDE

14th March 1969

Dear Dr. Seaborg,

It is exceedingly remiss of me not to have written sooner to thank you for so kindly sending me the photograph taken at the State Department and AEC Reception in Washington on November 14 last.

There are two reasons for the delay: the first a simple one due to the photograph reaching my office just after I had left on a short mission in UK.

The second reason is more difficult to explain, but basically results from a prolonged reflection as to whether - like the proverbial fool treading where angels dare not - I might risk drawing your attention to the existence of the European Nuclear Energy Agency.

Since I am in charge of the Agency's Public Relations I have finally decided that this would not be inappropriate. The decision was at least partly prompted by your two-part lecture "The International Atom - a new appraisal" which you delivered in January at Grinnell College, Iowa, and in which you spoke at length of the IAEA, rather more briefly of Euratom, but not at all of ENEA.

I know of course that there are reasons for this. Yet I am most surprised that international science, which I like to think of as represented by eminent scientists such as yourself, can close its eyes to a fact of existence in order to avoid distortion of a cherished theory. In my laboratory days I was constantly warned by my peers and mentors against such sacrifice of objectivity in the interests of "tidiness" - and indeed instructed that tidiness so achieved was bound to be illusory.

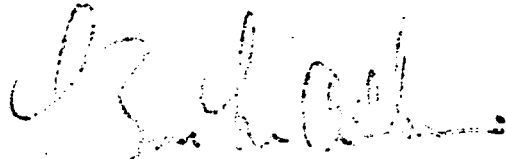
./..

Dr. Glenn T. Seaborg,  
Chairman,  
U.S. Atomic Energy Commission,  
Washington, D.C. 20545  
(Etats-Unis)

You cannot possibly disagree with this - yet when the eyes are so forcibly held shut that even the letter sending me that excellent Washington photograph had to have the ENEA part excised from my address, I think you will understand my reason for writing this letter. ?

I should perhaps add that this is a purely personal initiative, which may help you to understand why it has taken so long to mature.

Yours sincerely,



Bruce M. Adkins

Eric, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going along the White Horse Trail and Cross Trails 3 and 4 past the Police Headquarters, and returning to our starting point.

Wednesday, April 2, 1969 - D.C.

At 11 a.m. I presided over Information Meeting 890 (notes attached). We decided that we would try to find about \$500,000 through reprogramming in order to keep some effort going in the food irradiation program. If the budget cuts we made last week are allowed to stand it will essentially terminate the program. We also discussed the survey of the nuclear industry uranium supply that has been conducted by Rafford Faulkner (Director, Division of Raw Materials) and decided that the results of this study should be put into a report that would be issued to the public.

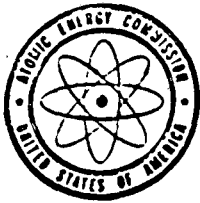
I received a call at noon from Lee DuBridge; he said he has sent me a copy of his March 29, 1969, letter to Ken Pitzer (copy attached), informing him that he has decided not to release the Pitzer panel report on the hazards of nuclear testing. DuBridge said we can go ahead and release our report under AEC auspices, and we can make reference to the fact that some groups have pointed out the possible seismic dangers, and that we are aware of these considerations, etc., but without referring to any particular report. I called his attention to the editorial (copy attached) that appeared in the New York Times the other day taking Howard Hughes to task, saying it is not up to him to determine whether there will be testing. The editorial also states that the AEC should tell the public why it is necessary to test and to take necessary precautions--but that is what we're doing.

Julie Rubin, Justin Bloom and I had lunch at the Madison Sandwich Shop on I Street.

I had a memorandum from Mayo forwarding a copy of President Nixon's directive to him dated March 24, 1969, asking for a revised 1970 expenditure total which will be significantly below the \$195.3 billion forecast in the Johnson budget (copies attached).

From 2:35 to 4 p.m. the Commissioners, the General Manager, Milton Shaw, George Kavanagh and other staff met with representatives of the Gas-cooled Fast Breeder Reactor Advisory Committee to hear their presentation of a proposed program to develop the GCFR. This meeting was in response to a letter from Ralph Davis (Chairman of the GCFR Advisory Committee and President of the Puget Sound Power and Light Company (copy attached). Present, besides Davis, were William Lee (Vice President, Engineering, Duke Power Company), John Tillinghast (Executive Vice President, America Electric Power Service Corporation), J. L. Everette (Executive Vice President, Philadelphia Electric Company), Freddie de Hoffman (President, GGA), C. L. Rickard (Vice President, GGA), Art Rolander (Vice President, GGA), John Landis (Regional Vice President, GGA), D. W. Berplanch (Assistant Director, GGA) and P. Fortescue (Research & Development Engineer, GGA).

Davis made the opening remarks to set the stage for the following discussion. Everette then described the success in the operation of Peach Bottom and said it has given useful information for the development of the GCFR. Fortescue described the proposed 330 MWe prototype and the eventual 1,000 MWe power



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

COPY NO. 2  
April 2, 1969

INFORMATION MEETING 890

11:05 a.m., Wednesday, April 2, 1969, Chairman's Conference Room, D. C.

1. Commissioner Tape's Report on the April 1 Governors' Conference, Las Vegas
2. Discussions with Dr. Lee DuBridge, President's Science Advisor, re Pitzer Panel Report and AEC Summary Report on Advice for Assuring the Safety of Underground Nuclear Testing

Appropriate action is requested. (PI-Rubin-SECY)

3. Request to Name Building at California Institute of Technology after Professor Charles C. Lauritsen

The Chairman discussed briefly the request from Mr. Robert Bacher which the Commissioners approved. The JCAE is to be informed. (Rubin-Congr.)

4. Commissioner Costagliola's Oral Report on the Food Irradiation Program

A staff report has been requested. (ID)

5. President Nixon's April 1 Letter Request to Commissioner Tape to Delay Effective Date of Resignation from the Commission
6. Chairman Seaborg's Oral Report on the April 2 Meeting of the Federal Council on Science and Technology

7. Commissioner Ramey's Oral Report on the April 1 Meeting of the Task Force on Power Reliability

Comments will be circulated tomorrow for consideration at the April 4 Information Meeting. (SECY)

8. AEC 359/82 - Report on Survey of Nuclear Industry Fuel Supply Arrangements

Revisions and reconsideration are requested. (RM)

9. AEC 1083/136 - International Conferences on Controlled Thermonuclear Research

Approved. (R)

10. JCAE Staff Request for Documents

I will circulate the documents for review and consideration on Friday, April 4. (Congr.-SECY)

11. AEC 1283/46 - Revision of 1970 Budget

Noted. (OC)

12. Report of Canadian 200 GeV Study (See Secretary's March 24 Memorandum and Proposed Letter to Professor Hincks)

Mr. Erlewine's April 1 draft letter from Mr. Ramsey to Professor Hincks is approved with revisions. (AGMO)

13. Revised Agenda for the Week of April 7, 1969

Approved. (SECY)

14. March 25 Reply to the Hughes Organization Inquiries

To be circulated. (AGMMA-SECY)

15. US-USSR Discussions

W. B. McCool  
Secretary

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. McDaniel\*  
Mr. Bishop\*  
Mr. O'Neill\*  
Mr. Erlewine\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF SCIENCE AND TECHNOLOGY  
WASHINGTON, D.C. 20506

March 29, 1969

UNCL. BY DOE  
1988

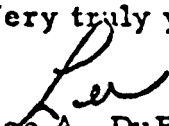
Dear Ken:

You raised some time ago the question of the public release of the report prepared by a panel on hazards in nuclear testing. This report has had an appropriate distribution in government channels, and has caused the AEC to review its policies on such tests. Furthermore, the considerations in the report will be used by me in discussions with the President and the AEC in regard to the approval of future tests.

In view of all the circumstances, it does not seem to be appropriate at this time to make a public release of the panel report, but I certainly would encourage members of the panel with expertise in the various fields to publish through normal scientific channels their data and conclusions. I think it is appropriate that this whole matter be discussed in the open literature and in open scientific meetings.

It has not, I understand, been normal for the Director of OST to release under the aura of White House auspices reports prepared for his own information and guidance. Your report has been and will continue to be useful to me, and I think it has accomplished its purpose of causing a review of the various hazards you mention in connection with underground nuclear tests. I shall continue to urge the AEC to consider these matters in their testing program, and as specific projects are brought up for authorization to the President, I will inform him of the considerations set forth in your report.

Very truly yours,

  
Lee A. DuBridge  
Director

Dr. Kenneth Pitzer  
President  
Stanford University  
Stanford, California

bcc: Dr. Glenn T. Seaborg

## The Croupier Safeguard

Howard Hughes, the eccentric Las Vegas magnate, is reported to be planning his biggest coup: a private nuclear nonproliferation agreement between his personal business empire and the United States Atomic Energy Commission.

The A.E.C.'s forthcoming underground tests at its reservation north of Las Vegas are designed for defense purposes. Their magnitude, according to Mr. Hughes's usual anonymous spokesmen, could possibly result in radioactive contamination of the Colorado River and geological disturbances. And the Hughes empire threatens court action to halt the tests unless it is reassured beforehand on the seismic side effects.

There is, unquestionably, a case for caution here—but not for the unspoken reasons of the Hughes empire. The A.E.C. has an obligation to explain to all Americans why more megaton explosions are necessary at this time and also what damage the blasts can do above and below ground. But Mr. Hughes is not the most unbiased citizen to demand the answers.

If the atmosphere will be polluted and other damage caused, that is one thing. But if Mr. Hughes's gambling tables and real estate holdings are disturbed, that is another. The A.E.C. is under no obligation to make Las Vegas safe for the croupier.



EXECUTIVE OFFICE OF THE PRESIDENT  
BUREAU OF THE BUDGET  
WASHINGTON, D.C. 20503

March 28, 1969

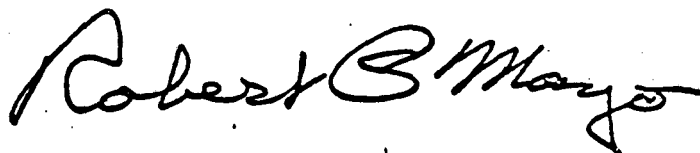
MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

I know that you have all been working hard on the review of the Johnson 1970 budget, as have we in the Bureau of the Budget. In this connection, I thought it would be helpful for you to have the President's goals for the review expressed in his own words.

Attached is his memorandum to me on the subject.

As you will note, he has directed me to prepare for him:

- A revision of the fiscal year 1970 budget that brings total 1970 outlays and appropriation requests significantly below the levels proposed in President Johnson's budget, and
- A set of agency ceilings which would hold total and full-time civilian employment in the executive branch in fiscal 1970 below the level estimated for June 30, 1969, in the printed 1970 budget document.



ROBERT F. MAYO  
Director

Attachment

COPY

THE WHITE HOUSE

WASHINGTON

March 24, 1969

MEMORANDUM FOR THE DIRECTOR,  
BUREAU OF THE BUDGET

On January 25, when I directed the heads of the executive departments and agencies to review the budget requests then before the Congress, I expected that review to result in a sizable reduction in the total Federal spending budgeted by the outgoing administration for the fiscal year 1970. That budget was understated. Even allowing for that fact, however, the report you have given me based on the responses of the department and agency heads is very disappointing. I appreciate that the Bureau of the Budget has negotiated further reductions in many instances. But several billions of dollars more must be saved.

The inflationary environment in which we find ourselves, our continuing commitment in Southeast Asia, the disappointing state of the Nation's commercial trade -- with its balance-of-payments impact -- and the recent congressional reaction to our request for a change in the debt limit, all demand decisive and substantive action to reduce the size of the budget and to keep Federal spending under strict control.

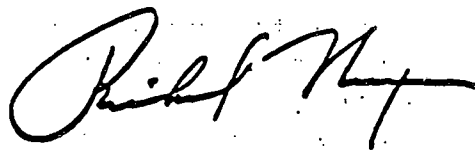
I fully recognize the difficulty of stopping, slowing down, reducing, or eliminating programs with the momentum of history behind them. Every program in the budget is a program somebody wants and is willing to fight for. Nonetheless, it is vital that we start to provide room for the resources needed to undertake the initiatives to which this Administration is committed.

Therefore, in your further review of President Johnson's 1970 budget, and your critical examination of the agencies' proposed revisions of it, I expect you to develop and recommend to me a revised 1970 expenditure total, including new initiatives, which will be significantly below the \$195.3 billion forecast in the Johnson

budget. I expect you also to take whatever steps are necessary to keep Federal executive branch full-time employment at a level during the fiscal year 1970 no higher than the employment estimated in the budget as of June 30, 1969.

Our objectives must be made clear to the heads of all executive departments and agencies. They must cooperate fully with you in meeting it. In some cases this means our Administration will have to propose and fight strongly for legislation and appropriation reductions that will be unpopular in many quarters.

Fiscal responsibility does not come easily. We have a duty, however, to show the way to the Congress and the people. I am confident we can obtain their support.

A handwritten signature in black ink, appearing to read "Richard Nixon". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

# PUGET SOUND POWER & LIGHT COMPANY

UNCL. BY DDP  
NOV 85

PUGET POWER BUILDING - GLENCOURT 4-6363  
BELLEVUE, WASHINGTON

OFFICE OF THE PRESIDENT

March 7, 1969

Handwritten: 5-3 3/11/69

Dr. Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Dr. Seaborg:

Thirty-seven utility companies, representing approximately 30 percent of the investor-owned utility industry, are supporting a \$4.2 million two-year cooperative program with Gulf General Atomic to further the development of the Gas-cooled Fast Breeder Reactor (GCFR) concept. Utility support for this concept began in 1965 by the 14 companies comprising the East Central Nuclear Group. At a meeting of the current group of supporting companies on February 20, it was decided that I should send this letter to the Atomic Energy Commission in behalf of the participating utilities listed in the attached tabulation.

Although we recognize that a great deal of development remains to be done, the GCFR appears to us to have a very high potential for meeting the objectives of a reliable, efficient and economic breeder reactor system. Moreover, the system does not appear to have many of the operating and maintenance problems associated with the LMFBR and sodium, which problems are of particular concern to the utility industry as the ultimate users of fast breeder plants.

We appreciate the very difficult budgeting problems confronting the Commission but note with concern that essentially all funds provided for the development of fast breeder reactors are being applied towards the development of the LMFBR. We feel there is considerable merit in a national breeder program which would encourage competition of concepts and technologies rather than

PUGET SOUND POWER & LIGHT COMPANY

Dr. Glenn T. Seaborg

-2-

March 7, 1969

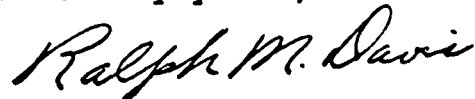
merely competition within one technology, i.e., competition for hardware of the LMFBR. Having more than one concept and technology would maximize industrial initiative and increase the likelihood that a breeder power system will be developed that meets the future needs of the utility industry for competitive and reliable power.

An important feature of the GCFR concept is that it can be developed with a comparatively modest share of government fast breeder expenditures because GCFR fuel element technology has much in common with that being developed for the LMFBR, and GCFR component technology is similar to that being developed for the HTGR.

At the present time the private funding by the utility industry directed toward the development of the GCFR concept is greater than the current level of direct AEC funding on this fast breeder system. We, therefore, recommend that the Commission give serious consideration to the support of a specific national GCFR development program with an appropriate increase in current funding levels. This would provide for basic research and development on the GCFR concept leading to the construction of a GCFR demonstration plant on a reasonable time schedule.

Representatives of the utility companies supporting the development of the GCFR, together with Gulf General Atomic, would like to meet with the Atomic Energy Commission at its convenience to discuss this matter further.

Sincerely yours,



Chairman  
GCFR Advisory Committee

Attach.

PARTICIPANTS IN GCFR DEVELOPMENT PROGRAM

Appalachian Power Company  
Central Illinois Light Company  
Central Illinois Public Service Company  
Cincinnati Gas and Electric Company  
Cleveland Electric Illuminating Company  
Columbus and Southern Ohio Electric Company  
Dallas Power and Light Company  
Dayton Power and Light Company  
Duke Power Company  
Gulf States Utilities Company  
Houston Lighting and Power Company  
Illinois Power Company  
Indiana & Michigan Electric Company  
Kentucky Utilities Company  
Louisville Gas and Electric Company  
Monongahela Power Company  
Ohio Edison Company  
Ohio Power Company  
Pacific Power and Light Company  
Pennsylvania Power Company  
Philadelphia Electric Company  
Portland General Electric Company  
Potomac Edison Company  
Public Service Company of Colorado  
Public Service Company of New Mexico  
Puget Sound Power and Light Company  
St. Joseph Light and Power Company  
San Diego Gas and Electric Company  
Sierra Pacific Power Company  
Southern Indiana Gas and Electric Company  
Texas Electric Service Company  
Texas Power and Light Company  
Union Electric Company  
Utah Power and Light Company  
Virginia Electric and Power Company  
West Penn Power Company

reactor. Landis then summarized with a discussion of the proposed schedule and the amount of AEC support contemplated by the group of thirty-seven utility companies and Gulf General Atomic for the development of this breeder reactor. He said that a decision would be needed by 1972 to go ahead with the 330 MWe prototype which they hope would be built and go critical by 1978. They are contemplating converting the heavy water reactor at Lucens, Switzerland to a 100 MWT experiment to test the gas cooled fast breeder concept. Landis said that their program contemplates a total funding of \$320 million by 1980, increasing from the present level of support to \$4 million for research and development, \$2 million for irradiation experiments and \$2 million for design and construction in FY 1971, to a near term annual spending of \$12 million per year.

Landis summarized by saying that he hoped the Commission would: (1) carry the GCFR project as a separate line item in their budget; (2) include the GCFR in the fast breeder reactor demonstration program; (3) increase R&D on the GCFR to \$12 million per year in the near term; and (4) consider participating in the conversion of the Lucens reactor to a gas cooled reactor experiment. De Hoffman concluded by saying that they hope there will be a new AEC attitude toward the GCFR program and toward the Lucens reactor conversion project. Ramey warned that they shouldn't attack the LMFBR program in their enthusiasm for the GCFR. I indicated that I thought they were not making any such attacks and emphasized that the Commission would support the GCFR concept but the problem is getting support at the Administration level for such a project when it is clear that it will lead to a higher rate of spending if it is adopted as a national program.

At 4 p.m. I met with Byron Price (General Manager, Eugene Water and Electric Board), Eugene, Oregon; Julie Rubin was also present. Price told me about the statement being issued currently by the Joint Power Planning Council, a utility planning group in the Northwest, stating that five large nuclear power reactors will be built in that region, starting soon. One of these will be built by the Eugene Water and Electric Board, and they will consider the High Temperature Gas Cooled Reactor (HTGR) if Gulf General Atomic can be ready to make a firm quotation by next fall.

He indicated that Harrison Brown seems to be the leading candidate for the presidency of the University of Oregon and went on to ask whether I would be interested in being considered for the presidency of Oregon State University. I told him I would not want to be considered for the presidency of either the University of Oregon or Oregon State University. He said that a number of business leaders in the Portland region would like to have me join them as an advisor on their nuclear and industrial programs planned for the future.

I received a letter from Lee DuBridge regarding the Canadian 200 GeV Study Group report entitled "A Particle Physics Program for Canada" (copy attached).

Eric, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going south along the White Horse Trail on to Cross Trail 3, continuing north on the Black Horse Trail (the Turtle Trail) to Cross Trail 5 and returning to our starting point.

Pete took a plane to San Francisco today to return to Berkeley. It appears that he will not enroll for the spring quarter because he feels that he is not getting enough out of his graduate work.

THE WHITE HOUSE  
WASHINGTON

March 28, 1969

UNCL. BY DOE  
NOV 86

SD 4/2/69

Dear Glenn:

The report of the Canadian 200 GeV study group entitled "A Particle Physics Programme for Canada," which you forwarded to me is extraordinarily interesting.

I think it is a very fine thing that there is a feeling in Canada that they would like to be collaborators in the Weston project and even contributors to its financing. I would hope that the U.S. could welcome this idea with open arms and pursue further discussions very actively. I am sure you will be working to this end in collaboration with the Department of State.

Sincerely,



Lee A. DuBridge  
Science Adviser

Honorable Glenn T. Seaborg  
Chairman  
Atomic Energy Commission  
Washington, D. C. 20545



Thursday, April 3, 1969 - D.C.

I called Attorney General Mitchell to tell him I am sending a letter to Chet Holifield, Chairman of the JCAE (copy attached) essentially along the lines that he (Mitchell) suggested in his letter to me of March 21. I said I thought we should be ready to expect that Holifield will ask to see the FBI file on this and this would be a request we would have to accommodate sooner or later. I told him I planned to try to deliver the letter myself in order to explain to him the sensitivity of the investigation. He said he thought that would be appropriate. I told him I would be sending a letter (copy attached) to him today more or less recapitulating where we stand and putting forth our views as to what the best method of procedure is. I said I am referring to the person involved as "the subject" rather than identifying him. Referring to the letter I sent him on March 18 with respect to an amendment to this company's license, I said that since he hadn't referred to this in his letter of March 21 I gathered we might as well go ahead. I said it is a routine matter and should not be held up. Mitchell said that he sent my letter to his Internal Security Division for review. They prepared a reply for his signature to which he suggested changes; it went back for re-write and he hasn't seen it since. He said the substance of it is that the Justice Department has no basis for recommending that we not do so. I asked whether I should wait for his reply before sending this letter and he said that would not be necessary.

I then called Holifield who told me he was leaving for California in a couple of hours. I said we are writing to inform him of something he probably already knows: an investigation we are making concerning a certain party who has been suspected of diverting materials. We don't feel there is any concrete evidence or cause for action of the type that could blow up into a big thing, but we feel we should inform him in a formal way because the FBI is involved. I said we had to clear it with the Attorney General to let him know, and I stressed the extreme sensitivity of the matter. Holifield asked that we deliver the letter to Bauser, and he will alert Bauser and ask him to hold it in a security safe until he returns from California on April 14. He said he's aware of this case, and that he'll talk to me in more detail after he gets back. I mentioned the clamor in Congress to name the National Accelerator Laboratory (NAL) after Fermi. Confidentially, we're thinking we might do that, and I might announce it in Chicago on April 10. He said to be sure to clear it with Mel Price, and to let him tell Congressman Frank Annunzio and "the other Chicago boys." I said that Price will probably be at the April 10 luncheon, too.

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UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

April 3, 1969

Honorable Chet Holifield  
Chairman, Joint Committee on  
Atomic Energy  
Congress of the United States

Dear Mr. Holifield:

My purpose in writing is to advise you that the Federal Bureau of Investigation has been conducting an investigation to establish the nature and extent of Zalman Shapiro's relationship with the Government of Israel. So far, the investigation has not developed that any of the information he may have passed to officers or representatives of the Israeli Government was classified, and it is possible that much of it could have come within the scope of contracts his company (NUMEC) had with the Israeli Government or other legitimate business associations. The investigation to date has not developed any information that would indicate diversion of special nuclear materials.

The Commission has sought the legal opinion of the Attorney General as to whether or not it can be established that any criminal laws have been violated. The Commission is reviewing the entire record in this matter to determine what action, if any, would be appropriate. After careful evaluation in consultation with the Department of Justice, the Commission will advise the Joint Committee in further detail.

Sincerely,

(Signature) William T. Reilly

Chairman



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

April 3, 1969

UNCL. BY DOE  
NOV 86

Honorable John W. Mitchell  
Attorney General

Dear Mr. Mitchell:

Thank you for your letter of March 21, 1969, providing suggested guidelines for a letter to the Joint Committee on Atomic Energy informing it of the results of the investigation to which your letter referred. The Committee will be informed in writing essentially along the lines you have recommended, and we will provide you with a copy of our letter.

You may recall that at our meeting in your office on February 25, 1969, I expressed the Commission's deep concern about this case and advised that an analysis would be made of the FBI reports relating to the subject's activities. The purpose of the analysis would be to determine whether the reports contained evidence of violation of AEC security procedures which would provide a basis for the initiation of steps to revoke his security clearances or to terminate classified AEC contracts with his company.

In our review of the reports, we have not found, nor are we aware of the existence of, any evidence of diversion of nuclear materials or of compromise of classified information. The AEC staff is of the opinion that based on all information available to the AEC at this time, there is insufficient evidence to sustain a proceeding under our regulations (10 CFR 10) to revoke the subject's security clearance or to justify termination of classified contracts with his company. In this connection the former would necessitate preparation of a letter of notification setting forth the derogatory information and offering the subject a hearing before an AEC Personnel Security Board. While termination of the several classified contracts would not require resort to formal procedures, the subject's company and the parent company could reasonably be expected to insist on a detailed explanation by the Government of its reasons for termination.

Consideration also has been given to the question of the advisability of conducting an interview of the subject. Under AEC procedures, an individual who is to be interviewed is informed that he has the right of counsel during the interview and that his statements could be used against him. An interview by the AEC might serve to clarify information on the subject's associations with Israel and hopefully might provide additional information on his contacts with members of the Israeli Government and Israeli Embassy staff. An interview could also serve to diminish Israeli interest in the subject as a possible source of assistance and possibly inhibit his activities on behalf of Israel. On the other hand, a substantive interview would almost certainly establish that an investigation had taken place and he might deduce the nature of it. We could not be sure that an interview would not evoke public charges by the subject that he was being victimized by the AEC and FBI because of his support of the Israeli cause and had been subjected to unlawful invasion of his privacy.

The possibility of such charges would not necessarily dissuade the Commission from undertaking the interview. In our experience, informal interviews generally have been effective and constitute a straightforward method of dealing with situations which involve both security considerations and an individual's rights; however, we would not want to undertake such an interview without the Department's counsel and your personal awareness of the attendant circumstances.

In addition, as you may recall, these most recent investigations were not initiated by the AEC and we believe the initiating agency should be consulted with respect to any steps that would possibly result in disclosure of the investigation. We should also like to be aware of the Department's intention with respect to the question of prosecution before an interview is undertaken.

We believe it is important to note that the attitudes expressed above are based on evidence now in hand. We would be most interested in any further information which may become available with respect to the subject's activities, especially information about the meeting on November 3, 1968, at the subject's home and the several information-gathering assignments which apparently were made at that time. If the information indicates that Restricted Data or other classified information had been compromised, the opinions we expressed above with respect to grounds for revocation of the subject's security clearance would be affected.

We would very much appreciate your counsel on the above matters. Your views also would be helpful to us in preparing an appropriate response to Mr. Hoover's letter of February 18, 1969, to Mr. William T. Riley.

AEC's Director of Security, to which I referred in our discussions of February 25, 1969, in which Mr. Hoover asks to be informed of any actions the AEC may plan to take with respect to revocation of the subject's security clearance and cancellation of classified contracts with his company. We believe such actions involve legal, as well as policy considerations, with respect to which your counsel is essential.

Cordially,

*[Faint signature]*

Chairman

Deleted

Upon my return to the office I joined a meeting that was already in progress; Commissioners Ramey, Tape, Johnson and Costagliola and Bob Hollingsworth and Julie Rubin were meetings with John Honrbeck, President of the Sandia Corporation. This was one of a series of regular meetings the Commissioners have with laboratory directors. We talked about various problems concerning the Sandia Laboratory and the relations of the Laboratory with the Commission.

I had lunch with John Palfrey at the Metropolitan Club. We discussed the book that he is writing which will describe a number of the involvements of the Atomic Energy Commission with national policy beginning with the earliest days of the Commission and emphasizing problems such as the resumption of atmospheric testing, the LTBT, the MLF and the NPT--problems with which Palfrey is more familiar as a result of his actual experience as a Commissioner. We discussed the possibility of his assuming the position of U.S. Representative (Ambassador) to the IAEA when Harry Smyth leaves that position, perhaps in another year or so. Palfrey had written to me about this possibility and also has written to Henry Kissinger and Elliot Richardson, as well as discussed it with Gerard Smith. I said that I would keep in touch with him with respect to this possibility.

I called Laura Fermi to ask her if she had any objections to the 200 Bev Accelerator laboratory being named the "Enrico Fermi Laboratory;" she said it would be agreeable to her.

She said she realizes that there is another point of view and she understands that. Either way would be all right.

At 2 p.m. I attended a briefing by General A. D. Starbird who was accompanied by Colonel Clark Martin and Robert J. Sosco. The other Commissioners, the General Manager and Fred Tesche of DMA were also present. Starbird gave us a complete description of the Sentinel (ABM) program and its deployment plan; he explained the factor that lead to its change to the safeguard plan and its deployment. He described the safeguard plan. He also described in detail the command and control procedures that are in effect to prevent unauthorized launching of ABMs.

I received a call from Sterling Cole who said he had looked over the material I sent to him concerning the position of Federal Representative to the Southern Interstate Nuclear Board; he thought the job would be interesting but quite time consuming. He said his main concern, however, is conflict of interest. I said I would have Joe Hennessey call him to determine whether there is a problem and then we could proceed from there. (Hennessey made the call with the result that Cole will probably accept this position.)

I received a memorandum from Bob Haldeman addressed to all Cabinet Officers and independent Agency Heads regarding the use of the Advertising Council for national information campaigns (copy attached).

At 4:10 p.m. I met with Paul W. McCracken, Chairman of the Council of Economic Advisers, who was accompanied by Thomas Moore. Julius Rubin was also present. McCracken told us about the study on the future of the uranium enrichment plants that is being made by a committee consisting of McCracken, Lee DuBridge and Robert Mayo which was appointed by President Nixon. He said that since they are not familiar with this field and do not have the resources to carry on an in-depth investigation they are asking the Arthur D. Little Company to perform the study for them. He said that in this connection they would like to have a number of people cleared including the three principals on the committee. He will send us a letter listing the names and formally requesting their clearances. I suggested that they receive the same briefing from Quinn, Hollingsworth and me that we gave to Ellsworth. It was decided that we would try to set this up for next Tuesday or Wednesday afternoon, depending on Mayo's and DuBridge's schedules. I gave McCracken a copy of the

THE WHITE HOUSE  
WASHINGTON

April 1, 1969

MEMORANDUM TO ALL CABINET OFFICERS AND INDEPENDENT  
AGENCY HEADS

SUBJECT: White House Liaison with Advertising Council

Government departments should be aware of the fact that, under certain conditions, extensive national information campaigns may be conducted through television, radio, newspapers, magazines, etc. via The Advertising Council.


The Advertising Council is the private, non-profit service organization which has assisted in many information campaigns of the Government continuously since 1942. Current examples include the campaigns for U.S. Savings Bonds, forest fire prevention, Peace Corps, and rehabilitation of the handicapped.

The Council makes no charge for its services nor the services of its volunteer advertising agencies. All space and broadcast time are free. However, it requires reimbursement of out-of-pocket costs of printing, art, plates, etc. Donated advertising for Council campaigns conducted for private organizations and the Federal Government totaled \$338.6 million last year.

The Council can accept applications for campaigns which (1) are in the public interest, (2) are reasonably non-controversial, (3) benefit the nation as a whole, and (4) are susceptible to advertising techniques.

The Council cannot deal independently with agencies and departments, and it has been the practice of past administrations to channel requests to the Council through a staff person in the White House.

Charles B. Wilkinson will serve as liaison for this administration. All requests to the Council should be channeled through his office for evaluation and advice.

  
H. R. Haldeman  
Assistant to the President



package that we sent out to industry soliciting their comments and made arrangements to provide Mayo and DuBridge with similar packages.

I wrote to Dave sending him some money to cover his expenses for the spring quarter at Davis.

Helen and I attended a reception and dinner in honor of William C. Foster, given by his friends in the Presidential Ballroom of the Statler Hilton Hotel. Paul G. Hoffman presided. A few remarks were made by Paul R. Porter (former Marshall Plan and Mutual Security Program representative to Europe), who presented Foster with the Department of Commerce flag in recognition of his work in the Department of Commerce some 21 years ago. Gerard Smith made a number of presentations to Foster in recognition of his long service in the cause of arms limitation and disarmament. John J. McCloy and Dean Rusk spoke briefly in praise of the many contributions that Foster has made to the field of disarmament, especially the Limited Test Ban Treaty, the special treaty banning nuclear weapons in space and the NPT. Hubert H. Humphrey was the main speaker and he spoke eloquently of Foster's accomplishments. He included in his statement an attack on President Nixon's decision to go ahead with the deployment of limited ABM's.

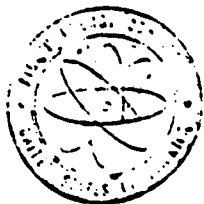
Helen and I sat at a table with Mr. and Mrs. Eric Sevareid, Mr. and Mrs. Leslie Ayers (our neighbors in Washington and former residents of Lafayette, California), Ambassador of Sweden and Mrs. Hubert deBesche, and Mr. and Mrs. Douglas Smith. I sat next to Mrs. Eric Sevareid which gave me an opportunity to get acquainted with her; she is a former singer and with a Spanish and Italian background has lived some time in Cuba.

Among those present at the dinner and with whom we had the opportunity to exchange greetings were Mr. and Mrs. Herbert C. Blunck (University of California, Berkeley, alumnus and longtime manager of the Statler Hilton Hotel), Mr. and Mrs. John G. Palfrey, Mr. and Mrs. Elie Abel, Fred Korth, Mr. and Mrs. David Packard, Congressman Melvin Price, and Mr. and Mrs. Mason Willrich (whose book on the NPT was just published). I also had the opportunity to speak briefly with Dean Rusk concerning my experiences with the new Administration; I also spoke a word of greeting to Hubert Humphrey.

Friday, April 4, 1969 - Germantown

Dr. Alexander Hollaender of the Oak Ridge National Laboratory came by to see me at 9:20 a.m. He said he thought there should be a biologist on the Commission, gave me a number of reasons why he thought so and said that he recommended James Liverman of ORNL for this position.

At 10 a.m. I presided over Information Meeting 892 (notes attached). We discussed the question of whether I should include in my talk at the luncheon in Chicago on April 10 the fact that the AEC proposes to name the NAL the "Enrico Fermi Laboratory" at the time of its dedication. (The luncheon is being held in connection with a ceremony at which the State of Illinois will transfer the title of the land for the 200 Bev Accelerator to the AEC.) It was decided that we might proceed in this manner provided it is satisfactory with the members of Congress who have proposed a number of bills for naming the laboratory in honor of Enrico Fermi. Representative Annunzio of Illinois is a leader of this group. We also discussed further the plans for the



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

COPY NO.         
April 4, 1969

INFORMATION MEETING 892

10:00 a. m. , Friday, April 4, 1969, Room A-458, Germantown Headquarters

1. Letters to Attorney General Mitchell and Chairman Chet Holifield, JCAE

The Chairman discussed briefly his conversations with Attorney General Mitchell and Mr. Holifield prior to transmittal of the letters. A briefing for JCAE staff is requested and the regulations may now be transmitted. (AGM-DR)

2. Chairman's Discussion with Mr. Gerard Smith re US- USSR Meetings

3. Administration Study of Gaseous Diffusion Plant Disposition

The Chairman noted staff will brief Mr. Paul McCracken, Chairman, Council of Economic Advisers, next week and a subsequent meeting of Messrs. DuBridg, Mayo, and McCracken with the Commissioners will be scheduled. (Rubin-SECY)

4. Naming of the 200 BEV Accelerator Facility

The Chairman will convey the Commission's thinking to Congressman Mel Price. (Rubin)

5. Certificate for Mr. Nunzio Palladino

To be prepared. (SECY)

6. ANS 15th Annual Meeting, June 15, 1969, Seattle, Washington

Commissioner Johnson noted he is the Honorary Chairman.

7. Congressman Craig Hosmer's Request for Additional Information re Diffusion Plant Disposition

Commissioner Johnson noted the information is in preparation for early consideration. (AGMP&P-Helfrich)

8. JCAE Authorization Hearings on the FY 1970 Budget Estimates

The Chairman said the Joint Committee hopes to begin the hearings during the week of April 14, 1969.

9. Proposed Letter to Mr. Hosmer re His Comment on Packet of Information AEC Distributed to Representatives of Industry and Government (See also Mr. Hosmer's March 24 Letter to the Chairman)

Approved. (Rubin)

10. March 27 Letter from Bruce Bolt re Publication of Information on Boxcar and Benham

A copy of Mr. Bolt's letter will be sent to Dr. Michael May.<sup>and Broderick</sup> (Rubin)

11. Agenda for the Week of April 7, 1969

Approved. (SECY)

12. Agenda for AEC-MLC Meeting, May 1, 1969

Approved with a change. (SECY)

13. AEC 141/126 - Proposal for Release of Summary Report on Assuring the Safety of Underground Nuclear Testing

Approved subject to the Commissioners' comments. Subsequent TID Publication is requested and Messrs. Klein and DuBridge are to be informed. (PI-TI-SECY)

14. AEC 23/85 - Proposed UK Export of Neutron Generator Systems to the USSR

Approved. (AGMIA)

15. Transmittal to the JCAE of Copies of GAC's October 30, 1949, Letter to the AEC and AEC's November 9, 1949, Letter to the President

Approved. The transmittal letter is to be signed by staff. (Congr. -SECY)

16. Pending Contractual Matters Report No. 302

Noted. (PAR)

17. AEC 152/240 - Meeting of April 1 of the Task Force on Electric Power Reliability and Related Issues

Approved with changes. (GC-Ryan)

18. Personnel Item'

W. B. McCool  
Secretary

11:30 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Hennessey  
Mr. Schoenhaut  
Mr. Rubin  
Mr. Kuli  
Mr. McCool  
Mr. Giller\*  
Mr. Stokeley\*  
Mr. Friedman\*  
Mr. O'Neill\*  
Mr. Price\*  
Mr. Beck\*  
Mr. Shaw\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

release of the Summary Report on Assuring the Safety of Underground Nuclear Testing. As a result of consultations with Lee DuBridge it has been decided that this report will be released by the AEC and that the Pitzer panel Report will not be released. The AEC release will be issued through the Nevada office and may subsequently take the form of a TID report. The Commission approved the material on the disposition of the gaseous diffusion plants requested by Congressman Craig Hosmer.

After the meeting I called Congressman Mel Price as a follow-up to our conversation last night and told him that the Commission does not feel strongly about the manner in which the naming of the NAL for Fermi takes place. I asked him to discuss it with Congressman Frank Annunzio. I said if Annunzio wants to do it through a bill in Congress, we wouldn't resist it. Our only concern is not to do anything that would jeopardize the accelerator. Price contacted Annunzio and called me back. He said Annunzio is very happy with the idea of my making the announcement at the April 10 luncheon. He is not worried about credit, except that he would like to issue a press release the day after the announcement.

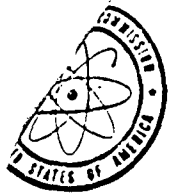
At 12 noon I presided over Regulatory Meeting 273 . We approved for publication for public comment the proposed amendment to 10 CFR Part 50, an amendment that defines quality assurance criteria for nuclear power plants. This is a matter that has been under discussion by the Commission for some time.

At 12:15 p.m. I presided over Commission Meeting 2368 (action summary attached). We approved the broad guidelines for the definition of a nuclear weapon. This is a matter that has been a bone of contention between the DOD and the AEC for a number of years. With the definition we have approved we now hope that we can get together with the DOD on an agreed position and then clear it with the White House and the Joint Committee on Atomic Energy. We want to do this through a reinterpretation of the present definition rather than through legislation since supporting legislation on nuclear weapons would have an adverse effect on the NPT.

I had lunch in the cafeteria with Justin Bloom and John Totter; we discussed various problems developing in the Division of Biology and Medicine, such as the GAO report on the ANL's Biology and Medicine program which is somewhat critical of the management.

I went to the Recording Room and recorded eleven three-minute tapes for the series "Seaborg on Science" that will be distributed to a number of radio stations throughout the United States. The programs recorded were entitled: Nuclear Power, Plowshare, Neutron Activation Analysis, Accelerators, Medical Atoms, The Experimental City, The Nuclear Rocket, Biosynthetic Foods, The Nuplex, Fusion and More Food From the Sea.

I also viewed the film on my summary discussion of the origin of the actinide concept and the place of the transuranium elements in the periodic table that I recorded for the German television during my visit to Berkeley on March 7. Another film I viewed, made at the same time, concerned the announcement of the discovery of isotopes of Element 104 and involved, besides me, Albert Ghiorso, Matti Nurmi, Pirkko Eskola and Kari Eskola.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

April 4, 1969  
Approved \_\_\_\_\_  
REH  
Date \_\_\_\_\_

R. E. Hollingsworth, General Manager

ACTION SUMMARY OF MEETING 2368, FRIDAY, APRIL 4, 1969, 12:15 P.M., ROOM A-410, GERMANTOWN, MARYLAND

SECY:JFB

Commission Business

1. Minutes of Meetings 2352, 2353, 2354 and 2355

Approved, as revised. (SECY)

2. AEC 151/112 - Definition of Atomic Weapon (See also AEC 151/113 - Weapons Laboratories' Comments on Definition of Atomic Weapon)

Discussed.

The Commission approved the General Counsel's recommendations that:

- a. staff undertake discussions with the staffs of the DOD and JCAE;
- b. the results of these preliminary discussions be reported to the Commission prior to discussions with the White House; and
- c. this matter be formally considered by the Commission after staff discussions with appropriate staff of the DOD, JCAE and the White House.

(OGC)

3. AEC 719/76 - Special Analytical Study No. 68-4 - Selected Low-Dose Radiation Processed Foods

Approved, with revisions. (ID/C)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

I received a call from Budget Director Mayo who read me a draft of a letter he had prepared to the President on the Hanford reactor situation. I gave him some corrections and suggested changes.

Ed Bauser called concerning my letter to Holifield on the diversion of materials matter and asked that someone go up to tell them about it. I agreed, and cautioned that this is very sensitive. He said that Holifield is still sweating it out how to get his information out without hurting programs, individuals, etc., because this type of loss cannot stay hidden.

Charles Miller called to say that since five members of the Honorary Advisory Committee to the Berkeley Centennial Fund are no longer in Washington, he wanted my approval and assistance to get four new members: Senator Alan Cranston, Congressman Glenn Anderson, Secretary Robert Finch, and Joe Blatchford (Director, Peace Corps). He said his plan is to start with a mailing to everyone in the area, introducing them to the fund; this will be followed by a phone call or visit from a volunteer solicitor. He said the Honorary Advisory Committee members could help in two ways: (1) call a particular prospect whom they know to help obtain a pledge; and (2) make an appearance at one or two functions that will be held to get the better prospects together. I said I would call Cranston and Anderson. He will draft a letter for my signature to Blatchford. We decided he would ask Chief Justice Warren to contact Finch; I said that if I happened to run into Finch I would mention the Committee to him.

I received an April 3, 1969 letter from Samuel De Palma, Assistant Secretary of State for International Organizational Affairs, replying favorably to my March 10 letter to Secretary of State Rogers in which I proposed that the State Department initiate action to increase the 1970 United States voluntary contribution, both in cash and in kind, to the Operational Program of the International Atomic Energy Agency (copies of both letters attached).

I also received a copy of the letter President Nixon wrote to Commissioner Tape saying he would appreciate Tape's remaining in his present position for a few more weeks (copy attached to March 29, 1969 journal).

Eric, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going along the White Horse Trail and Cross Trails 3 and 4 past the Police Headquarters, and returning to our starting point.

Saturday, April 5, 1969 - D.C.

I worked in the office until about 1 p.m.

A front page, scare story appeared in this morning's Washington Post, written by Victor Cohn, claiming that the AEC is planning for high yield underground nuclear tests next fall. There is nothing new in the story and the headline obviously was written to give the impression that the AEC had suddenly decided to carry on high yield tests in the immediate future. It was apparently occasioned by the release of our answers to the ten questions posed by the Hughes organization concerning high yield underground testing in Nevada and the possible dangers of these tests. Obviously this will attract some attention. (Copies of questions and answers attached.)

DEPARTMENT OF STATE  
WASHINGTON

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NOV 86



April 3, 1969

The Honorable  
Glenn T. Seaborg, Chairman  
U.S. Atomic Energy Commission  
Washington, D. C. 20545

B-D 4/14/69

Dear Chairman Seaborg:

I wish to respond to your letter of March 10, 1969 to the Secretary in which you propose that the Department of State initiate action to increase the United States voluntary contribution, both in cash and in kind, to the Operational Program of the International Atomic Energy Agency (IAEA) for 1970. You have noted in your letter the increasing importance of the IAEA's Operational Program in its relation to the Non-Proliferation Treaty and the role assigned to the Agency by that Treaty. The Department is in agreement with you that it is in our interest to take whatever steps we reasonably can to consolidate support for the NPT and we agree with your assessment that greater financial support for the Agency's Operational Program is desirable in the interests of achieving this objective.

I am accordingly pleased to inform you that as the result of recommendations emanating from a meeting held on March 11 in my office and attended by Ambassador Henry Smyth, Mr. Myron Kratzer, Assistant General Manager for International Activities, USAEC, and Herman Pollack, Director, International Scientific and Technological Affairs, Department of State, the Department of State will request an increase in the U.S. voluntary contribution to the IAEA as follows:



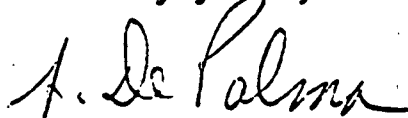
1. to revise the formula of our cash contribution to permit the United States to contribute to the \$2 million target figure at our assessed ratio (currently 31.57 percent) with the provision that the U.S. contribution not exceed 40 percent of the total unrestricted cash contributions received. We are requesting \$650,000 for this purpose.

2. to double the sum allocated for the U.S. contribution-in-kind from the current \$400,000 to \$800,000.

To summarize; the Department will seek the necessary authorization to increase the total U.S. pledge to the Operational Program for 1970 from \$1 million to \$1.45 million.

I would welcome the cooperation of your staff in preparing this proposal for review by the BOB and its subsequent presentation to the appropriate Congressional committees. Should we be successful in obtaining the necessary legislative action for the change, I believe we will want to consider very carefully how best this increase in U.S. support for the IAEA Operational Program might be presented at the next IAEA General Conference to achieve the best possible impact. We will also wish to consider with you subsequently how this increase might be used to seek greater support of the Operational Program ~~on the part of other members of the IAEA, and particularly the~~ more advanced countries.

Sincerely yours,



Samuel De Palma  
Assistant Secretary for  
International Organization Affairs

MAR 10 1969

Honorable William P. Rogers  
Secretary of State

Dear Bill:

I understand that the Department is preparing material for submission to the Bureau of the Budget on the proposed appropriations for voluntary contributions to international organizations for 1970, and I would like to call to your attention a matter which I believe to be of importance involving our contributions to the International Atomic Energy Agency's Operational Program.

During the IAEA's Twelfth General Conference in September 1968, the United States pledged to the 1969 Operational Program, from which the Agency's technical assistance program is financed, a matching cash contribution of 32.5% of the total unrestricted cash contributions received from all Member States up to a total of \$600,000. This percentage has been reduced steadily each year since 1964, when it was about 50%. Additionally, as in past years, we pledged about \$400,000 in contributions-in-kind.

Both before and after the pledge was made, I recommended that the cash contribution be based on a percentage of the approved target figure of \$2 million for the Operational Budget, rather than on the total cash contributions received, and that the percentage be the same as our assessed percentage under the IAEA's Regular Budget, i.e., 31.57%. While this would have resulted in a slight increase in our cash contribution, this formulation would have brought the U.S. into compliance, for the first time, with an IAEA General Conference resolution approved in 1962, which urged members of the Agency to pledge to the Operational Budget on this basis. This could have been achieved by slightly decreasing our contributions-in-kind for that year, in order to stay within the \$1 million already appropriated for our voluntary contributions in cash and in kind to the IAEA. I might note that over three-fourths of the Agency's other Member States complied with the resolution in 1968.

The Department responded that it would be difficult to change the basis of the 1969 pledge after having informed the Congress that it was based on a percentage of the contributions actually received rather than on the target figure, but that the nature of the pledge for 1970 could perhaps be reviewed this spring.

The Agency's developing Member States have expressed far more interest in the Agency's technical assistance program than in the safeguards system or the Non-Proliferation Treaty. During the past several months, most of these countries have strongly reinforced this view, particularly in light of the declining resources available for technical assistance and the prospect of considerable increases in expenditures for safeguards work in the near future as a result of the NPT. Attitudes reflecting this view were particularly evident from the resolutions adopted or proposed at the Conference of Non-Nuclear Weapon States held in Geneva last August, and at the last session of the United Nations General Assembly. Similar views have also been forcefully expressed by the developing Member States in the Agency's Board of Governors and General Conference.

I believe that, in view of our Government's leading role in advocating and supporting the NPT and the IAEA's role thereunder, and our desire to strengthen, where possible, the commitment of the developing countries to the Treaty and the Agency, it would serve our interests to take whatever steps we reasonably can to counter this concern and to strengthen the sense of commitment of these countries. I believe that one of the most effective ways of achieving this goal would be to base our 1970 pledge to the Operational Budget on the target figure at the same percentage as our assessed contribution, in accordance with the aforementioned 1962 resolution, which would amount to about \$630,000. This would eliminate any basis for criticism that our commitment to this portion of the Agency's budget was less than complete.

In addition, I should like to propose that serious consideration be given to our pledging an amount of \$1 million for contributions-in-kind to the Agency for 1970 as further convincing evidence of our desire to strengthen the Agency's technical assistance program in support of the objectives cited above. These contributions enable us to satisfy many needs of the developing Member States that would otherwise not be met, since the Agency has never been able to fulfill more than a portion of the technical assistance requests received. For example, the Agency, for 1969, has been able to select projects (involving experts and equipment) totalling only about \$975,000 out of \$1,894,000 worth submitted, on the

Honorable William P. Rogers

- 3 -

assumption, based on past experience, that the \$2 million target figure would not be reached.

Funds for contributions-in-kind are spent on IAEA approved projects and activities, and include modest equipment grants and cost-free experts for Member States, fellowships for training foreign nationals in American institutions, and Agency-sponsored technical meetings and training courses held in the United States. A major advantage in the use of these contributions is the fact that we exercise considerable influence over how the funds are spent, which we are unable to do with respect to the Agency's cash contributions. Moreover, since most of the funds are spent in the U.S. (excluding, for example, only such minor items as per diem for a U.S. expert traveling abroad), there is no adverse effect on our balance of payments. An additional benefit resulting from our equipment grants is the potential for creating and/or expanding markets abroad for U.S. equipment.

During the past several years our annual pledge for contributions-in-kind has been limited to about \$400,000, and, although it has been useful, I believe that our current and future objectives clearly can be more effectively realized by substantially increasing our pledge. I have enclosed a breakdown of the use of the funds that we would anticipate pursuant to a \$1 million pledge.

Thus, I recommend that we seek an appropriation in the amount of \$1,650,000 for our contributions to the Agency's technical assistance program for 1970. I believe that a contribution of this amount for the purposes outlined would significantly strengthen our hand in dealing with the developing countries on this issue at this crucial time.

Cordially,

(Signed) Wm. P. Rogers

Chairman

Enclosure:  
Contributions-in-kind breakdown

bcc: Chairman Seaborg (2)  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola  
GM(2)  
EAGM  
DCM  
Sec(2)  
AGMIA  
A.S.Friedman  
Samuel DePalma, Asst. Sec.  
Internat. Organiz., Stat  
Gerard C. Smith, Dir. ACI  
Herman Pollack, Dir., SCT,  
Stat

CONTRIBUTIONS-IN-KIND TO THE INTERNATIONAL ATOMIC ENERGY AGENCY

| <u>Proposed for 1970</u>                              | <u>Estimated for 1969</u> | <u>Actual for 1968</u>   |
|---|---------------------------|--------------------------|
| \$ 425,000 60 Fellowships                             | \$287,000 40 Fellowships  | \$287,000 40 Fellowships |
| 30,000 1 or 2 training courses                        | 22,000 2 training courses |                          |
| 100,000 Cost-free experts <sup>1/</sup>               | 17,000 Cost-free experts  | 16,000 Cost-free experts |
| 425,000 Equipment grants                              | 81,000 Equipment grants   | 104,000 Equipment grants |
| 20,000 Scientific/Industrial study tour <sup>2/</sup> |                           |                          |
| <u>\$1,000,000</u>                                    | <u>\$407,000</u>          | <u>\$407,000</u>         |

<sup>1/</sup> Approximately \$75,000 would be used to supplement Agency funding of several U.S. experts for technical assistance assignments of less than one year's duration, to enable the expert's family to accompany him in selected cases where the expert would otherwise not accept an assignment. The IAEA does not cover expenses of family for short-term assignments and obtaining experts for such assignments has accordingly, been extremely difficult.

<sup>2/</sup> Costs of travel and per diem within the U.S. of tour participants from developing countries to scientific and industrial establishments in various subject areas, e.g., industrial and medical uses of isotopes.

|                    |               |
|--------------------|---------------|
| OFFICE DIARY       |               |
| GLENN T. SEABORG   |               |
| Chr USAEC, 1961-72 |               |
| FOLDER-PAGE        | <u>100069</u> |

Question 1: "How big will the future tests go on the Pahute Mesa in view of Dr. Frank Stead's warning? NVO-40, page 17, Geologic Section, areas 19 and 20, Nevada Test Site...The geology dictates a maximum test depth of about 4,500 feet. Two major criteria: first, the spacing of major fault planes at more than 2,400 feet apart at a depth of 4,500 feet, because of the possibility of venting of radioactive debris to the atmosphere along fault planes is a major seismic safety consideration; and second, the rock types, at depths between 2,000 and 5,000 feet below the surface, which have low transmissibility to groundwater movement; this is both a construction consideration and a hydrologic safety consideration."

REVIEWED BY: *J. Sofner*  
DATE: *7/2/68*  
*11/11/82*

Answer: As you are aware, both the BOXCAR and BENHAM tests were a little over a megaton. It is planned to continue tests in this general yield range, although we have not established a size limitation for tests at Pahute Mesa. Each event will be thoroughly examined before execution. Our prediction capability, which is now quite good, will improve further with tests in the megaton range. The yield limitation for Pahute Mesa is obviously related to the effects of ground motion on structures external to the test site. We recognize what Dr. Stead has said in the separate NVO-40 passages you quote. As mentioned above, NVO-40 is being reviewed in order to remove ambiguous statements and statements that appear to conflict with one another. We do not feel that the faulting situation at Pahute Mesa will be determining as far as yield limitation is concerned. However, the geology at any test location is always examined carefully prior to site selection and then monitored closely during drilling and construction operations. You are undoubtedly aware that exploratory holes go considerably deeper than the depth of the emplacement facility to investigate the hydrological situation.

Question 2: "How big will the tests go at Hot Creek Valley which is isolated from Las Vegas but not too far away from Winnemucca and Carson City; and even Salt Lake City and the Wasatch fault in Utah? It has been the reasoned judgment of seismologists in Nevada that the earthquakes at Winnemucca following FAULTLESS, January 19, 1968, were triggered. Also the sudden appearance of a 6 magnitude earthquake in Salt Lake City shortly after FAULTLESS, although unreported in the USC&GS catalogue is believed to be related to it also."

Answer: Our purpose in selecting the Hot Creek-Little Smoky Valley location was to investigate the possibility of the use of this area for tests of yields higher than could be carried out at Pahute Mesa. The preliminary results of this investigation permit the conclusion that the yield range of several megatons can be conducted without undue hazard to structures or people. So far in Central Nevada we have conducted one calibration test with a yield range of less than a megaton (FAULTLESS). As you know, we have consulted with recognized seismologists and geophysicists about the effects of that test and of the higher yield tests at the Nevada Test Site. Obviously, interpretations can vary. There appears little doubt that microseisms have followed FAULTLESS and other tests within distances of up to 20 or 30 kilometers. We find no basis for the statement that earthquakes at greater distances such as near Winnemucca have been triggered by FAULTLESS or other nuclear tests. We have checked all available records and consulted with the University of Utah and find no record of a 6 magnitude earthquake in the Salt Lake City region following FAULTLESS. We are continuing in our efforts to obtain a better understanding of these phenomena.

Question 3: "At what size will the tests be taken to Amchitka, Alaska? In view of the increased costs estimated from double to five times NTS costs, will sufficient budget be given during the coming economy period to provide for taking yet larger tests there?"

Answer: Our purpose in developing the supplemental site at Amchitka was to provide a location where devices with design yields greater than those



feasible for testing at the Central Nevada area could be detonated safely. Again, we are planning an initial calibration test so as to look at effects from a yield lower than those which may ultimately be proved possible. Although the entire test budget is somewhat tight because of the national economy period you mentioned and one future test emplacement site at Amchitka has been eliminated from plans, other plans for operations there are not affected, nor are any tests presently scheduled for Amchitka being rescheduled elsewhere.

Question 4: "How large will the Plowshare tests be over 35 KT and how much radioactivity and what kind will be released to the atmosphere?"

Answer: You recognize that many Plowshare tests do not release any radioactivity to the atmosphere. On the other hand, active planning is underway for two cratering experiments which ordinarily do release some radioactivity. One of these is YAWL, proposed for the Nevada Test Site or the Central Nevada area, that could have a yield several times that of SCHOONER. However, even though the yield may be larger, the amount of radioactivity released to the atmosphere will still be very small, and it is anticipated that radioactivity levels beyond a few miles from ground zero would be less than that from SCHOONER. The second is an experiment designed to determine cratering characteristics in saturated shale to simulate geological conditions in some areas of the isthmus between North and South America. Possible sites for this experiment are being investigated in southeastern Montana, western

South Dakota, and northwestern Nevada (the Black Rock Desert area). Design of the experiment must await evaluation and selection of a suitable site. Both of the proposed experiments would be conducted with minimum fission nuclear explosives, so that most of the small amount of radioactivity which reaches the atmosphere would consist of short-lived activation products. Other possible Plowshare experiments have been discussed, the highest yield of which is PHAETON, at one megaton, but the radioactivity from PHAETON would be about that from YAWL, i.e., less than that from SCHOONER and much less than past experiments like SEDAN.

Question 5: "What are the percentages of fusion and fission in future

Plowshare tests -- ~~REDACTED~~

DELETED

Answer: While you appreciate the sensitivity of discussing precise ratios, we can say that in future Plowshare cratering tests at useful yields, we expect the amount of fission product radioactivity released outside of the crater area to be no more than that which would result from an equivalent 20 ton fission explosion, irrespective of the total yield. Results of the SCHOONER experiment of December 8, 1968 (about 35 kilotons) at the Nevada Test Site showed that only a very small amount of fission products entered the atmosphere.

Question 6: "Will any test at the megaton range or above be held before May 1 in view of the three conferences: (a) American Geophysical Union in April (21-25), (b) Geological Survey Hydrological Studies in April to be released in "open file," and (c) U. S. Public Health PSMRHL Plowshare Seminar in Las Vegas in April?"

Answer: No tests of a megaton or more are currently planned for readiness prior to May 1, 1969.

Question 7: "Does the AEC plan to use Nevada as the center for a series of 'programmed earthquakes' in order to find those areas where nuclear power plants can be installed safely away from earthquake hazards. How large will these explosions be and where?"

Answer: No. The AEC is not involved in anyway with "programmed earthquakes," nor is such involvement envisioned. Measurements of ground motion from underground tests (weapons and peaceful uses) are made in order to provide data for study of: (a) ground motion amplification factors as a function of local geology, local soil conditions, intensity and frequency characteristics of input motion, wave path, and focusing effects, and (b) wave transmission from the energy source as a function of the geologic path or paths traversed, over a range of distances from a few to many miles from the energy source. These measurements will be made as tests of suitable yield are conducted during the weapons and peaceful uses test programs. Since the ground motions from underground nuclear tests in many instances are similar to earthquake motions, and since the weapons and peaceful uses programs are continuing, the opportunity for measurements which may lead to a better understanding of ground motion characteristics and their effects on safe siting and design of reactor plants in any areas of naturally occurring seismicity, will be utilized.

Question 8: "Will there be an effort at the governors' conference briefing to draft a regional AEC compact between the states of Oregon, Idaho,

Montana, Utah, New Mexico, Arizona, California, and Nevada to surrender 'states rights' to the AEC covering safety aspect of this programmed earthquake program?"

Answer: As noted above, the AEC does not have a "programmed earthquake" program. A regional nuclear energy compact between states in the western United States has been drawn up and ratified by at least some of the states. We understand that a number of state legislatures have bills before them or ready for introduction ratifying their membership in the compact. However, the compact has no relationship to the so-called "governors' briefing" which the Nevada Operations Office of the AEC will sponsor in Las Vegas April 1 and 2, 1969. Governors invited to attend or send representatives to our briefing are those from Nevada and the states adjacent to it--California, Oregon, Idaho, Utah, Colorado, and Arizona. We have also invited the Governor of Alaska, since we intend to conduct test operations there. The group was selected because it seems to represent the region where effects of our larger tests may have some impact, real or psychological. The only purpose of the governors' briefing is to present facts on why and how we test and the observed and potential effects. There will be no effort to obtain the consent of the governors or their states to any AEC-proposed compact or other proposal.

Question 9: "Will there be planned tests for mining of copper, preparation of gas contamination caverns, creation of water aquifers, and other novel uses of atomic energy at the NTS or the CNTS sites or where?"

Answer: We believe you meant gas containment caverns, in your question. Under the Plowshare program to develop peaceful applications of nuclear explosions, the AEC is studying, planning or discussing with a number of industrial firms and others the use of nuclear explosions in several applications of the underground engineering technology. In these applications, void space is created underground for various purposes. One specific application is enhancement of natural gas production from relatively impermeable rock.

Such an experiment, Project GASBUGGY, was performed on December 10, 1967, near Farmington, New Mexico. Results are being evaluated and gas production tests are still being run. The AEC and the Department of the Interior are developing plans for similar gas stimulation experiments, Projects RULISON and DRAGON TRAIL, both in Colorado, with the industrial sponsors. A proposed contract for RULISON has been negotiated and is now undergoing management review within the government and by the Austral Oil Company, Incorporated, and the CER Geonuclear Corporation, the industrial partners. Project DRAGON TRAIL has been proposed by the Continental Oil Company and CER. Discussions are being held for two additional similar experiments in Wyoming. The industrial firms concerned are El Paso Natural Gas Company and a joint venture headed by the International Nuclear Corporation. Project BRONCO in Colorado would be an experiment to determine the possibility of producing shale oil from kerogen-bearing rock after creating an underground chimney of broken rock. It has been formally proposed to the AEC by a group of industrial firms, led by the CER Geonuclear Corporation at Las Vegas, Nevada.

A contract has been negotiated and awaits implementing action by the parties. The Kennecott Copper Corporation has proposed Project SLOOP, in which a similar rubble-filled chimney would be formed in a copper-bearing formation near Safford, Arizona, to provide an underground environment for in-place leaching of copper. The Columbia Gas System Service Corporation has proposed an experiment to investigate the feasibility of creating space underground for the storage of natural gas. No site has been selected for this project. All the above experiments would be designed for complete containment of all radioactivity underground. The State of Arizona, the AEC and the Bureau of Reclamation are engaged in a joint study of possible uses of nuclear explosions for water management and development projects in Arizona. This may involve principally the creation of additional reservoirs. Project AQUARIUS, as the study is called, is in a very early stage. It could involve earth moving applications of nuclear explosions at some future time.

Question 10: "Is the AEC prepared to assume responsibility for requiring all future uranium contracts for mining or processing uranium along the Colorado River to adequately cover the tailing piles or filter radium and to pay for covering abandoned tailing piles now a potential danger?"

Answer: The AEC does not anticipate any further contracting for uranium, the present supply being more than adequate to meet AEC requirements for the foreseeable future. The AEC states to the Subcommittee on Air and Water Pollution, United States Senate Committee on Public Works on May 6, 1966, that "The evidence available at the present time does not support a conclusion that the uranium tailings piles represent a radiation hazard

to their environment. The exposure of persons to concentrations of radioactive material in the vicinity of tailings piles would be only a small fraction of the concentrations allowed by applicable standards." Consequently, AEC is not considering the action of making payments for covering abandoned tailings piles.

Helen, Steve, Eric, Dianne and I attended the wedding of Marianne Price to William H. Liddle at the Columbia Baptist Church in Falls Church, Virginia, at 2 p.m. The following relatives were present: Robert and Louise Price (the parents of the bride); Roberta Price (sister of the bride and one of the bridesmaids); Mr. Liddle (brother of the bridegroom and the best man); Gordon and Helen Swanberg, their daughter Carol, 5-1/2 years old; their son Scott, 10-1/2 years old; and their son John, 16 years old (one of the ushers); Jerry and Viola de Gabriele, their daughter Caroline, age 15 (one of the bridesmaids), and son Christopher, age 13 (one of the ushers); Esther Arnott; Jack and Adelaide Gittins; and Jim and Alice Robinson. Following the wedding, the relatives had an opportunity to visit.

After we returned home Eric, Suki and I took a hike in Rock Creek Park. We started at Oregon and Nebraska Avenues, hiked along the White Horse Trail to Cross Trail 2 and then back on the Black Horse Trail (including the Turtle Trail) to Cross Trail 5 and back to our starting point.

#### Sunday, April 6, 1969

I spent a good part of the day reading various AEC papers.

Helen went to the airport to visit with Bill and Lynne who were between planes on their way back to Cambridge from Nashville. They visited in Nashville with Bill's brother Steve. During their stay in Tennessee they visited the Oak Ridge Nuclear Energy Museum at Gatlinburg, and the Hermitage, and attended a radio broadcast of Grand Ole Opry in Nashville.

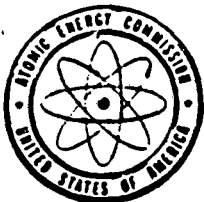
In the afternoon Eric and I shot 9 holes of golf at the Chevy Chase Club; I had a 52 and Eric had a 79.

I read the galley of "The Atom's Expanding Role in the Medical World" (my Livermore speech of March 6, 1969) preparatory to its publication, as part of the Livermore symposium on Biological Implications of the Nuclear Age, in the AEC symposium series.

#### Monday, April 7, 1969 - Germantown

I presided over Information Meeting 893 (notes attached) at 10 a.m. We discussed the question of the current efforts among a number of members of the IAEA to enlarge the Board of Governors. At a recent February meeting of the Board, the Board passed a U.S. resolution establishing an ad hoc committee to consider the subject in preparation for the June Board meeting. The ad hoc committee will meet in Vienna on April 15 and Ambassador Smyth will attend. Members of the IAEA not on the Board have been invited to participate in the discussions. At the February Board meeting papers were submitted by Italy, Mexico, and Pakistan outlining three different schemes of representation. The Italian and Pakistani proposals would increase the size of the Board from 25 to 31. The Mexican proposal would increase the size of the Board to 34. The proposals which have been submitted by Italy, Mexico, and Pakistan broadly fall into two categories: the Italian and Mexican proposals retain the concept of "designated" states which insures that technically advanced countries will be well represented on the Board; the Pakistani proposal is unfavorable to Western Europe and would limit the number of designated seats





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

COPY NO. 2  
April 7, 1969

INFORMATION MEETING 893

10:00 a. m. , Monday, April 7, 1969, Room A-458, Germantown Headquarters

1. April 3 Letter from Kenneth Ford re History of Thermonuclear Weapons Development

Staff views are requested. (SECY)

2. AEC 973/109 - Composition of IAEA Board of Governors

Approved. (AGMIA)

3. AEC 783/119 - Proposed Comments on Section 355 of the Revised Statutes re Title to Lands

Approved. (GC)

4. Release of Summary Report on Assuring the Safety of Underground Nuclear Tests

The report will be released as a TID document. The Commission will be informed prior to release. (PI-TI)

W. B. McCool  
Secretary

10:25 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Brown  
Mr. Ferguson  
Mr. Schoenhaut  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Hewlett\*  
Mr. Kratzer\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

to four in contrast to thirteen and would open all other seats to election. This approach might be attractive to developing countries who might see in it the possibility of more frequent rotation for themselves on the Board. It would, however, alter the philosophy of Board composition radically and could place the technically advanced countries at a serious disadvantage.

I replied to Craig Hosmer's letter of March 24, 1969 (copies attached) in which he commented on the information we distributed to representatives of industry and Government soliciting comments concerning the question of future responsibility for uranium enriching activities in the United States.


I received a copy (attached) of the letter Robert Mayo wrote to the President on the shutdown of the AEC plutonium production reactors at Hanford.

As guests of General Pete Quesada, Helen, Steve, Eric, Dianne and I attended the opening ball game of the 1969 season which was played by the Washington Senators and the New York Yankees. Helen and the kids went to the stadium by bus with a group from General Quesada's home, while I went directly from the office and met them there. Members of the Quesada party included Mr. and Mrs. Joseph Charyk (COMSAT) and daughter Dianne, 9-1/2 years old; Mrs. Stuart Symington, Mr. and Mrs. Corliss Lamont; Mrs. Sally McConnell (whose husband is the Air Force Chief of Staff) and son Dorsey; and Justice and Mrs. (Marion) Byron White, their daughter Nancy and son Barney. President Nixon threw out the first ball which was caught by Hank Allen, a Senator. The President threw out two more balls and he stayed for the entire game; we saw him as he drove away from the game. On the bus ride back to the Quesadas', I sat next to Mrs. Symington. During our discussion of hiking in Rock Creek Park, I learned that her father, Senator and Representative Wadsworth, was an ardent hiker in Rock Creek Park with Nick Longworth as his hiking companion. Mrs. Symington's brother is James Wadsworth, a former U.S. Ambassador to the United Nations and now a member of the Federal Communications Commission.

Eric, Suki and I took a hike in Rock Creek Park starting at Oregon and Nebraska Avenues, going north on the White Horse Trail and then along Cross Trails 3 and 4 past the Police Headquarters, and returning to our starting point.

Tuesday, April 8, 1969 - Germantown

At Commission Meeting 2369 (action summary attached) at 10:10 a.m. we discussed our draft statement regarding the Atomic Energy Commission policy with respect to the future of uranium enrichment activities. We agreed on a draft that would make the transfer of the uranium enrichment services to private industry the ultimate objective of the Government but would state that this would not be done immediately and that there would be intermediate operation through something like a government-owned corporation. There was some difficulty in getting agreement among all the Commissioners on a compromise position, for which a new and, we hope, final draft will be considered at the Information Meeting tomorrow. We also discussed the difficult question of U.S. policy concerning possible forms of cooperation with foreign governments in uranium isotope enrichment activities. We decided that we would begin to discuss with the State Department, the Executive Branch and the Congress a policy for commencing discussions with friendly foreign governments concerning possible U.S. cooperation in the building of uranium gaseous diffusion facilities in their countries.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

APR 7 1969

Honorable Craig Hosmer  
House of Representatives

Dear Craig:

Thank you for your timely and helpful comments and suggestions on the packet of information we distributed to representatives of industry and Government soliciting comments concerning the question of future responsibility for uranium enriching activities in the United States. In addition to the packets sent to 150 executives in industry, we have since had numerous requests for additional copies. We believe there is great interest in this matter, both in industry and Government, and are hopeful that worthwhile and helpful comments will be received.

The references in the staff report to United States Government requirements were meant to be all inclusive and not limited to weapons uses. The estimates of requirements were made with full awareness of all projected Government uses including weapons, Navy propulsion, isotope production, Plowshare and Government reactor and development programs. With respect to the Plowshare program, there is still considerable uncertainty in the related oralloy requirements because the designs of Plowshare explosives, particularly those for applications in the underground engineering field, are still under development. However, the total projected separative work requirements for the Plowshare program are very small in comparison to the overall requirements, and are well within the range of uncertainties in our projections for all other Government requirements.

On the second point, the possible disposition into civilian channels of uranium presently tied up in the weapons inventory, we recognize this as one of the issues that must be considered in any decision on the future of the uranium enriching industry. In the event of a future arms control agreement involving removal of oralloy from weapons inventories, the extent to which oralloy should be blended down would, of course, be determined on the basis of an economic analysis of alternatives to develop the greatest economic benefits to the Government in managing its inventories. Such analysis would recognize the then projected future

requirements for oralloy, the blending loss associated with immediate sale and the relative time value of money. In addition, in the event uranium enriching were a private commercial activity at that time we would have to consider the impact on the uranium enriching industry of a disposal action, just as we now plan to do regarding the raw material industry in terms of disposing of our natural uranium inventory stocks. It is important to note, however, that the projected growth in requirements for uranium enriching in the early 80's is so great that by deferral of new plant construction for only a short period a considerable quantity of Government stocks of oralloy could be absorbed by the nuclear power industry as blending material if blending and disposal are then desired.


We were particularly appreciative of your views on the desirability of instilling confidence among other countries in our willingness and desire to supply their uranium enriching requirements under appropriate safeguards, and your view that comments from outside our borders would be both fruitful and proper. We have already undertaken a limited distribution abroad of the packet of information in the expectation that helpful comments may be received from foreign groups. As you know, foreign organizations have closely followed thinking in the U.S. related to the possible transfer of AEC diffusion plants to private ownership, and have expressed some concern that such a transfer might interfere with the fulfillment of U.S. commitments to supply enriched uranium abroad. We believe your suggestion that these organizations should be given a broader opportunity to comment is an excellent one, and we are taking steps to insure that they have this opportunity.

We would be pleased to receive any additional comment you may have and would be happy to provide any additional information you may require.

Cordially,

 Glenn T. Seaborg

Chairman

  
bcc: Chairman (2)  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola  
OCR (2)  
GM (2)  
AGMPP  
AGMIA  
OGC  
PNE  
E. Shepherd, OC  
J. Work, OA&F  
Secretariat (2)

# Congress of the United States

## House of Representatives

Washington, D.C. 20515

UNCL. BY D  
NOV 86

March 24, 1969

Dr. Glen T. Seaborg, Chairman  
U.S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Glenn:

I was impressed with the packet of information issued March 14 by the Commission in soliciting comments concerning the possible disposition of its diffusion plants and establishment of a structure to provide for meeting future civilian enriched uranium requirements. It is understood that comments were solicited from approximately 50 U.S. addresses in government and industry.

Although the materials mention a continuing need to provide for the United States Government's requirements for highly enriched uranium, the projections of demand for enrichment capacity seem to be cast entirely in terms of either weapons use by the Government or civilian nuclear power uses by domestic and foreign utilities. Overlooked, apparently, are possibly substantial demands based on Plowshare uses.

Some experts project a very large development of Plowshare activity within the United States. In addition, the recently ratified Treaty on the Nonproliferation of Nuclear Weapons imposes on the United States and other nuclear signatories an obligation to supply the needs of non-nuclear countries for Plowshare explosive services. It is hoped that the Commission may be able to furnish some information and estimates in these regards so that future separative work requirements may be better understood by those who will respond to the Commission's invitation for comments.

Along the same lines, the materials which have been furnished are not clear as to the AEC's thinking about possible disposition of enriched uranium presently tied up in the weapons inventory in the event various arms control objectives sought by the Government are achieved. Perhaps these difficult objectives may never be achieved, but, in the event they are, the Government's intentions regarding blending down its inventory of Oralloy for civilian use are relevant to the enriched uranium supply situation of the future.

The above are thoughts which have come to mind as I have been contemplating the principal purpose of this letter, which is to urge the Commission to entertain a somewhat wider degree of comment on the future of enrichment than was solicited on March 14th. I am particularly concerned that potential users of United States enrichment services in other countries have an opportunity for inputs regarding the future ownership and management of uranium enrichment facilities in the United States.

As properly pointed out in the Summary Report by AEC Staff included in the packet, "virtually all of the Free World's uranium enriching capacity that is available for commercial purposes exists in the U.S. gaseous diffusion complex." The Staff Report re-endorses the Commission's policy of offering, within the limits of its available capacity, "long-term contracts for enriching services" to foreign users. It contains this particularly pertinent language:

"It is therefore important not only to the interests of other friendly nations, but also of the United States itself, that the product of U.S. enriching capacity continue to be available to other nations on reasonable and attractive terms and under appropriate safeguards, even beyond specific contractual commitments and the capacity of the existing diffusion plants." (p. 3)


Elsewhere the Staff Report indicates the desirability of instilling confidence among other countries in the sincerity of the above quoted declaration.

For these reasons I think it would be both fruitful and proper, even at this early stage of consideration of the problem, to receive appropriate comments from those outside our borders who may be affected in a substantial way by the future ownership and management of the U.S. facilities.

I recommend not only that this be done now, but that provision be made as this matter progresses for continued non-domestic comments of an advisory nature. This procedure seems to possess a potential for bringing the matter along to its eventual resolution in a manner in the mutual self-interest and to the satisfaction of both the United States and our friends abroad.

Thank you for your consideration of these comments and suggestions.

Very truly yours,

  
CRAIG HOSMER  
Member of Congress

EXECUTIVE OFFICE OF THE PRESIDENT  
 BUREAU OF THE BUDGET  
 WASHINGTON, D.C. 20503

APR 7 1969

UNCL. BY DO  
NOV 86

## MEMORANDUM FOR THE PRESIDENT

Subject: Shutdown of AEC plutonium production reactors

In the course of reexamining the FY 1970 budget, an issue has arisen which requires your attention. The Johnson Administration decided to shut down two of the four plutonium production reactors at Hanford, Washington, in order to achieve savings of \$16 million in outlays and \$21 million in budget authority for FY 1970. (There are also three reactors at Savannah River, S. C., which will continue to operate.) Strong objections to the proposed shutdowns were raised by Senators Magnuson and Jackson and Representative May and by local officials who were concerned about the impact closing both reactors would have on the economy of the Hanford area.

Initially the Atomic Energy Commission suggested keeping one of the two reactors in operation in order to lessen the effect on the community and to produce additional quantities of plutonium for peaceful and contingent military purposes. However, Chairman Seaborg now agrees that both reactors can be shut down since the Commission is not able to find the funds within its budget allocations. In addition, Deputy Secretary Packard has informed me that IOD has no objection to the proposed closing, since the five remaining reactors are quite capable of meeting any foreseeable military needs (including contingencies). (I understand Senator Jackson would still urge continuance to meet unforeseen contingent military needs.)

AEC, it might be noted, has substantially expanded other elements of its program at Hanford in order to ease the impact of reactor shutdown. Moreover, AEC has actively encouraged private industry to come into the area for precisely the same reason. There will, nevertheless, still be an impact on the local community. AEC employment will decline about 4% as a result of closing the second reactor.

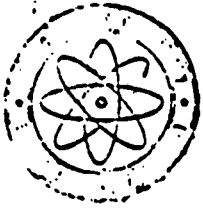
In view of the severe budget stringency and AEC's continuing ability to produce sufficient plutonium and reactor products for all civilian and IOD needs, I recommend that we reaffirm the decision to close down both reactors. Your approval is needed in order to expedite shutdown. Significant delays in closing down both reactors will reduce the dollar savings anticipated for FY 1970.

Before any public announcement is made, Bryce Harlow or Glenn Seaborg will wish to advise Senators Magnuson and Jackson, and Representative May.

(Signed) Robert P. Mayo  
 Robert P. Mayo  
 Director

Approved \_\_\_\_\_

Disapproved \_\_\_\_\_



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

April 8, 1969

Approved \_\_\_\_\_

EJB

Date \_\_\_\_\_

REC. BY DOE  
NOV 86

E. J. Bloch, Acting General Manager

ACTION SUMMARY OF MEETING 2369, TUESDAY, APRIL 8, 1969, 10:10 A.M., ROOM A-410,  
GERMANTOWN, MARYLAND

SECY:RBM

Commission Business

1. Statement of Proposed Policy Regarding the Future Means of Providing Uranium Enrichment Services to the Nuclear Power Industry

To be revised and resubmitted for Commission review Wednesday, April 9, 1969. (AGMP&P)

The Commission will discuss with the consultants on this matter at the appropriate time. (AGMP&P-SECY)

2. AEC 610/136 - U.S. Policy Concerning Possible Forms of Cooperation with Foreign Entities in Isotope Enrichment Activities (See also AEC 610/163 - U.S. Participation in Foreign Enrichment)

Discussed.

A talking paper for Commission review is requested for use in discussions with the White House and the Department of State. (AGMIA)

3. AEC 894/27 - Foreign Distribution of Evaluated Nuclear Data

Approved. (AGMIA)

4. Cost Benefit Analysis of the U.S. Breeder Reactor Program -WASH 1126 (See Mr. Shaw's March 20 Memorandum)

Approved for release after notification of the BOB. (RDT)

Original signed  
W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola



I received a letter (copy attached) from Gene Schubert of the General Electric Company in which he referred to our meeting with him and his group on March 27 and reiterated their hope that the AEC would include funds for the LMFBR prototype in the FY 1971 budget.

I sent my biweekly status report on significant developments in the atomic energy program to Dr. DuBridge today (copy attached).

I had a somewhat stormy session with Commissioner Ramey who feels that Commissioner Johnson and I have been a little devious in our attempts to assess the safety of the liquid metal cooled fast breeder reactor. I tried to convince him that my main objective is to satisfy myself that no serious nuclear explosion could result as part of any mishap. He also expressed deep concern that the study being undertaken by the McCracken-Mayo-DuBridge committee on the future of the AEC's gaseous diffusion plants might be the prelude to a giving away of these plants and could lead to a situation reminiscent of the Dixon-Yates scandal in the Eisenhower Administration. I tried to assure him that I thought the Executive Branch's interest in this important matter is legitimate and the analogy to Dixon-Yates is erroneous. I said that I would try to arrange for a meeting of the Commission with the McCracken-Mayo-DuBridge committee.

At 4 p.m. Ed Bloch, George Quinn, John Abbadessa and I went to Room 415 of the Executive Office Building for the purpose of briefing the McCracken-Mayo-DuBridge committee on the uranium enrichment program. Mayo was not able to be present; those present were: Dr. DuBridge, Paul McCracken and Thomas G. Moore (CEA), Jack W. Carlson, Fred Schuldt and Donald Crabill (BOB). Quinn gave them essentially the same briefing that he had given Ellsworth, Whitehead and Hofgren on March 20. It was apparent from the comments of those present that they are seriously considering the advisability of the immediate sale of the gaseous diffusion plants to private industry. We tried to explain to them some of the problems involved in this course of action. I described the need for an Executive Branch decision on the degree of cooperation that we should have with European countries and Japan on any program they might have for building gaseous diffusion plants, having in mind that this might reduce their incentive to build gas centrifuges and hence might help reduce the danger of the proliferation of nuclear weapons. We would, of course, insist that the Non-Proliferation Treaty be in effect before we would undertake any such cooperation and would require the involved countries to be signatories of the NPT.

After this meeting I met with McCracken and DuBridge in McCracken's office in order to emphasize to them the importance of bringing members of the AEC into the discussions of the McCracken-Mayo-DuBridge committee in the course of their consideration of their assignment to come up with an Executive Branch position of the future of the AEC uranium enrichment plants. I warned them that there is considerable opposition in Congress to the immediate sale of these plants to private industry.

Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north on the White Horse Trail and then along Cross Trails 3 and 4 past the Police Headquarters and returning to our starting point.

Eric went on a bicycle trip to Great Falls with his friends, Scott Luria, Harvey Washington and Benny Lagueruela. They were joined at Great Falls by

GENERAL  ELECTRIC  
COMPANY  
175 CURTNER AVENUE  
SAN JOSE, CALIFORNIA 95128

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NOV 86

A. EUGENE SCHUBERT  
VICE PRESIDENT  
NUCLEAR ENERGY DIVISION

April 4, 1969

Dr. Glenn T. Seaborg, Chairman  
United States Atomic Energy Commission  
Washington D. C. 20545

Dear Dr. Seaborg.

This is to thank you and your fellow Commissioners, and the members of the Atomic Energy Commission staff in attendance, for the opportunity for Dr. Cohen and me and our associates to review with you on March 27 our views on the program for the development of liquid metal fast breeders.

In retrospect, it occurs to me that we may not have been as clear as we would like concerning our outlook on a good schedule for a demonstration breeder plant. As I noted in my letter to you of February 26, our ESADA arrangements presently contemplate that if General Electric feels it prudent, in light of the state of the technology, we may by September 30, 1969 submit to ESADA an offer to supply a 300 MWe sodium-cooled fast breeder nuclear power plant. As I indicated to you in our discussion on the 27th, we now believe that schedule will slip somewhat. The extent of the slippage will be in great measure dependent on the resolution of problems associated with an appropriate site for the plant and with the development of data in the SEFOR research program.

Our current thinking is that the slippage could be in the order of some six months. This would mean that the remainder of the ESADA schedule would slip some also.

However, as we now see it, even with this delay, and assuming AEC, ESADA, and General Electric agreement, the ESADA arrangements would contemplate commitment to construct this breeder demonstration plant in the Government's Fiscal Year 1971. It was in this frame of reference that Dr. Cohen noted the necessity, in view of the state of the art today, of proceeding without delay with the research and development programs, specially in the safety area, which will have to be well advanced when a construction permit is sought for the plant.

Dr. Glenn T. Seaborg

- 2 -

April 4, 1969

Once again, thank you very much for the opportunity to have this discussion.

Sincerely,



A. E. Schubert

AES:mmm

cc: H. W. Gouldthorpe  
K. P. Cohen

April 8, 1969

Honorable Lee A. DuBridge  
Science Adviser to the  
President  
The White House

Dear Lee:

Enclosed is the biweekly status report  
on significant developments in the atomic  
energy program for April 8, 1969.

Cordially,

Signed Glenn T. Seaborg

Glenn T. Seaborg

Enclosure

Identical letter prepared to:

Honorable Robert F. Ellsworth  
Assistant to the President

bcc: Cecil King

JLB/jel

AEC BIWEEKLY STATUS REPORT FOR APRIL 8, 1969

1. The Senate Committee on Appropriations, Subcommittee on Public Works, has scheduled hearings on AEC's Fiscal Year 1970 appropriations for April 24, 25, and 28, 1969. The House Appropriations Committee, Subcommittee on Public Works, has also scheduled its hearings on AEC's appropriations for May 12, 13, and 14, 1969. The Joint Committee on Atomic Energy has tentatively scheduled April 17 as the beginning date for AEC authorization hearings.
2. AEC has accepted an invitation to testify on cost sharing and payment of indirect expenses in connection with research contracts and grants before the Senate Government Operations Committee, Subcommittee on Government Research, on April 23, 1969.
3. AEC testified in support of a bill to establish a Commission on Government Procurement (H.R. 474) before the Military Operations Subcommittee of the House Committee on Government Operations.
4. Governors of eight western states designated 56 representatives to attend the technical briefings on underground nuclear test safety that were held at AEC's Nevada site on April 1. Almost all the representatives were state officials. Included were scientists, educators, and administrators.
5. AEC's Atoms-in-Action Demonstration Center in Manila closed on March 16, after a four-week exhibit. Total general public attendance was 82,000 and 5,600 high school students attended a three-hour lecture demonstration.
6. A high-level Japanese team will visit AEC on April 11 to discuss the U.S. approach to comprehensive and systematic research and development. The team will include Noboru Shinohara, one of the full-time members of the Japanese Council for Science and Technology. They will then visit our Oak Ridge atomic energy installation on April 14 to discuss the same subject.
7. An AEC mobile radioisotope laboratory will begin a two-week visit to the Federal City College in Washington, D.C., on April 21. This visit will mark the beginning

of the second decade of operation of this program, which consists of an intensive two-week course, including lectures and laboratory experiments on the principles and applications of radioactivity in teaching and research. Plans are being made to invite local officials to visit the laboratory and to observe its use as an effective teaching tool in small colleges and universities which are not well equipped with scientific facilities.

8. A cooperative program for strengthening predominantly Negro engineering schools is being started between six Negro schools, seven predominantly white southern state universities, and AEC's installation at Oak Ridge, Tennessee. Faculty from the Negro schools will work at Oak Ridge, while people from Oak Ridge or other participating institutions serve at the Negro schools.
9. During Fiscal Year 1969 AEC has awarded \$500,000 in matching-fund grants to 63 educational institutions for purchases of laboratory equipment to be used for research and training in the nuclear sciences.
10. In 1968 AEC purchased \$117 million worth of  $U_3O_8$  in uranium concentrate (14,675,000 pounds) from U.S. ore processing mills. The mills also sold commercially more than 10 million pounds for use as fuel in nuclear power plants.
11. The Export-Import Bank has contracted to loan a Japanese electric utility \$69 million toward the cost of a nuclear generating plant.
12. West Germany's plans for increasing its electrical generating capacity include 19 additional nuclear plants by 1975.
13. Employment of Negroes by private contractors at AEC facilities increased during 1968 from 3.3 to 4.2 percent of the total work force (currently 105,000 workers). The greatest increase occurred in clerical and production jobs.
14. The first sea trials of the 40th U.S. nuclear attack submarine and our 81st nuclear-powered submarine in operation, the USS Bergall, were completed on March 24.

15. As part of the study to evaluate the potential of using underground nuclear explosions for water management purposes in Arizona, AEC, the Bureau of Reclamation, and the State of Arizona will begin in April a field investigation comparing the cost and safety of using nuclear explosions versus conventional earth-moving techniques for constructing a dam near Winslow, Arizona.

their friend Joe Canary who then rode his bike back to our home in Washington with them; Joe spent the night in our home.

I received a call from Theos Thompson today. He said he has been asked to participate in a rebuttal program on "The Careless Atom" and wondered what I thought about it. I said that under the circumstances of his impending commissionership it might be more prudent not to undertake this assignment at this time.

I wrote to Peter, David, and Lynne and Bill, sending them copies of Pace, since it has an article about me.

Wednesday, April 9, 1969 - Bethesda and D.C. Offices

At the Bethesda Office I presided at 9:35 a.m. over Regulatory Information Meeting 338 (notes attached) and at 9:55 a.m. over Regulatory Meeting 274 (action summary attached).

Commissioner Tape, Julie Rubin and Cathy Maus accompanied me back to the H Street Office and on the way we drove by the Tidal Basin area to see the cherry blossoms which are in full bloom.

I had lunch at the Madison Sandwich Shop with Bill Perkins and Stan Schneider.

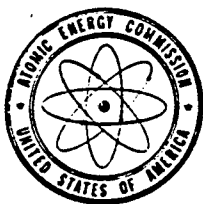
I received a letter (copy attached) from Budget Director Mayo providing BOB guidance for our FY 1971 planning and budgeting cycle.

Al Labowitz forwarded to me a letter (copy attached) he received from Admiral Lemos of the DOD enclosing some recent comments made by the Soviet Military Attache on the subject of the Safeguard decision and SALT.

At 4 p.m. I presided over Information Meeting 894 (notes attached). I was called out of the meeting to take a call from Bob Mayo who said he had been going over things with the President again and brought to his attention that closing the two reactors at Hanford could pose a political problem for him with Senator Jackson as long as there is a decision against the prototype on the SSI and other offices are moving from Seattle to San Francisco. The President said he would have to do something for Jackson and asked Mayo to get together with me to perhaps close down a reactor at Savannah River in place of one of the two at Hanford. Mayo pointed out to the President that this could be a more serious problem, not only because of Thurmond and Russell but because the reactors at Savannah are more versatile and produce other products than plutonium. The President then said to add one reactor at Hanford and to try to see what I could do for them. Mayo said he indicated to the President that I had played ball splendidly.

I asked Mayo if he would go for dropping more uranium purchase contracts. I said we have the results now and think we might be able to find something, but not the whole amount corresponding to the cost of operating a Hanford K reactor. He said that would be all right if it is legitimate. I said that it would be, that I would get Abbadessa working on it right away so he could contact Fred Schuldt on the results. He asked me to work with Bryce Harlow on the publicity for the restoration of one Hanford reactor. The President wants to be sure that this is handled in such a manner that Senator Jackson will get the credit for it.





UNITED STATES  
 ATOMIC ENERGY COMMISSION  
 WASHINGTON, D.C. 20545

April 9, 1969

REGULATORY INFORMATION MEETING 338

9:35 a.m., Wednesday, April 9, 1969, Room P-118, Bethesda

1. U. S. Navy License (See Mr. Price's April 7 Memorandum)

Approved. (ADRA)

2. Mr. Price's Oral Report on Jersey Central Power and Light Company (Oyster Creek 1), Docket No. 50-219

The Commission concurred in the proposal that the Division of Reactor Licensing issue a license authorizing a five megawatt power level. (DRL)

3. Strike at Big Rock Point

Noted.

4. Status of General Electric Plants

The Commission noted discussions would be held on the technical issues in the Bell Station, Hatch, and Brunswick Plants. Bell Station and Hatch are on the ACRS agenda, and Brunswick will be represented by an official observer.

W. B. McCool  
 Secretary

9:55 a.m.

PRESENT:

COMMISSIONERS:

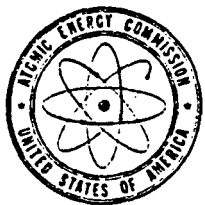
Chairman Seaborg  
 Commissioner Ramey  
 Commissioner Tape  
 Commissioner Johnson  
 Commissioner Costagliola

STAFF:

Mr. Price  
 Mr. Beck  
 Mr. Mann  
 Mr. Schur  
 Mr. Wells  
 Mr. Rubin  
 Mr. Ryan  
 Mr. Helfrich  
 Mr. Yore  
 Mr. McCool

DISTRIBUTION:

Commissioners  
 Dir/Regulation  
 General Manager  
 General Counsel  
 Secretary



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

April 9, 1969

Approved \_\_\_\_\_

HLP

Date \_\_\_\_\_

H. L. Price, Director of Regulation

ACTION SUMMARY OF REGULATORY MEETING 274, WEDNESDAY, APRIL 9, 1969, 9:55 A.M.,  
ROOM P-118, BETHESDA, MARYLAND

SECY:MJD

Commission Business

1. Briefing on Reactor Effluents

Commissioner Ramey suggested an up-dating of the effluent impact on the environment from the presently estimated number of reactors that may be in operation by the year 2000.

Commissioner Johnson requested an analysis of AEC operations at Savannah River, Idaho and Hanford as they affect the ecology of the environment in relation to anticipated changes in Regulatory effluent standards.

(ADRR)

2. AEC-R 30/91 - Amendments to 10 CFR Parts 30 and 32 - Exemption of Byproduct Material in Gas and Aerosol Detectors

✓ Approved. (RPS)

3. AEC-R 30/92 - Amendments to 10 CFR Parts 30, 31 & 32 - Exemption of Electron Tubes Containing Byproduct Material

✓ Approved. (RPS)

4. AEC-R 4/61 - Proposed Amendments to 10 CFR Part 2 - Protection of Information Received from Applicants and Licensees Regarding Safeguards and Physical Security Measures

Approved, as revised.

✓ The Commission requested:

- (a) deletion of the proposed public announcement;
- (b) a status report on the program in six months.

(NMS)

H. L. Price  
Action Summary of  
Regulatory Mtg. 274

-2-

April 9, 1969

5. AEC-R 2/73 - Amendment of 10 CFR Part 50: Licensing of Production and Utilization Facilities

Approved. (DRS)

6. AEC R 4/60 - Proposed Amendments to 10 CFR Part 2 - Elimination of Docketing and Notice Requirements of Part 2 for Certain Waste Disposal Licenses

Approved. (DML)

7. AEC-R 18/44 - Petition to Amend 10 CFR Part 40 to Exempt from Regulatory Controls Cufflinks Containing Depleted Uranium

Approved. (RPS)

8. AEC-R 101/13 - Amendment of 10 CFR Part 150 to Redefine the Basis of Continued Commission Authority in Agreement States Over Transfer of Products Containing Agreement Materials

Approved. (RPS)

Original signed  
by W. B. McCool

W. B. McCool  
Secretary

cc:  
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

EXECUTIVE OFFICE OF THE PRESIDENT

BUREAU OF THE BUDGET

WASHINGTON, D.C. 20503

UNCL. BY DOE  
NOV 86

APR 7 1971

Honorable Glenn T. Seaborg  
Chairman, U.S. Atomic Energy  
Commission  
Washington, D. C. 20545

Dear Mr. Chairman:

The purpose of this letter is to provide Budget Bureau guidance for the FY 1971 planning and budgeting cycle. It is my intention to make the process responsive to both our needs during this important first year of the new Administration by emphasizing analysis of major program issues and priority-setting for the FY 1971 budget and subsequent year budgets. While our Bulletin No. 68-9 will continue to be used, improvements to the planning and budgeting process will be developed this year for implementation in the FY 1972 cycle.

As you know, the process begins with identification of major program issues and is followed by the careful analysis of each issue, including development of realistic alternatives and estimates of their budgetary and social implications. The first step has already begun. Both your staff and mine have been developing descriptive material for several proposed policy studies. This letter is intended to formally identify these issues.

We have limited the number of major policy issues to avoid dilution of your agency's analytical resources. The principal program issue which we see at the present time involves the future of AEC's uranium enrichment complex, with specific reference to the question of whether steps should be taken soon to transfer the uranium enrichment function to industry through sell-off of all or most of the existing AEC complex. There appears to be nothing intrinsically governmental about the function of enriching fuels for nuclear powerplants, assuming appropriate controls to protect the national security and the public safety. On the other hand, it would be important that the Government should secure the maximum feasible financial return from the sale of these assets. This issue is described and discussed further in Attachment A.

This subject is not a new one, and we are aware of the attention which AEC and certain industry groups have already given to it. Because of the importance of the subject, and in order better to prepare ourselves for later review of your study, we plan to make a concurrent exploration of

the subject. In view of what we understand to be AEC's commitment to the Joint Committee on Atomic Energy to testify on this subject by June 1, we will need your study, at least in draft form, by May 9.

Two other issues are described in Attachments B and C. They involve the future of the Hanford NPP reactor and the HFBR demonstration plant program. We need the draft results of these studies by June 1 so that we can take the results into account during our preview of the FY 1971 budget, which we plan to conduct in June. The completion of the writeup and final report of the analysis may be later. For my part and to offer assistance, I have assigned a member of my staff to follow each issue described in the attachments. We expect to send you shortly a statement of an additional issue involving the possibility of greater foreign participation in certain of AEC's non-military programs, notably the high energy physics program.

Summarized briefly in Attachment D, simply as a matter of record, is a list of the unfinished business remaining from studies previously initiated.

Study results should later be summarized in the Program Memoranda, which should set forth the statements of program issues, the comparisons of the alternatives, and a final summary of the analytic material. The final Program Memoranda should discuss other issues besides the issues identified in this letter if they require decision in the current budget cycle.

Some issues may require cooperative analysis with other agencies; we stand ready to assist you in these cooperative efforts. During the year we may have other major program issues which we can discuss when they arise. Also, the Budget Bureau will be contacting your staff concerning smaller issues and for additional information.

For analytical purposes, we request that you use a 10 percent discount rate with tests for sensitivity at 7.5 and 12.5 percent, unless the Federal expenditure has a similar counterpart in the private economy, in which case the before-tax rate of return in the comparable private sector should be used. Other assumptions are being developed and will be given to your staff when available; additional ones may also be used.

In response to your letter to Mr. Zwick of December 18, 1968, regarding further analytical studies in high-energy physics previously requested by us, I am willing to withdraw the request for specific further studies in view of the considerations expressed in your letter. However, I am sure that we both recognize that this subject is a matter which requires continuing attention, and we may make independent studies. Moreover, based upon our review of your SAS 68-A, I concur in the conclusion expressed in Mr. Zwick's letter of January 16, 1969, with respect to terminating operation of the Princeton-Tenn accelerator.

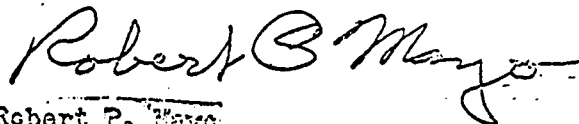
In an effort to provide a summary of our knowledge about Federal programs and their impact on our society, we will develop a suggested format for reviewing such information by April 15 so that it can be included in your agency's budget and planning sessions and your submissions to the Budget Bureau.

Also, we request that you evaluate the adequacy of your planning and analytic staffs in your immediate office and major subordinate units in time to include the results in your June 1 submission to the Budget Bureau.

I should like to take this opportunity to thank you for the several studies which you prepared last year for my predecessor, in connection with preparation of the FY 1970 budget. They served a very useful purpose.

The Budget Bureau will be ready to provide informal staff assistance should you find it useful during the planning and budgeting process.

Sincerely,



Robert P. Mayo  
Director

Enclosures

Attachment A

The Future of AEC's Uranium Enrichment Cascades

Issue: Should steps be taken to sell off one or more of AEC's uranium enrichment cascades to industry? If not, what operating arrangements should be followed over the next decade?

Background: The Bureau of the Budget asked AEC to do a study (SAS 67-1) on this general subject on February 23, 1967. In response, AEC on August 21, 1968, transmitted to the Director of BOB a preliminary staff report on this subject and indicated that BOB should be kept advised of further results as information became available. On March 14, 1969, AEC transmitted to the Director of BOB and simultaneously to some 150 industrial addressees a 30-page AEC staff study entitled "Future Ownership and Management of Uranium Enrichment Facilities in the United States." AEC invited comments from the industrial addressees by May 1, 1969. The Joint Committee on Atomic Energy last fall asked the GAO and the Department of Justice to submit reports on the subject by about July 1, 1969, and indicated in a general way an expectation of holding hearings on the subject this year.

Questions relevant to the analysis

1. What principal alternatives exist for future operation of the cascades, whether by Government or by industry? What are the pros and cons of each?
2. What Executive Branch position is recommended by AEC? What are the considerations, pro and con, which lead AEC to this position?
3. What would be the Government cash flows--including taxes--and recovery of previous Government investment under the assumptions that 0, 1, 2, or 3 of the cascades are sold to industry? What would be the industrial cash flows under these circumstances? The answer to this question should deal explicitly with an agreed range of uncertainty and agreed definitions of "cash flow," based upon AEC-BOB staff discussions.
4. Assuming that a decision were taken to sell one or more cascades at the earliest practicable time, what disposition procedure should be followed? What upset price, based upon the plants' future earning potential, should be set? What payment procedures should be established so that the selling price in any event equals or exceeds the Government's depreciated book value?
5. What are the possibilities for and economic implications of splitting the Paducah complex and selling it as two cascades? What are the possibilities for, and the balance of payments and national security implications of, foreign participation in ownership?

6. What policy should be pursued with respect to sell-off of toll enrichment contracts, natural uranium stocks, pre-production stocks, higher enrichment stocks, and tails? If a decision is taken to sell these inventories, what cash flows and disposition procedures would or should result?

7. What Government intervention, if any, should be undertaken to protect customers against the emergence of anti-competitive practices in each case?

8. What would be the implications of the various cases for the present \$25 charge for separative work and for the AEC-announced ceiling charge of \$30 (escalated)?



Transfer of the Hanford NER

Issue: When and how should the Hanford NER dual purpose reactor be transferred to the Washington Public Power Supply System (WPPSS)?

Background: It has been generally recognized from the outset that the Hanford NER would sooner or later be transferred to WPPSS. At the time that AEC collaboration with WPPSS was authorized, a seven-year period of dual purpose operation was used to illustrate a possible or probable pattern of activity and relationships. That period actually began in November 1966. At AEC's urging, WPPSS is now proceeding with an R&D program to enhance its ability to take over operation of the reactor.

Questions relevant to the analysis

1. What steps should be taken within the Executive Branch during CY 1969 to assure that the Hanford NER reactor could be transferred to the Washington Public Power Supply System (WPPSS) in 1971 or 1972, or in any event no later than November 1973?
2. What obstacles, if any (from the standpoint of AEC's program) would stand in the way of reaching the objective cited above?
3. What is the most appropriate timing for a firm decision on this matter? Is there any obstacle to advising WPPSS within the next several months of a firm decision to proceed?
4. What involvement by the Bonneville Power Administration is appropriate and necessary to achievement of the objective?

INER Demonstration Plant Program

Issue: How can the present value of the Government's contribution to the INER cooperative demonstration plant program be held to a minimum consistent with the achievement of overall INER program objectives?

Background: The potential magnitude of the Government's contribution to the INER cooperative demonstration plant program under current AEC projections (up to \$240 million) is of great concern and warrants a careful search into alternative ways of achieving overall program objectives at significantly less cost to the Government. Given the development of a substantial nuclear industry and the extensive commitment of the utility industry to nuclear power, the private sector now appears to possess not only a willingness but also a great deal of technical capability, economic incentive, and financial resources to support the construction of INER demonstration plants. Thus, under present circumstances, it would appear that the commercial users of the INER technology could reasonably be expected to assume a greater share of the risk in this venture, thereby reducing the amount of Government subsidy required. However, it is recognized that some AEC financial contribution to the first demonstration plant will be required in order to achieve desired quality assurance, relevance to AEC's RD program, and other overall program objectives.

In addition to cost-sharing questions, the possible request for authorization in FY 1971 of the definitive cooperative arrangement stage for an INER demonstration plant raises a number of other questions concerning the timing, number, and size of such plants.

Questions relevant to the analysis

1. What are the overall INER program objectives which will directly affect decisions on the timing, number, and size of INER demonstration plants? How can the incremental costs and benefits of alternatively sited demonstration plant programs be evaluated in terms of their economy and efficiency in achieving the overall objectives of the INER program?

2. Considering the economic incentive of the utilities to develop a profitable market for plutonium, what strategy should the Government employ to encourage the utilities to make a greater financial investment in the demonstration plant program? How can the utilities, together with the reactor manufacturers, be brought into a real competition for the first plant, so that they will increase their dollar investment?

3. What are the considerations, pro and con, on whether the Government should plan to contribute to the construction of more than one demonstration plant? Could the full cost of constructing any subsequent plants be paid by reactor vendor and utility teams? Could the amount of any such

contribution be at least substantially less than the Government's share in the first plant? Should the Government aim for a "maximum of technical convergence" in the demonstration plants to achieve overall cost savings?

4. If a decision were made for the Government to make a financial contribution to only one LMFBF demonstration plant, what alternative means would there be to so structure the project that two or three qualified reactor vendors and utilities could contribute to and participate in its construction and operation?

5. Assuming a possible Government contribution to a second or even a third demonstration plant, what would be the effect on the program if these plants were initiated at greater than two year intervals?

6. Can the size of the initial LMFBF demonstration plant be held to 300 MWe or less to decrease total capital cost required?

Attachment D

Unfinished Business from Prior Years

1. Safeguards program (SAS 68-2) - Development of an AEC position regarding application to user charges to offset all or part of the costs of this program.
2. Benefit/cost study on the INFER program - Refinement of the study conducted by AEC in October 1968.
3. Oralloy utilization (SAS 68-2)
4. Food pasteurization program (SAS 68-4)
5. Power reactor safety program (SAS 68-B)

4/9/69

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE  
WASHINGTON, D. C. 20301

4 APR 1969

Refer to: 1-21625/69

INTERNATIONAL SECURITY AFFAIRS

Mr. Allan M. Labowitz  
Special Assistant for Disarmament  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. Labowitz:

I am enclosing herewith a copy of some recent comments made by the Soviet Military Attache on the subject of the Safeguard decision and SALT. They may be of interest to members of the NSSM-28 Working Group.

A handwritten signature in cursive script, reading "W. E. Lemos", is positioned above the typed name.

W. E. Lemos  
Rear Admiral, USN  
Director, Policy Planning &  
Arms Control Staff

Enclosure  
a/s

4/9/69

NOT DECLASSIFIABLE

OFFICE DIARY  
GLENN T. SEABORG  
Chr USAEC, 1951-72  
FOLDER-PAGE/00116-100118

DOCUMENT TITLE Memo of conversation 3-25-69

from Col. Fitzgerald, OASD, concerning

Soviet military attache's comments on ABM  
and SALT (attachment to 0910899)

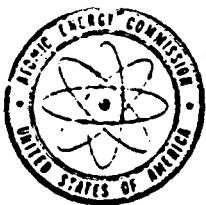
0910900

This document has been determined to be NOT DECLASSIFIABLE and has been removed from this folder.

C. Seeger  
Name

11-30-87  
Date

Reference letter OASD, Bodding to DOE, OC  
Hubert dated 9-1-87



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 2  
April 9, 1969

INFORMATION MEETING 894

UNCL. BY DOE  
NOV 86

4:10 p.m., Wednesday, April 9, 1969, Room 1115, D. C. Office

1. AEC 116/66 - Official Announcement of Certain Event Yields Useful in Seismic Studies (See also AEC 116/67)

Approved with a change. (C-AGMMA)

2. Agenda for the Week of April 14, 1969

Approved. (SECY)

3. Meeting with American Public Power Association, April 15, 10:30 a.m. (See Mr. Hobart's April 2 Letter)

Noted. (SECY)

4. Chairman's Report on April 8, 1969, Meeting with White House Study Group

5. General Manager's April 8 Memorandum re AEC Policy Regarding Participation by Industry in Uranium Enriching Activities

Revision and reconsideration are requested. (AGMP&P-SECY)

6. Chairman's Discussions with Mr. Mayo, Director, BOB, and Mr. Abbadessa re FY 1970 Budget Estimates

Appropriate staff action is requested. (OC)

7. AEC 1219/23 - DUN Alternatives to Sequential Operation of the K Reactor  
Noted.
8. Chairman's May 5 Speech at Argonne  
The Chairman requested the Commissioners' comments. (Rubin)
9. Commissioners' Luncheon Meeting with Mr. Ralph Nader  
To be scheduled. (Rubin-Ryan)
10. AEC 688/64 - Draft Letter to Managing Editor of Natural History on "Myth of the Peaceful Atom".  
Approved. (Heinrich)
11. AEC 29/147 - Proposed Letter Commenting on 107th GAC Meeting  
Approved with an addition. (Rubin)
12. Naming of the National Accelerator Laboratory  
Commissioner Tape will call Dr. DuBridge. (Rosen)
13. AEC 1230/18 - ACNMS Membership Changes  
Approved. (SMM)
14. AEC 751/419 - Euratom Safeguards for Fuel Fabrication Plants  
Approved with a request. (AGMIA-SMM)
15. AEC 901/429 - Proposed Visits to AEC CTR Laboratories by USSR National  
Approved. (AGMIA)
16. AEC 811/232 - Future of Australian Plowshare Study  
Approved. (PNE)
17. AEC 811/233 - Proposed Letter to Henry Kissinger Regarding Project Rulison  
Approved. (PNE)



18. AEC 1304 - Establishment of Ad Hoc PSAC/GAC Panel on Nuclear and Elementary Particle Physics

Approved. The Commissioners are to be kept informed. (R)

19. Puerto Rico Energy Center Study Contract

Staff may proceed. (DC)

20. Pending Contractual Matters Report No. 303

Noted. (PAR)

21. Commissioner Tape's Report on US-USSR Discussions in Vienna Next Week

22. Commissioner Tape's Report on Today's Meeting of the FRC Review Group

AEC staff designations are due on Monday. (AGMO)

23. Commissioner Tape's Letter to Chairman Chet Holifield, JCAE, re Amendment to the Agreement for Cooperation with the UK on the Uses of Atomic Energy for Mutual Defense Purposes

Approved. (Rosen)

W. B. McCool  
Secretary

6:30 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Bloch  
Mr. Parks  
Mr. Brown  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Marshall\*  
Mr. Tesche\*  
Mr. Quinn\*  
Mr. English\*  
Mr. Crowson\*  
Mr. Kratzer\*  
Mr. Strauser\*  
Mr. Kelly\*  
Mr. Miller\*  
Mr. Kolstad\*  
Mr. Wallenmeyer\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (e)

I returned to the Information Meeting and brought the conversation to the attention of those present. After the meeting I called Mayo back to report on the action we took regarding his request. I said that Abbadessa called Schuldt and told him we could find another \$4 million from uranium contract cancellations to offset the cost involved in restoring one of the Hanford K reactors. I said I also asked Abbadessa to identify one other problem with Schuldt. DuBridg is very unhappy that AEC cut out \$3.6 million for basic research in the physical sciences because NASA and DOD held the line. In view of the President's statement in support of basic research, DuBridg thought this might embarrass the President. Therefore, could we use the \$4 million from the uranium contract cancellations to restore the \$3.6 million for basic research? Mayo said he could not reopen that part of the budget now; he had authority to negotiate only the one item, i.e., the Hanford reactor. Any additional items would require the specific approval of the President, and he didn't feel he could approach the President on this one.

I called Maurice Goldhaber and George Beadle today to tell them a little about Nova University and ask them if they would be interested in some involvement with this school. They both agreed to talk to Warren Winstead (President of NU) and I told them that Winstead would get in touch with them.

Steve and Eric and their friend, Joe Canary, went to the Robert F. Kennedy Stadium to see the Washington Senators-New York Yankees baseball game. The Senators won, 6-4, which included a home run by Frank Howard. Joe Canary and his sister Brendan (a guest of Dianne's) spent the night in our home.

Thursday, April 10, 1969 - Chicago, Illinois

I signed a letter to California Representative Robert Leggett (copy attached) regarding AEC's views on a continued nuclear ship program. I received a letter from Ralph Davis, Puget Sound Power and Light Company (copy attached), emphasizing the importance of the Gas Cooled Fast Breeder Reactor.

Accompanied by Julius Rubin, I flew to Chicago on American Airlines Flight No. 415, leaving about 9 a.m. and arriving at 9:50 a.m. Jim Ramey, Paul McDaniel and John Erlewine were on the same flight. Ken Dunbar (Manager, Chicago Operations Office) met our plane and drove Erlewine, Rubin and me to the small DUSAF office in the Robert Taylor Shopping Center area at 5050 South State Street where DUSAF has a recruiting effort for Negroes. On the way Dunbar told me about the progress in the Training and Technology (TAT) program at Oak Ridge where 22 colored people, hired for work at the National Accelerator Laboratory (NAL), are trained in such areas as electronics, drafting, machine shop, etc. The program covers a training period of six to eight months and seems to be succeeding in both rehabilitating and training essentially all 22 participants.

At the DUSAF office we were briefed by McGlother Irvin and Marvin Childress on their Negro recruiting efforts. Besides finding people for the TAT program, they carry on an extensive program of attempting to qualify colored people, starting as apprentices, for membership in a number of unions. This is difficult due to varying degrees of resistance by union officials. They have succeeded, however, in placing about 15-20 colored people in unions despite some unfair testing procedures, etc. Mr. Robert Scott of DUSAF was present during our talks.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

APR 10 1969

Honorable Robert L. Leggett  
House of Representatives

Dear Mr. Leggett:

The Atomic Energy Commission is pleased to respond to your request for our views on a continued nuclear ship program.

As you know, in past years there has been a development program which attempted to apply to nuclear merchant ships the technology for building power reactors which we have been developing for other purposes. This effort, in cooperation with that of the Maritime Administration, has over the years led to the construction and operation of the Nuclear Ship Savannah. The results of that program have demonstrated the feasibility of propelling merchant ships with nuclear reactor power systems and have indicated some of the problems connected with operating such ships in the commercial marine environment.

In recent years, considerable thought has been given to the possibility of proceeding beyond that demonstration to the actual development of an economic nuclear merchant marine technology so that nuclear propulsion methods could be applied in a more widespread way on an economic basis to the U. S. Merchant Marine. The Commission considers that other departments of the Government might best consider questions as to when a vessel should be built, what type of vessel should be constructed, and under what commercial conditions nuclear power should be utilized. However, under the Atomic Energy Act of 1954, as amended, the Commission is responsible for research and development on promising reactor systems for maritime propulsion.

An effective way to proceed would be to combine two separate approaches into a program in which: (1) a land-based facility would provide test and development capability with which it would be possible to develop technology input for ships, and (2) a succession of operating vessels would be built under a parallel approach. This combined program was discussed in our Authorization Hearings for Fiscal 1967 before the Joint Committee on Atomic Energy and before the House Committee on Merchant Marine and Fisheries on the proposed Maritime Program for Fiscal 1968.

Any maritime plant would be a very small plant in comparison with the typical central station power plant. The 100,000-shaft horsepower plant which would be considered for fast merchant ships corresponds to about 75 MWe. The cost of building these plants would be much greater per unit of energy than in the size actually being built in the central station power industry. These general relationships represent the most prominent fact that has to be faced in considering the real prospect for developing nuclear powered merchant ships; however one looks at the systems and whatever order of technology one assumes nuclear power to have reached, we are talking about very small plants in comparison to those where economic nuclear electric power is showing real promise.

The trend toward much larger plant size and the accompanying lack of a clear prospect for a maritime development program have been a major factor in the very small effort in this field over the last few years. We have found in all our developments, and we have observed in the design and construction of plants not supported by the Government, that a much greater effort than was originally thought necessary has had to be exerted on the difficult tasks of design, testing, and quality assurance, to provide reactor systems which are reliably operable.

In summary, the Atomic Energy Commission would support a meaningful cooperative program between industry and Government in order to further the national interest of strengthening our nation's merchant marine. However, we feel that this could be accomplished with more assurance if there is clear recognition and identification of the requirements, including recent power cost trends.

Please let me know if I can be of any further assistance on this matter.

Cordially,

(Signed) Glenn T. Seaborg

Chairman

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BELLEVUE, WASHINGTON

OFFICE OF THE PRESIDENT

April 8, 1969

Dr. Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Dr. Seaborg:

We very much appreciated meeting with the Commission and members of the staff of the AEC on April 2 to discuss the Gas Cooled Fast Breeder Reactor on behalf of the utility group supporting the development of this concept. As we pointed out, a large segment of the utility industry believes that the GCFR has a high potential for meeting the objectives of a reliable, efficient and economic breeder reactor system and merits the strong support of Government as well as industry.

We recognize that there are many competing demands for Federal funds. However, the importance of the breeder program to the future of our economy should, in our opinion, warrant Government support of the GCFR as a parallel effort to the LMFBR. Such parallel effort would greatly increase the certainty that a breeder is developed that is economic and has operating and maintenance features important to the utility industry. We would again note that since the GCFR makes direct and substantial use of HTGR component developments and LMFBR fuel developments, it is possible to have an effective parallel effort at a moderate funding level.

It is urged that the Commission designate the GCFR as part of the national breeder program. Such a designation coupled with some increased funding on the part of government would provide the added momentum needed for the success of this program.

We would also like to emphasize as we did at the April 2 meeting, that we are not against the LMFBR program. In fact, we feel that this program is important to the country. Twenty of the 37 companies supporting the GCFR program are or have been in one or more of the utility groups supporting the LMFBR.

Dr. Glenn T. Seaborg

- 2 -

April 8, 1969

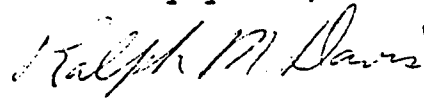
Nevertheless we believe that it is important to the national breeder program that there be competition between concepts as well as between hardware manufacturers. Vigorous competition between systems with high technological potential would seem to offer greater assurance of rapid progress.

We know that you will give serious consideration to the recommendations we made on April 2 with respect to the GCFR. As you will recall, these were:

- \* The GCFR should be funded as a separate line item in the budget, and a national program to develop the GCFR should be established.
- \* Consideration should be given to the GCFR as a candidate for one of the three breeder demonstration plants proposed by the AEC, with a decision to be made at a later date based on its technical merit.
- \* The base research and development program on the GCFR should be increased within the next few years to a level of about \$12 million per year.
- \* The AEC should consider participation in the program to convert the reactor facility at Lucens, Switzerland into a GCFR experiment.

Thank you for the courtesies extended us. We are ready to assist in any appropriate way in the further consideration of this matter.

Sincerely yours,



Ralph M. Davis, Chairman  
GCFR Advisory Committee

We then rode to the Palmer House where we were met at the door by Don Tobias, Resident Manager of the Palmer House, Bob Newlin of AEC Headquarters and Bill Downey of the Chicago Operations Office. We then went to the reception in the Pool Promenade where I met and talked to Illinois Governor Richard B. Ogilvie, former Governors Otto Kerner and Samuel Shapiro, Ray C. Dickerson (Director, Illinois Department of Business and Economic Development), Dr. Hudson T. Armerding (President of Wheaton College and Chairman of the Accelerator Site Acquisition Committee), Donald M. Graham (Chairman, Mayor's Committee for Economic and Cultural Development of Chicago and Chairman of the Board, Continental Illinois National Bank and Trust Company), James T. Ramey, John Erlewine, Congressmen Mel Price, John Erlenborn and Abner Mikva, Dr. Robert R. Wilson (Director, NAL), Norman Ramsey (President, URA), Ned Goldwasser (Associate Director, NAL). During the reception I was interviewed on the status of the 200 Bev Accelerator by Walter Jacobsen of WBBM-TV for later CBS local release.

We then went in to a luncheon attended by about 200 people, consisting of leading Chicago businessmen and city, state and county officials. I sat at the head table between Ogilvie and Wilson; others at the table were Dickerson, Kerner, Ramsey, Gene Graves (former director of the Illinois Department of Business and Economic Development), Ray Simon (City Counsel and representing Mayor Daly), Erlenborn, Price, Mikva, Shapiro, Armerding, Ramey, Graham and Dunbar. Dickerson presided over the luncheon in the Adams Ballroom. There were remarks by Graham, Simon, Wilson and Ramey.

Governor Ogilvie then presented me with the "A New Era for Illinois" plaque and symbolic title to the 6800 acres of land for the NAL as a gift from the State of Illinois. I responded, accepting the plaque and symbolic title to the land, with a combination of ad lib and prepared remarks. I was able to ad lib one bit of humor following Dickerson's slip of the tongue in introducing Governor Ogilvie as Dr. Ogilvie. I picked this up in my remarks by referring to the Governor as Dr. Governor Ogilvie and noting the ease by which he had received his doctor's degree compared with the one I worked for. I facetiously pointed out to Dickerson and Ogilvie, during the course of my remarks, that Bob Wilson was accepting Dickerson's offer to put the University (that Wilson requested in his remarks) on the 6800 acre site (which Dickerson alluded to in his remarks). I wasn't able to include the suggestion that the AEC would name the laboratory the "Enrico Fermi Laboratory" at the time of its dedication some years hence because we had not yet received a response to my letter to President Nixon requesting permission to do this.

Following my remarks Governor Ogilvie gave his address, "A New Era for Illinois."

The following reporters were present during the luncheon: Art Snyder (Chicago Daily News), Dick Lewis (Bulletin of Atomic Scientists), Jeanne Moore (Wheaton Journal), George Leposky (Chicago American), Don Bruckner (Los Angeles Times), Carol Simpson (WWBM), Don Jansen (New York Times), Bill Derus (Batavia Herald), Peter Vanderwicken (Time), Walter Jacobsen (WWBM) and a reporter from the London Times. The luncheon was filmed for the record by the Argonne public relations division.

Following the luncheon, Dunbar, Rubin and I proceeded to the airport. Although we allowed ourselves plenty of time, traffic was so congested we barely caught our plane which was United Airlines Flight No. 760, leaving Chicago about 4 p.m. and arriving at D.C. National Airport about 6:30 p.m.



After dinner I called Bryce Harlow at the White House from home to tell him that the President has decided to restore money to the FY 1970 budget for the operation of the K reactor and that he wanted Senator Jackson to get credit for this decision. Harlow and I agreed that I would call Senator Jackson to inform him of this decision.

I called Jackson in Washington, where he is visiting during the Easter recess and informed him of President Nixon's decision and told him he is free to announce it in any way he wishes. He was delighted and said he would announce it to the press tomorrow morning.

Friday, April 11, 1969 - Washington, Augusta, Georgia

Accompanied by Julie Rubin, I flew to Augusta, Georgia to participate in the presentation of AEC Citations to Lombard Squires and Bill Overbeck at Savannah River. We left National Airport on Delta Flight 747 at 8:15 a.m., changed to Delta Flight 747 in Atlanta at 10:45 a.m. and arrived in Augusta at 11:20 a.m. Frank Costagliola and W. B. McCool were on the same flights.

We were met at the airport by Nat Stetson (Manager) and Jim Hopkins of the Savannah River Operations Office and Bob McKinney of McCool's staff who had been making the detailed arrangements for the AEC Citation ceremony to be held later in the afternoon.

Stetson drove Rubin and me to the Savannah River plant where we joined Costagliola and had lunch with a group of my former Berkeley students, Robert Folger, Donald Orth and William O'Donnell, Clark Ice, E. R. Russell, Leon Meyer and Bill Jenkins.

After lunch we proceeded to a conference room in the Savannah River Laboratory where Costagliola, Rubin, Stetson and I were joined by Milton Wahl, Sam Lenher (Vice President, du Pont), Hood Worthington, Jesse Croach, Frank Kruesi, Gerard Dessauer, J. Monier, Julian Ellett, Bill Mackey and Jack Crandall for a briefing on the californium program.

Clark Ice made some introductory remarks, describing the Cf-252 program, the Cm-244 program (which has experienced some difficulties), a program of reactor computation, the weapons program (tritium) and the cooperation with local universities in Georgia and South Carolina.

W. C. Reinig described the Market Evaluation Program for Cf-252. He listed a number of potential applications and summarized the papers they have written covering these applications. He also listed a number of laboratories, hospitals, institutions, government departments and companies interested in acquiring Cf-252 for their use. Savannah River will need HFIR-produced Cf-252 to carry on their program in 1970; they are asking for 40 mg. Savannah River will be in pretty good shape for supply in CY 1971 because of their 1969-70 production campaign.

Paul L. Roggenkamp described the production options for satisfying the large range of requirements for Cf-252. He described combinations using power reactor americium and resonance reactors that can lead to production of Cf-252 at rates of Kgs per year in the early 1980's. One program could produce 50 gm. of 90% Pu-244 within about five years--also 50 mg. of Es-254.

Wahl, Mackey, Lenher, Stetson, Costagliola and I then toured a part of the Laboratory under the guidance of Lee Meyer (Assistant Director, Savannah River Laboratory). First we visited the Cf-252 facility which was described by A. Gary Evans--this can handle up to 100 mg. We then visited the Cm-244 encapsulation plant which was described by Earl C. Nelson. The capacity is about 300 gm. of Cm-244. We then saw the Cf-252 Source Preparation Facility which is under construction and will be finished in about a year. Next we were shown the Gas Centrifuge Development facility by Al S. Jennings. John T. Lowe (who became a father early this morning) showed us the High Pressure Ion Exchange Hot Laboratory facility.

We returned to the conference room for the AEC Citation ceremony. I greeted Lom and Elizabeth Squires, Bill and Daphne Overbeck, Norm Copeland, Buck Sherwood and South Carolina Congressman William J. Dorn. Lom introduced me to his brothers, Rathburn B., Richard, and Walter. The ceremony started at 3:30



AEC Citation Ceremony, Savannah River, Georgia; April 11, 1969.  
L to R: Commissioner Costagliola, William Overbeck, Mrs. Overbeck, Seaborg, Mrs. Squires, Lombard Squires.

p.m. with about 100 people present. Nat Stetson opened the ceremony by introducing me. I read a congratulatory telegram from Governor Robert E. McNair (South Carolina) and introduced Lom's relatives--his wife, three brothers and their wives, Mr. and Mrs. J. D. Weed (his daughter Sally and her husband) and their sons, Andrew and Harry. I also introduced Bill Overbeck's wife Daphne, as well as members of the staff and other distinguished guests. I spoke extemporaneously and with prepared remarks on Lom's career, read from Charles Wende's poem and then presented him with the AEC Citation and medallion. Lom responded briefly.

Commissioner Costagliola then made the presentation of the AEC Citation and medallion to Bill Overbeck who responded briefly.

After the ceremony I was interviewed by Wallace Hitchcock of the Columbia State newspapers.

I met Oswald F. Schuette of the University of South Carolina and head of the Savannah River plant Nuclear Education Committee.

I rode with Stetson, Costagliola and Rubin to the Commercial Hotel in Aiken where a reception was held. Those attending the reception were principally key staff people from the AEC Savannah River Office and the senior operations and laboratory staff of Du Pont at Savannah River. The Squires, the Overbecks, Frank Costagliola and I stood in the reception line and were greeted by about 100 people. John Wheeler was among those present.

After the reception Wahl, Jenkins, Rubin and I had dinner at T's drive-in and restaurant. We all spent the night at the Towers Motor Hotel.

Saturday, April 12, 1969 - Augusta, Georgia

Jenkins, Rubin and I had breakfast in the Towers Camelot restaurant. Then, joined by Wahl, we went to the Pinnacle Club on the 16th floor of the Georgia Railroad Bank & Trust Company building. Here we attended a reception hosted by Mr. and Mrs. Sherman Drawdy (Chairman of the Board, Georgia Railroad Bank & Trust Company) which culminated in a brunch. Among those present were former Governor of Georgia Carl Sanders and Mrs. (Betty) Sanders, Congressman and



Brunch reception, Augusta Georgia; April 12, 1969.  
L to R: Governor Ellington, Seaborg, Bill Jenkins.

Mrs. Robert G. Stephens (Georgia), Congressman and Mrs. John J. Flynt (6th District, Georgia), Governor Buford Ellington of Tennessee, Congressman and Mrs. W. J. Dorn (South Carolina), Mr. and Mrs. Sancken (he is Mayor of Augusta, she is a daughter of the Drawdy's), Mayor Sancken's parents, General Watson (Commanding General of the Soldiers' Home in Washington, D.C.), Mr. and Mrs. Monier (Manager of the Savannah River plant), Georgia State Senator Holley, Gerald Robins (President, Augusta College), General Tillsen (Commander of Fort Gordon), and Grover Maxwell (owner of Maxwell Furniture Company in Augusta).

Wahl, Jenkins, Rubin and I then went to the Augusta National Golf Club for the third round of the Masters Golf Tournament. Billy Casper led by one stroke over George Archer at the end of the third round.

We had dinner in the Towers Camelot restaurant. After dinner I studied my testimony for use at the JCAE Authorization Hearings to be held next Thursday, April 17.

Commissioner Tape left for Vienna today, where he will head a U.S. team which will confer with a Soviet team, headed by Y. K. Federov (USSR Academy of Sciences) on the technical aspects of the peaceful uses of nuclear explosives; these discussions are related to the implementation of Article V of the Non-Proliferation Treaty. Although the talks are not aimed at the political aspects, the AEC hopes that they will include some discussion of the interpretation of the "debris present outside the territories limits" clause of the Limited Test Ban Treaty. The other members of the U.S. team are: Jack Rosen (Assistant to Commissioner Tape), John S. Kelly (Director, Division of PNE), Roger E. Batzel (Associate Director, LRL, Livermore), Herbert Scoville, Jr. (Consultant, ACDA), Nelson F. Sievering, Jr. (State Department), and William D. Krimer, Interpreter (State Department). The other members of the USSR team are: I. D. Morokhov (State Committee on Atomic Energy), O. L. Kedrovskiy (State Committee on Atomic Energy), U.N. Israel (Applied Geophysical Institute), V. N. Rodionov (Institute of Earth Physics), O. A. Grinevskiy (Ministry of Foreign Affairs), E. C. Gudkov (State Committee on Atomic Energy), and U. C. Klukin, Interpreter (Ministry of Foreign Affairs).

Sunday, April 13, 1969 - Augusta, Georgia, Washington, D.C.

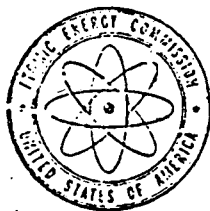
I had breakfast with Wahl, Jenkins and Rubin in the Towers Camelot restaurant. We then went out to the Augusta National Golf Club to watch the last round of the Masters Golf Tournament. George Archer won by one stroke in an exciting match that wasn't decided until the last hole.

Rubin and I flew back to Washington, leaving Augusta at 5:30 p.m. on Delta Flight 571 to Atlanta, leaving Atlanta at 7:15 p.m. on Eastern Flight 142, and arriving at Dulles Airport at 8:50 p.m.

Monday, April 14, 1969 - D.C., Minneapolis

I spent the morning in the D.C. office.

At 9:55 a.m. I presided over Information Meeting 895 (notes attached). We discussed further the wording of our tentative policy concerning the future of the AEC uranium enrichment plants.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 2  
April 14, 1969

INFORMATION MEETING 895

9:59 a.m., Monday, April 14, 1969, Chairman's Conference Room, D. C.

1. April 11 Letter from the JCAE re A. D. Little Study on Gaseous Diffusion Plants

Copies of the letter will be sent to Messrs. Mayo, McCracken, and DuBridgE at the White House, and the Chairman requested summary information for his use on Thursday, April 17, 1969. (AGMP&P)

2. April 14 Letter to Dr. Alvin Weinberg re Mrs. Weinberg's Death

*Dispatched*

3. April 11 Letter from Chairman Chet Holifield, JCAE, re Transfer of Research on Human Radium Patients to the Argonne "Center of Human Radiobiology"

4. AEC 544/99 - Interagency Uranium Mining Review Group

Approved. (AGMO)

5. AEC Policy Regarding Participation by Industry in Uranium Enriching Activities (See April 11 Draft)

Discussed and revised for further consideration on Friday, April 18, 1969. (AGMP&P-SECY)

6. AEC 1044/24 - Proposed Tours for Uncleared People Inside Gaseous Diffusion Plants

Discussed.

7. AEC 1283/47 - Proposals for Reduction in U<sub>3</sub>O<sub>8</sub> Deliveries Under Stretch-out Contracts  
Staff may proceed. (RM)
8. AEC 89/139 - Proposed One-Month LASL Assignment of Canadian National  
Approved. (AGMIA)
9. AEC 89/138 - Proposed LASL Assignment of Argentine National  
Approved. (AGMIA)
10. AEC 901/428 - Proposed Participation by Soviet National in SLAC International Conference  
Approved. (AGMIA)
11. AEC 809/132 - Proposed Export of Computers to Israel  
Staff will discuss with the Department of State the proposed query to the Israelis and report back. (AGMIA)
12. April 9 Memorandum from the General Manager re Proposed Exemption from Post-Employment Restrictions of Section 207 of the Conflict of Interest Statute  
Approved. (GC)
13. AEC 1037/56 - Proposed Press Releases Relating to US/USSR Bilateral Plowshare Talks  
Noted. (AGMIA)
14. AEC 1292/2 - Selection of Subcontractor for Puerto Rico Nuclear Energy Center Study  
Noted. (RDT)
15. AEC 1003/13 - Briefing by NASA Mission Planners  
Approved. (SNS-SECY)

16. AEC 783/120 - Proposed Letter to Director, BOB, re H.R. 3809 - Occupational Health and Safety Act of 1969

Approved. (GC) *Dispatched*

17. AEC 853/29 - Plutonium Sales for FY 1970

Deferred. (EAGM-SECY)

18. Mr. Bloch's Report on the 30-Day Deferral of Project Rulison

19. Mr. Price's April 11 Memorandum re AEC Comments on H.R. 5832, A Bill to Extend the Period of Time Required Between Publication and Effective Date of Federal Regulations

Approved. (ADRA-GC)

W. B. McCool  
Secretary

11:45 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Bloch  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Abbadessa\*  
Mr. Erlewine\*  
Mr. Marshall\*  
Mr. Riley\*  
Mr. Bengelsdorf\*  
Mr. Kratzer\*  
Mr. Faulkner\*  
Mr. Minsch\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

I received NSSM-41 (copy attached) from Henry A. Kissinger in which the President directs that a study be prepared on the issue of a treaty prohibiting the emplacement or fixing of nuclear weapons or other weapons of mass destruction on the seabeds.

Presidential Assistant Robert Ellsworth was named by President Nixon yesterday to be U.S. Ambassador to the North Atlantic Treaty Organization.

Justin Bloom and I flew to Minneapolis on Northwest Flight No. 347, leaving Washington at 1:40 p.m. and arriving at 2:40 p.m. Earl Ewald (Chairman of the Board, Northern States Power) met us at the airport and we rode with him to the Radisson Hotel. He wanted to take this opportunity to discuss the problems they are facing with some of the University of Minnesota faculty and the Minnesota Pollution Control Agency in regard to the plant that Northern States Power Company is building at Monticello, 40 miles up the river from Minneapolis. They are insisting on levels of radioactive effluent discharge that are unrealistically low. Ewald mentioned that he has talked to Hubert Humphrey about this problem and that Humphrey desires to discuss the matter with me after my arrival.

After Bloom and I checked into the Radisson Hotel I called Humphrey's office to leave a message that I was in town, but the call was not returned.

We attended the reception preceding the ACS Annual Award Dinner and General Meeting. There I was interviewed by Ron Way of the Minneapolis Tribune and Mike Wolf of the Minneapolis Star on the question of possible water and air pollution by the Northern States Power Company's Monticello nuclear power plant. I spoke with many old acquaintances, including Wallace Brode, L. M. Cooke, George Boyd, Walter Sullivan, and Ken Pitzer. Pitzer, who was to give the Priestley Medal address later, warned me that he is going to take the AEC to task in his speech for being too secretive about the seismic effects of underground nuclear explosions in areas that are seismically active.

ACS President Wallace R. Brode presided over the awards program following the dinner. Ken Pitzer received the Priestley Medal and delivered the address, "Effecting National Priorities in Science." In what seemed to me to be a contrived addition to his address he attacked the AEC for excessive secrecy in its underground nuclear weapons testing program in view of potential hazards of induced earthquakes. By his strong statement I surmised that he was trying to create a good image for the rebellious students at Stanford (of which he serves as president) who have been protesting the University's research for the Department of Defense.

Among those receiving ACS awards were George Boyd (ORNL) and Walter Sullivan of the New York Times.

Tuesday, April 15, 1969 - Minneapolis, Chicago

Bloom and I had breakfast in his room.

We then went to the ACS meeting at the Minneapolis Auditorium and Convention Hall where, in the Harriet Room, I gave my talk "The Role of Ion Exchange in the Discovery of Transuranium Elements" as part of the Nuclear Applications in Chemistry Awards Symposium in honor of George Boyd. Art Adamson presided and introduced me.



April 11, 1969

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National Security Study Memorandum 41

TO: The Secretary of State  
The Secretary of Defense  
The Chairman, Joint Chiefs of Staff  
The Director, Arms Control and Disarmament Agency  
The Director of Central Intelligence  
The Chairman, Atomic Energy Commission  
The Science Adviser to the President

SUBJECT: Treaty for Nuclear Arms Control of the Seabeds

The President has directed that a study be prepared on the issue of a treaty prohibiting the emplacement or fixing of nuclear weapons or other weapons of mass destruction on the seabeds.

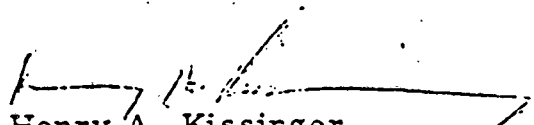
The study should examine:--

- a) the pros and cons of whether such a treaty is in the over-all U.S. interests;
- b) the pros and cons of the alternative formulations of the specific provisions of such a treaty;
- c) the prospects for obtaining agreement on the various formulations of the treaty; and
- d) the factors affecting the timing of our proposing a specific treaty draft.

The study should include complete drafts of the alternative formulations of the treaty considered in the study.

The study should be prepared by an Ad Hoc NSC Steering Committee, chaired by the Arms Control and Disarmament Agency, with representatives of the following: Secretary of State; Secretary of Defense; Chairman, Joint Chiefs of Staff; Director of Central Intelligence; Chairman, Atomic Energy Commission; Assistant to the President for National Security Affairs; Science Adviser to the President.

The study should be forwarded to the NSC Review Group by April 18, 1969.

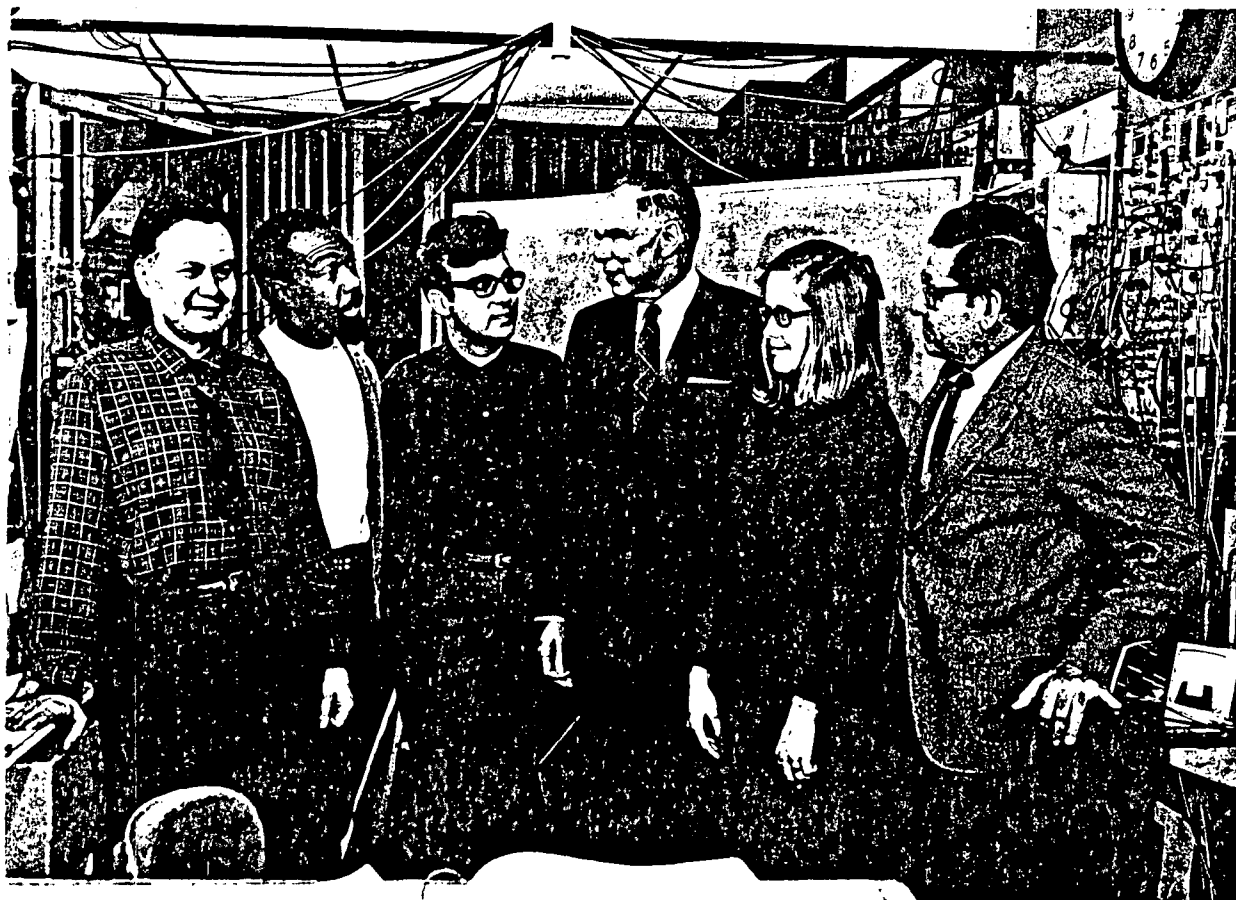
  
Henry A. Kissinger

We then went to the Leamington Hotel where we met Al Ghiorso. Ghiorso and I held a press conference on the work of his group (Ghiorso, Harris, Nurmia, Mr. and Mrs. Eskola) on the discovery of two alpha emitting isotopes of element 104. I then continued in front of the TV cameras and, after answering questions on element 104, I answered questions on the Monticello plant radioactive effluent controversy, underground testing in Nevada, safety of plutonium fuel in breeder reactors, etc.

I then rode to TV station channel 5-KSTP, an NBC affiliate, with Henry Wolf, Merrill Jones (of General Mills, representing ACS) and Miss Vogel (of General Mills). I met Ghiorso there and we had lunch in the little cafeteria.

At 1 p.m. I was interviewed (on tape) for "The Henry Wolf Show," which is a weekly hour-long program shown in the Minneapolis-St. Paul area (Channel 5) and in various other parts of the country. He asked me about my experiences on the GAC, Kennedy's call to me on January 9, 1961 asking me to be his Chairman of the AEC, the problem of thermal pollution, the dangers of radiation, the recent announcement by Ghiorso on element 104, etc.

Miss Vogel and Jones then drove Ghiorso and me to the Pick-Nicolette Hotel where, at 1:45 p.m., he made his announcement about the discovery of element 104, identified through its alpha-emitting daughters.



Element 104 working group; picture taken on March 7, 1969 at Lawrence Radiation Laboratory, Berkeley, California.

L to R: Matti J. Nurmia (formerly University of Helsinki), James A. Harris, Kari A. Y. Eskola (University of Helsinki), Seaborg, Pirkko Eskola (University of Helsinki), Albert Ghiorso.

At 2 p.m. I gave my talk on "Prospects for Further Considerable Extension of the Periodic Table." The room was packed with more than 500 people. V. I. Goldanskii (Director, Institute of Chemical Physics, Moscow) was present and after the talk Ghiorso, Bloom and I went to his room to talk. (L. Dunlop of Chemical and Engineering News also came along and interviewed me on attendance at ACS meetings, my feeling as to the value of meetings, the significance of work on heavy transuranium elements, etc.) Goldanskii said he is glad I am coming to the Mendeleev Symposium in Leningrad on September 23 and was genuinely surprised when he learned I had not received an invitation. Apparently I am expected to attend but no one informed me. Unfortunately, the September 23 date conflicts with the IAEA General Conference.

Ghiorso, Bloom and I then walked to the Convention Hall where I introduced George Boyd for his Nuclear Applications Award address.

Ghiorso, Bloom and I then took a taxi to the airport and Bloom and I flew to Chicago (O'Hare Airport) on Northwest Flight 722, leaving about 6:50 p.m. and arriving about 7:50 p.m. We spent the night in the O'Hare Inn.

Wednesday, April 16, 1969- Chicago, Terre Haute, Indiana, Washington, D.C.

I flew to Terre Haute, Indiana, on Allegheny Airlines Flight 541, leaving at 7:15 a.m. and arriving about 9 a.m. (Bloom flew directly back to Washington.) I was met by Professors Harold Hughes (Chairman), Henry Carroll and R. E. Winn (Department of Physics, Indiana State University). I rode with them to Indiana State University.

After a tour of the campus with Hughes and Carroll, I attended a reception in Room 183 of the Science Building where I met a number of undergraduate and graduate students and faculty members. I then went across the hall for a press conference where I was taped by Channel 8 (CBS) Terre Haute. Questions were asked on the nature of the Nixon Administration budget cuts, the peaceful uses of nuclear energy, the status of heavy elements beyond element 104, AEC relations with Congress, radioactive waste disposal problems, etc.

I then went to lunch in the Cotillon Room of Hulman Hall. I sat at a table with President and Mrs. Alan C. Rankin, James C. Acher (President, Board of Trustees), Dr. and Mrs. William P. Allyn (Professor Emeritus of Zoology), Mr. and Mrs. Holmstedt (immediate past president of Indiana State University). President Rankin introduced the distinguished guests and visitors from Indiana and Illinois colleges and universities and Dr. Allyn spoke briefly.

Here and during the day I met William Bunger (Chairman, Department of Chemistry), Dr. Townsend (Vice President for Academic Affairs), Dean Cobb of the Graduate School, Dean Turney (Education), Professors Hansen (Physics), J. A. Swez (Physics), Reuland (an instructor in nuclear chemistry, a student of Professor Caretto), Miss Deborah Woerner (President, Science Honorary Fraternity, Omega Alpha Delta), Ewing Miller (architect for the addition to the Science Building), and many others.

We then robed for the Academic Procession which entered Tilson Music Hall where the dedication ceremony was held. President Rankin presided. Miller presented and Acher accepted the building. Rankin then made some remarks quoting from John Gardner's 23rd century speech and then introduced me. I

gave my talk "Science Teachers in a Changing World." The whole program was taped on a SONY TY recorder. Rankin then conferred honorary Doctor of Science degrees on Dr. Allyn and me. I was presented by Professor Bunger.

Following the dedication ceremony we went to the east entrance of the addition to the Science Building (Unit II) and I participated in a ribbon cutting ceremony with President Rankin, Professor Hughes, Mr. Acher, Ex-President Holmstedt and Miss Woerner. A number of photographers were present to take pictures.



Dedication of Science Building, Indiana State University, Terre Haute, Indiana; April 16, 1969.

L to R: James Archer, Seaborg, Dr. Harold K. Hughes, Dr. Raleigh Holmstedt, Miss Deborah Werner, President Alan C. Rankin.

I then toured the Science Building under the guidance of Hughes, Carroll, Bunger and others. We visited the Department of Chemistry, Department of Physics, the Department of Life Sciences, and the Science Education Department. They have a good deal of equipment including various kinds of counting apparatus, a \$50,000 electron microscope, modern analytical chemistry apparatus, advanced teaching aids, etc. In the Department of Life Sciences I saw quite a collection of snakes that would interest Dave and Steve.

Following the tour I met with some more students and then rode to Hulman Airport with Winn, Hughes and Carroll. I flew to Chicago on Allegheny Airlines Flight No. 546, leaving about 6 p.m. and arriving at 6:10 p.m. Because I arrived early and the outgoing gate was nearby, I caught an earlier than scheduled flight - American Airlines Flight No. 372 - which left Chicago at 6:25 p.m. and arrived at National Airport about 9 p.m.

President Nixon today named Peter M. Flanagan an Assistant to the President and chief White House liaison officer with regulatory agencies. He will assume the duties of Robert Ellsworth, who was named as U.S. Ambassador to the North Atlantic Treaty Organization by President Nixon on April 11, and hence will exercise some oversight of AEC activities.

Attached is a copy of a letter that our Acting General Manager, Ed Bloch, sent to Edward Bauser (JCAE) regarding the latest developments in Euratom safeguards procedures for fuel fabrication plants.

Thursday, April 17, 1969 - D.C.

I received a phone call from Dr. Whitehead at the White House who asked us to name someone as liaison to work with McCracken's Committee on the uranium enrichment study. This liaison individual would sit in on some of the meetings that the Committee will hold with groups like RAND, etc. I said that would be excellent and that we will let him know by tomorrow who it will be.

At 10 a.m. I testified before the Joint Committee on Atomic Energy at their AEC Authorization Hearings. Among other things, I was questioned about the McCracken-Mayo-DuBridge Committee that has been set up by the White House to study the question of the gaseous diffusion plant transfer to industry. Holifield and Anderson were particularly critical of this and likened it to the Dixon-Yates controversy. I suggested that they should not prejudge the outcome and emphasized that the AEC will have a representative sitting with the McCracken Committee during its deliberations.

Julie Rubin and I had lunch in the Commissioners' Dining Room.

Secretary of Defense Laird sent me a letter (copy attached) thanking me for my letter of March 28, 1969, concerning the AEC's consideration of nuclear safety aspects of the proposed SNAP 27 mission and enclosing a copy of his letter (attached) to the Vice President which provided the DOD recommendation for approval of the launch.

At 5 p.m. I presided over Information Meeting 896 (notes attached) at which we discussed our relationship with the McCracken-Mayo-DuBridge Committee. It was decided that Commissioner Johnson will represent the AEC on this Committee. The Commissioners, especially Ramey, expressed strong displeasure at the intent of the McCracken Committee to include Rand Corporation people (Victor Gilinsky and William Hoehn) in the A. D. Little study of the diffusion plant transfer. This point of view will be expressed at the Commissioners' meeting with the McCracken Committee which has been scheduled for Thursday, April 24, 1969.

Eric, Suki and I went for a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going along the White Horse Trail and Cross Trails 3 and 4 past the Police Headquarters and returning to our starting point.

Friday, April 18, 1969 - D.C.

At 11:30 a.m. I watched on TV President Nixon's press conference during which he announced that he is directing the U.S. to resume aerial reconnaissance



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

APR 16 1969

Mr. Edward J. Bauser  
Executive Director  
Joint Committee on Atomic Energy  
Congress of the United States

Dear Mr. Bauser:

This is to inform the Committee of the latest developments in regard to Euratom safeguards procedures for fuel fabrication plants.

AEC's position has been that in the present state of technology effective safeguards in connection with fabrication of plutonium and highly enriched uranium can be accomplished only through continuous inspection. The Committee was informed of this view in Chairman Seaborg's letter to Senator Pastore of September 6, 1967, which also assured the Committee that no plutonium authorized for distribution by the 1967 amendment to the Euratom Cooperation Act would be delivered until Euratom agrees to continuous inspection during fabrication. None of the plutonium has been delivered. Euratom's safeguards staff has indicated that as a result of their own studies and the technical information supplied by AEC, they are in agreement with this conclusion.

Throughout the period beginning in late 1966 when Euratom started giving special attention to the development of procedures for safeguarding plants fabricating plutonium and highly enriched uranium there has been close cooperation between Euratom staff and AEC staff. This resulted in the joint development, at the staff level, of procedures for the application of continuous inspection at fabrication plants. Since then, Euratom has kept us informed as to developments in the consideration of the proposed procedures by their member states.

We have now been informed by Euratom that their Commission has approved safeguards procedures for plants in the Community fabricating plutonium and highly enriched uranium, and has informed the member states of their decision at a meeting of their Council of

Ministers. Euratom has proposed that the procedures be set forth in an agreed record of a meeting of the Joint Technical Working Group on safeguards to be held in the immediate future. The language proposed by Euratom for this agreed record is attached. We probably will propose some clarifying changes of a technical nature to the statistical criteria. We will send you a final version of the minutes when they become available.

While Euratom has assured Ambassador Schaetzel and us that these arrangements would, in practice, constitute continuous inspection in accordance with the procedures developed jointly by our respective safeguards staffs, they must avoid an explicit designation of these arrangements as "continuous inspections". You will note that, instead, their proposed language refers to these safeguards as procedures which "may reach a frequency of several operations a day".

Euratom has explained that the necessity to avoid the use of the term "continuous inspection" arises from Article 85 of the Euratom Treaty which reads as follows:

"Where new circumstances so require, the manner of applying the control provided for in this Chapter may, at the request of a Member State or of the Commission, be amended by the Council acting by means of a unanimous vote on a proposal of the Commission and after the Assembly has been consulted. The Commission shall examine any such request by a Member State."

They have stated that if the new procedures were designated as "continuous inspection" this would run the risk of long delays in obtaining the unanimous consent called for by Article 85 of the Treaty, if it could be obtained at all, and that the result could create a serious state of confusion for the Euratom safeguards system as a whole. In effect, they have said that they are able to agree with us on a technical basis on the substance of the procedures which we have consistently pressed for, but that they cannot describe these procedures in the language that we prefer.

In further explanation of the firmness of their decision to employ continuous inspection, Euratom has informed us that the Council of Ministers has approved an increase of the Euratom safeguards staff by 20 additional people including 19 new inspectors. They have also decided in favor of an allocation of additional funds to meet increased expenses for on-site assignments and safeguards operations

by the Euratom safeguards staff. The term "on-site assignments" has been employed to confirm our understanding that Euratom inspectors will in fact be located at the fabrication facilities in question on a resident basis. A copy of the letter informing us of these developments is also attached.

We believe that Euratom's explanation as to their inability to designate their new safeguards procedures as "continuous inspections" is understandable, and we are convinced that further efforts to secure their agreement to this designation would be unsuccessful. We also believe that their assurances that procedures to be followed will, in fact, constitute continuous inspection in accordance with our jointly developed arrangements will be honored. Finally, we will be in a position to monitor Euratom's fulfillment of these understandings through the Joint Technical Working Group and through joint safeguards exercises to obtain information on the actual implementation of the Euratom procedures. In the event these safeguards were found not to constitute continuous inspections in accordance with the agreed arrangements, further plutonium shipments would be deferred until corrective action was taken.

In recent months, we have been able to obtain additional information on Euratom's safeguards through exercises conducted by our Joint Technical Working Group, which has reassured us as to effectiveness of these safeguards. For example, as stated in Mr. Crowson's letter of March 25, the most recent of these exercises indicated that the Euratom safeguards system as applied to material supplied by the U. S. appears to be satisfactory for the quantities of special nuclear material now being supplied by the U. S.

In view of these considerations, we believe, on balance, that United States interests would be best served by proceeding with the delivery of the approximately 116 kilograms of plutonium for which we now have firm orders from the Euratom Supply Agency. As noted, the delivery of additional quantities would depend on the application of continuous inspection in accordance with the agreed-upon arrangements.

We will be glad to discuss this matter further if you so desire.

cc: Chairman (2)  
Commissioner Ramey  
Commissioner Johnson  
Commissioner Tape  
Commissioner Costagliola  
G.M. (2)

Sincerely,

E. J. BLOCH

Acting General Manager

OCR (2)  
Secy (2)  
DLCrowson  
OGC  
MBKratzer/AGMIA  
DIA

Enclosures:

1. Eft Agreed Record Proposed by Euratom
2. Ltr dtd 4/2/69 fm Cancellario d'Alena

Internal Concurrence:

SMH:D:DLCrowson

Other Concurrence:

OCR



DRAFT AGREED RECORD PROPOSED BY EURATOM

Informed U. S. AEC that its Commission had recently adopted new instructions concerning safeguarding of nuclear fuel element fabrication plants processing all highly enriched uranium or plutonium in the Communities. Such instructions are based on the results of the inspectorate's own experience, of research work carried out by a group of European experts and of the studies carried out by the Joint Technical Working Group in the framework of the techniques currently called "Continuous Inspections". The aim of these instructions is to put Euratom safeguards in condition to establish an independent balance of the material(s) in process in order to minimize the possibility of diversion to illicit use and to detect this diversion as quickly and as accurately as possible.

The contents of the Commission's instructions were described as follows:

Depending on quantities of material(s) processed in a year period, three categories of plants are envisaged, namely: Category I processing less than 40 kg per year, Category II processing between 40 and 200 kg per year, and Category III processing more than 200 kg per year.

For Category I periodic inspections will be carried out as dictated by circumstances.

Category III will be subject to in-process safeguarding procedures based on the right of the inspectors to have access at any time to the nuclear materials. It is envisaged that these procedures will include physical measurements that may reach a frequency of several operations a day. The aim of the envisaged procedures is to put the inspectors in condition to evaluate the amount of materials being processed in the plant within a limit of uncertainty not exceeding plus or minus 1%.

Category II is a middle category and the type of safeguarding applied will depend upon operating and security conditions of the plant and upon the type of production campaign. Consequently safeguards applied can be either of the type envisaged for Category I or the one envisaged for Category III.

Answering some questions raised by U. S. AEC, the Euratom side gave some more explanations concerning Category II and the criteria that the Euratom inspectorate intends to apply for the selection of the regime of safeguarding. Before input operations are started plant operations and safeguarding plans will be carefully reviewed. After this review the inspectorate will apply safeguards as set forth in Category I only

if the uncertainty level of measurements can be kept below an acceptable limit. The inspectorate is of the opinion that such limit should not exceed plus or minus 3% at 95% confidence level for each measurement and with standard deviation of the mean  $\frac{2\sigma}{\sqrt{n}}$  and not exceeding plus or minus 1% at the same confidence level for all measurements on the entire inventory and measured discards.

If such conditions are not met or if during the fabrication it appears that they will not be met then safeguarding will be as for Category III. Upon request the Euratom side acknowledged the importance of problems related to material unaccounted for (MUF), should be kept under review for a better definition of its technical aspects. However, the Euratom side recognized that the data and principles quoted by Euratom in its statement above concerning Category II implied a yearly imbalance not exceeding 1.5 kg.

The Euratom side finally informs "that its Commission intends to review in due time the experience gained through the implementing of the new instructions and that this will be done in cooperation with national experts".

- 2. 4. 1969

Mr. Myron B. KRATZER

Assistant General Manager  
for International Activities  
United States Atomic Energy Commission  
Germantown/Maryland

Dear Myron:

The US-Mission in Brussels has already been informed of the new instructions adopted by the Commission of the European Communities, concerning the application of safeguards to fuel fabrication plants in the Community, processing plutonium and highly enriched uranium.

To the above informations I would like to add that the Council of Ministers, in its session of March 25, 1969, unanimously decided to increase the Euratom safeguards staff of 20 additional people, including 19 new inspectors. On the same occasion, the Council also decided in favor of an allocation of adequate funds to meet increased expenses for on site assignment and safeguards operations by the Euratom Safeguards staff.

Both, the increase of staff and the allocation of funds to meet increased operational expenses are mainly destined to implement the new instructions issued by the Commission and referred above.

Sincerely yours,



F. CANCELLARIO D'ALENA

THE SECRETARY OF DEFENSE  
WASHINGTON, D. C. 20301

APR 14 1969

Honorable Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

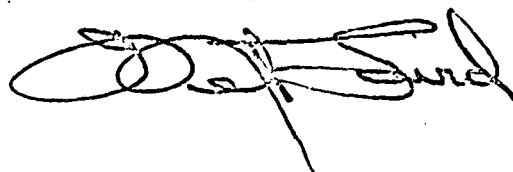
*Bus 4/17/69*

Dear Dr. Seaborg:

Thank you for your letter of March 28, 1969, concerning the Atomic Energy Commission's consideration of nuclear safety aspects of the proposed SNAP 27 mission.

Attached for your information is a copy of my letter to the Vice President which provided the Department of Defense recommendation for approval of the launch.

Sincerely,



Attachment

THE SECRETARY OF DEFENSE  
WASHINGTON, D. C. 20301

APR 14 1969

The Vice President  
The White House  
Washington, D. C. 20500

Dear Mr. Vice President:

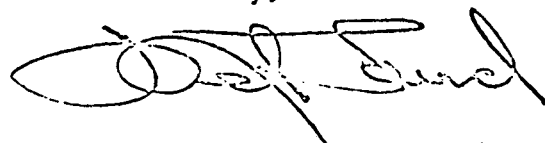
The National Aeronautics and Space Council staff, in a memorandum dated April 7, 1969, has advised me of your request for the views of Council members on nuclear safety aspects of the SNAP 27/Apollo 12 mission.

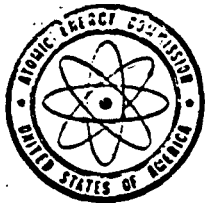
Department of Defense representatives participated in the extensive nuclear safety review of all phases of this mission by the Interagency Safety Evaluation Panel and assisted in preparation of the report from this panel which presents an assessment of the risks associated with the mission. Although my technical experts differ on some details of this risk assessment, these differences do not affect qualitatively our conclusions on mission safety.

Overall, I believe that the risks involved, as far as nuclear safety is concerned, are acceptable in the national interest and therefore recommend that launch approval be granted.

However, this extensive safety review has shown that we must not stand still in the field of aerospace nuclear safety. For the future, the DoD continues to urge development of safer fuel forms and more rigorous testing, including actual flight tests, for radioisotope containment systems. There is also a need for clearer knowledge in the area of radiological effects from plutonium inhalation. These safety improvements are vital to future DoD missions using radioisotope power systems.

Sincerely,





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

ENCL. BY DOE  
NOV 86

COPY NO. 2  
April 17, 1969

INFORMATION MEETING 896

1. National Civil Service League Award to Mr. Bloch
2. 2:00 p.m., Meeting, Friday, April 18 of JCAE Members with Mr. Paul W. McCracken, Chairman, Council of Economic Advisers

The Chairman plans to attend.

3. Designation of AEC Liaison Representative for White House Study

To be designated. (SECY)

4. TID 24996 - Safety of Underground Nuclear Testing

Approved for release at NVOO. The Chairman will write Ken Pitzer.  
(AGM-PI)

W. B. McCool  
Secretary

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Brown  
Mr. Hennessey  
Mr. Quinn  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Stokeley\*

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic

over North Korea with planes that would be fully protected (presumably with fighter planes). This is the result of the November 14th incident in which the North Koreans shot down a Navy reconnaissance plane. In response to a query as to whether he had blocked the appointment of Dr. Frank Long as head of the National Science Foundation because he disapproved of the Administration's position on the ABM, President Nixon said he did back his staff who believe that Dr. Long's appointment, in view of his very sincere beliefs opposing the ABM, would not be in the best interests of the overall Administration position. The President went on to say he wishes to make it clear that there is vigorous dissent and discussion within the National Security Council on this and other matters. But to have at this time made an appointment of a man--of eminent credentials, incidentally-- who quite honestly and quite sincerely disagrees with the Administration's position on a major matter of this sort, he thought would be misunderstood. He said his staff thought thus, and, under the circumstances, he approves of their decision not to submit the recommendation to him.

At 1 p.m. I attended a farewell luncheon for Jerry Tape, hosted by Alex Johnson in the Van Buren Room of the State Department. Others present at the luncheon were: David H. Popper, Nelson Sievering, Phil Farley, Llewellyn E. Thompson, Jack Rosen, Donovan Q. Zook, Myron Kratzer, Wolfgang Lehmann, Charles N. Van Doren, H. G. Torbert, Jr., and Joseph T. Kendrick.

The conversation centered pretty much around Jerry's recent trip to Vienna (see April 24 journal for Tape's report) for the technical talks with the Soviet team concerning the peaceful uses of nuclear explosives. Jerry said that about all he learned from the Soviet team was that they have conducted a 1 kt. cratering shot and a 1 kt. underground explosion in salt. Jerry said that he, of course, described all of our Plowshare experiments--in fact, these have all been published.

The matter of interpretation of the Limited Nuclear Test Ban Treaty came up mainly in side conversations. The Soviets said they would not want to amend the Limited Nuclear Test Ban Treaty, but would rather interpret it in terms of some defined level of radioactivity in the atmosphere. This, of course, is exactly the USAEC position, and those present at the luncheon seemed to express agreement with this position, particularly Alex Johnson. Jerry said that the Soviets described a number of future projects for nuclear excavation in the Soviet Union, including a 65-kilometer canal that would require about 250 nuclear detonations, some of them in the megaton range.

I had to leave the luncheon early in order to attend a 2 p.m. meeting of the JCAE with McCracken and DuBridge. Attending this meeting were Chet Holifield, John Pastore, Craig Hosmer, Paul McCracken, Lee DuBridge, Thomas Moore, Fred Schuldt, George Quinn, Edward J. Bauser, George Murphy and I. Melvin Price came in later.

Holifield opened the meeting saying that he and the JCAE had been surprised to learn about the White House Committee to study the future of the AEC's gaseous diffusion plants and expressed concern about the lack of AEC representation on the Committee. He reiterated that the JCAE expected to go ahead with their publicly announced hearing on this subject, scheduled to start June 1.



Hosmer indicated that he may have had some role in the decision to form this White House Committee in that he had, in a conversation with Dick Burress, Assistant Counsel to the President, discouraged him from setting up a proposed task force to make such a study and strongly advised that, if such a study had to be made, it be made within the White House. He had told Burress that, if they needed outside help, they should get a business management firm as consultant but added that he didn't particularly like A. D. Little, the firm that they did employ.

DuBridge said it was felt that the White House should be informed on this important matter, and, as a result, the President asked McCracken, DuBridge and Mayo to look into it. He said they called "Glenn" over to brief them, and then asked the Commissioners to come over to talk to them. (This was not a completely accurate representation in that I had suggested to McCracken that I arrange to have the Committee briefed, and following that briefing, I urged McCracken and DuBridge to meet with all the Commissioners--however, I did not dispute DuBridge on this minor point at the meeting.)

Holifield described the immense background of work in this field, mentioning the AIF report, which, he said, was biased toward sale of the plants, and the AEC analysis, which, he said, was broad and balanced, and took no particular position. He emphasized that private ownership of the enrichment plants would increase the cost of electric power in the U.S. by 35 to 40%. Pastore interjected that such private ownership would, however, lead to tax income for the government, and thus the enriching costs would be paid for by the people concerned, rather than by all the people, as in government ownership. However, he emphasized that there should not be any giveaway of the plants.

Hosmer then said that the White House might as well understand here and now that it had to be that the only feasible step is the creation of a government corporation, and that we must move rapidly in the shift to such a corporation. He said it would be impossible to convince Congress, who would have to act, to sell the plants. He said that the government corporation would need a good finance man, and he suggested that the best solution for moving toward such a corporation would be through cooperation between the White House, the AEC, and the JCAE. He said that a good man for such coordination would be Jack Rosen. He said he had written Dick Burress to this effect. (April 18, 1969 letter attached.)

At this point, I said I believed it is absolutely essential that the White House become thoroughly familiar with this important issue. I said, however, that had I been asked for my advice, I would not have recommended their bringing in a consultant firm. I said that the time scale for decision is too short for outsiders to become knowledgeable on this immensely complex issue, and as a result, the consultants that were designated have been frantically writing the AEC for information. I quoted from the letter of Manson Benedict to George Quinn (copy attached) to illustrate the sensitive type of barrier information and gas centrifuge information that is being requested, and indicated that the AEC has not dispensed this sort of information to anyone, and it is doubtful it would likely be needed. I also indicated that Benedict had suggested that the same information be sent to Dr. Victor Gilinsky and William Hoehn of the Rand Corporation, and indicated that the Commissioners were very doubtful that it was sensible to do this. (A letter from Hoehn requesting this information has been received by George Quinn - copy attached.)

# Congress of the United States

## House of Representatives

Washington, D.C. 20515

April 18, 1969

Mr. Richard T. Burress  
Assistant Counsel to the President  
West Wing  
The White House  
Washington, D. C.

Re: Uranium Enrichment Plant Disposal

Dear Dick:

This is a follow-up of my telephone call to you yesterday, recommending that someone be placed in charge at the White House on possibly a full-time basis of the above captioned matter.

This recommendation is based on my own difficulty thus far in having to deal with several of the White House staff in connection with proposed legislation.

As related to you, there are a number of alternative possibilities with respect to the future management structure of these plants. They range from keeping them under the AEC as they are at present and accomplishing improvements and additions by appropriations from the Treasury to disposal to competing private owners.

From the political standpoint, the only legislation you are going to get out of this Congress is to establish a government corporation to own, operate and augment the capacity and/or facilities. Unless you take this legislation you are going to be faced with budgeting \$100 to \$200 million in FY 70 for cascade improvement.

This issue is exceedingly important because at stake is the future of \$2 to 2-1/2 billion dollars worth of government property, plus the thrust and nature of the nuclear power industry in the United States and perhaps world-wide. There are considerable numbers of complications involved in any legislative process and particularly in a process which involves the Joint Committee on Atomic Energy -- a rather special and unique committee which regards its prerogatives with considerable zealously. If any legislation is to proceed quickly and smoothly, there must be a high degree of coordination between the Committee and its staff, the AEC and the White House.

Mr. Richard T. Burress  
4/18/69

- 2

Further, and assuming that legislation proceeds rather rapidly, it also will be necessary to get the government corporation in action quite rapidly in order to meet the deadline for commencement of cascade improvements and upgrading. It seems to me that even while the legislation is in process, considerable amount of attention will have to be paid to this particular aspect of the overall problem.

From the purely management standpoint, I would foresee the successor corporation taking up and continuing for a while at least the present management contracts for the enrichment plants at Oak Ridge, Portsmouth and Paducah. Aside from legal transfers of property and personnel to the corporation, its big job will be to establish a very competent financial division which can quickly go to the private money market with a revenue bond issue to finance initial requirements.

I have gone into some detail in order to impress upon you the magnitude not only of the legislative aspects of this problem but of the overall problem itself.

We are not dealing with "small potatoes" and this is one of the larger things that the Administration will have to deal with. I believe its actions should be properly coordinated from the beginning and smoothly executed through to the end.

In short, there is a need now to put a good man on this job to carry it through at least the legislative stage and the beginning of the corporation organizational stage, which should be running roughly in parallel. This man should be someone like yourself who understands not only executive structure but as well the legislative structure and its personalities.

As mentioned to you on the telephone, it is my belief that Jack Rosen, who is presently an aide to Dr. Gerald Tape, would be ideal for this purpose. Rosen is a retired Army Colonel who is thoroughly versed in nuclear affairs. He served for possibly 4 years as a member of the Joint Committee staff following his retirement from the Army and has had another 2 years or so with the AEC. He is not only technically competent in all aspects of atomic energy but is a highly intelligent, articulate and dedicated individual. He is respected both at the AEC and the JCAE. Since Dr. Tape is leaving the Commission, I believe his services could be obtained by you from the AEC on a loan basis for the period of 6 months or so that might be involved.

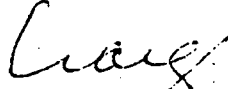
This recommendation of Rosen is being made on a purely impersonal basis. I am not trying to get him a job, and I doubt if he needs one. I make the recommendation simply because I am confident that he could carry out this duty in an exceedingly creditable fashion. I make it also because, up to the present time, it seems that I am about the only one who has tried to

Mr. Richard T. Burress  
4/19/69

- 3

coordinate this effort, and I simply do not have the time to get into it any deeper on a continuing basis.

Very truly yours,



CRAIG HOSMER  
Member of Congress

CH/h

cc: Dr. Lee A. DuBridge  
Director  
Office of Science & Technology  
Executive Office Building  
Washington, D. C.

Hon. Chet Holifield  
2469 RHOB  
Washington, D. C.

Dr. Glenn T. Seaborg  
Chairman  
AEC  
Washington, D. C.

Hon. Robert P. Mayo  
Director  
Bureau of the Budget  
Washington, D. C.

Hon. Paul W. McCracken  
Chairman  
Council of Economic Advisers  
Washington, D. C.



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AREA CODE 617 864-5770

Mr. George F. Quinn, Assistant General Manager  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear George:

I'm working with Arthur D. Little on the study of the diffusion plant transfer issue. Little has been asked to make by Messrs. DuBridge, McCracken and Mayo. My principal role in the task is to provide information on the technology and production economics of the diffusion and centrifuge processes.

To be an accurate source of information, I should update my knowledge of both processes. I'm writing to ask you advice on how best to do this, and then to ask your assistance in doing so.

Here is a partial list of information that seems to me to be relevant.

I. Diffusion Process

A. Barrier

1. Characteristics of best barrier now available:  
separation factor vs. fore pressure, back pressure,  
permeability and temperature
2. Cost
3. Specific barrier productivity, kg. separative  
work/ sq. ft./yr.
4. History of barrier developments - past record  
and future projections of
  - a. Characteristics
  - b. Manufacturing cost
  - c. R & D expenditures
  - d. Was barrier development an orderly one or  
were major improvements the result of unexpected  
breakthroughs?

5. Barrier manufacture

- a. Main steps in present process
- b. Sensitivity of product to minor manufacturing variables
- c. Cost of product vs. scale of production

B. U. S. Diffusion Plants

1. List of stages at each site, giving for each size: number, barrier area, volumetric flow rate, maximum pressure and power consumption
2. Projected plant life as now maintained
3. Maintenance costs
4. Brief description of new U.S. diffusion plant whose costs and power consumption was given in ORO-668, including barrier characteristics and breakdown of investment costs

- C. Foreign barrier development - What do we know about type and characteristics of barrier developed in United Kingdom, France or USSR?

II. Gas Centrifuge

- A. Present state of U.S. technology
- B. Projected schedule of improvements in technology
- C. Estimated costs
- D. Present state of foreign technology


Two other members of the ADL team, Victor Gilinsky and William Hoehn, both of the Rand Corporation, are interested in the same topics because of their responsibility to assess the security aspects of diffusion plant transfer. They and I would like your advice on what reports to read and whom to see and talk to. Mr. Gilinsky has Q clearance; Mr. Hoehn has DOD secret clearance and is requesting Q clearance. As

soon as Mr. Hoehn's is approved, we hope that you can help us by obtaining relevant reports for us and giving us permission to visit the K-25 plant at Oak Ridge.

As ADL is expected to make an oral report by May 15, our time is short. If there are any relevant reports which I might be sent even before Mr. Hoehn had clearance to see them, it would be helpful. I am authorized to receive secret reports at the Security Records Office at M.I.T., and could come to Washington to read TS material.

Please don't have special material compiled for us, but please advise us on what existing material to read, whom to talk to and what to see. Your help will be appreciated.

Sincerely,



Manson Benedict

# The RAND Corporation

1700 MAIN ST. • SANTA MONICA • CALIFORNIA 90406

April 16, 1969

L-7164

Mr. George F. Quinn  
Assistant General Manager  
U.S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. Quinn:

As part of the Arthur D. Little study of diffusion plant transfer issues sponsored jointly by the Council of Economic Advisors, Budget Bureau and Office of Science and Technology, The RAND Corporation has been asked to evaluate national security implications of alternative transfer plans. We would regard as essential inputs to this phase of the study both the AEC's current assessments of the state of U.S. and foreign uranium enrichment technologies, and the Commission's views on the implications of the differing degrees of access to this classified technology that alternative transfer plans appear to envision.

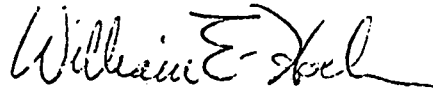
In carrying out our assignment, we shall be working closely with Professor Manson Benedict of M.I.T., who has already addressed to you a list of topics of mutual interest. In addition to the listed items, we should be interested in further pursuing selected topics pertaining to the assurance of supply of enriched uranium for future military requirements and to the control of the extent to which prospective bidders, owners, and/or operators would require access to classified information. Furthermore, we shall have to consider carefully the special implications for national security of any potential arrangements incorporating foreign participation in ownership and/or operation of the plants.

As Manson's letter suggests, Dr. Victor Gilinsky and I will have the principal research responsibility for these aspects of the study. Victor presently holds both TS and Q clearances, while I hold only a TS clearance (although my application for a Q clearance is presently in process). Let me repeat Manson's sense of urgency, and add that we also would appreciate any assistance in procuring relevant reports in advance of the formal conversations and facility visits to be arranged. The RAND Corporation is authorized to receive classified materials, of course, and Victor might profitably read certain Q reports now, leaving me to catch up when the appropriate clearances are in hand.



Should you require further information in support of our requests, please feel free to call either of us (at 213-393-0411). We also are planning to make another trip to Washington within the next two weeks, and we will look forward to arranging a meeting with you at which we might explore some of these issues in more detail. We will be most appreciative of any advice and information you can provide.

Sincerely,



William E. Hoehn  
Economics Department

WEH:jm

cc: Dr. Victor Gilinsky (RAND)

Professor Manson Benedict  
Chairman, Department of Nuclear Engineering  
Massachusetts Institute of Technology  
Cambridge, Massachusetts 02139

Dr. Bruce S. Old  
Arthur D. Little, Inc.  
Acorn Park  
Cambridge, Massachusetts 02140

Holifield suggested to McCracken and DuBridge that they look up the history of the Dixon-Yates affair because there is a lot of analogy to the present drive to sell the diffusion plants.

Hosmer indicated he is probably as rabid a free enterpriser as anyone in Congress and thus his opposition to the sale of the plants should be a warning that this path is fraught with difficulty. Holifield and Hosmer both reiterated that some kind of a government corporation, perhaps of the TVA type, is probably the only sensible answer.

McCracken and DuBridge thanked the members of the JCAE for the opportunity to meet with them and indicated they thought it would be very helpful to them.

McCracken rode back from the meeting to the Executive Office Building in my car in order that we might discuss further the issues posed by his White House Committee studying the disposal of the gaseous diffusion plants. I indicated to him it should be clear that the government corporation is the only feasible course of action. McCracken seemed to be convinced that this is the case and indicated that the meeting with the JCAE members had been very helpful. I reiterated to McCracken that I wanted to help the President on matters like this, and that I could do so better if I were consulted before such crucial steps as the hiring of consultants, which may very well have been a mistake, were taken. I told him, in response to Tom Whitehead's phone call of yesterday morning, that I would designate Commissioner Bill Johnson as the liaison to his Committee, with Commissioner Jim Ramey as back-up, and George Quinn as resource person.

Upon my return to the office I met briefly with Bob Ginna (President, High Temperature Reactor Development Associates) at his request. He told me about a personal observation by a former senior executive in the utility industry that there is a present feeling that now that utilities have ordered some 90 nuclear power plants the Commission's attitude is "you are a big boy" and should work your way out of any problems encountered. Ginna attributed this climate as one of the reasons for no new orders of nuclear power plants in 1969. He strongly urged that the Commission take steps to assist the utilities in their public understanding, regulatory and equipment reliability problems and communicate this intention to the utilities.

I received a letter from President Nixon in which he approved our recommendation to name the 200 Bev Accelerator Laboratory in honor of Dr. Enrico Fermi (copy attached).

I also received a copy of McCracken's letter to Holifield (copy attached) in which he discusses the White House thinking on the future of the uranium enrichment complex.

I replied to Professor J. D. Decius's (Oregon State University) letter asking if I would be interested in being considered for the Presidency of Oregon State University and advised him that I would prefer not to have my name considered for this position.

At 3:45 p.m. I presided at Information Meeting 897 (notes attached) during which we discussed my meeting with McCracken, DuBridge and the JCAE and my Minneapolis discussion with Earl Ewald (President of Northern States Power) regarding the Monticello Nuclear Power Plant, among other things.

THE WHITE HOUSE

WASHINGTON

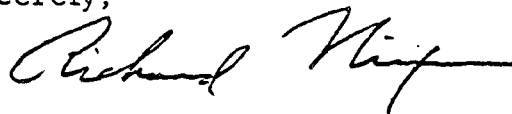
April 18, 1969

Dear Dr. Seaborg:

I concur with the recommendation set forth in your letter of April 5th that the new 200 Bev Accelerator Laboratory being built near Chicago, Illinois be named in honor of Dr. Enrico Fermi.

It is my understanding that the Commission will indicate its intention in the near future, although the actual naming will not occur until completion of construction some years hence.

Sincerely,



Honorable Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C.

THE CHAIRMAN OF THE  
COUNCIL OF ECONOMIC ADVISERS  
WASHINGTON

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NOV 86

April 17, 1969

Dear Mr. Chairman:

Chairman Seaborg has informed me of Edward Bowser's letter to him of April 11. We regret that the Joint Committee has not been kept fully informed about our thinking here. Prior to Captain Bowser's letter we believed the Committee had been made aware of our discussion.

The new Administration has recognized that the future of the uranium enrichment complex of the Atomic Energy Commission presents important questions of public policy for not only the Congress and the Commission, but also the Administration (since the nature of the decision has significant implications for the budget). We also understand that the Joint Committee on Atomic Energy plans to hold hearings this summer on this issue. In order to become more familiar with the problem, a committee consisting of Dr. DuBridge, Mr. Mayo and me was asked to study the future of the uranium enriching plants.

We have discussed our plans with Chairman Seaborg, and we are, of course, planning to work very closely with AEC. The Commission is directly affected, and its knowledge, experience, and judgments will be an essential part of our study effort.

In view of the short time period and in order to gain additional insights into the problem, we felt that outside help might be useful to us. Among the possible resources, Arthur D. Little Inc. appeared to have the most knowledgeable staff on uranium enriching, and we have consulted with them. As yet no formal contract has been signed with the prime contractor,

but on an informal basis Arthur D. Little agreed to go ahead with the study (subcontracting out the national security aspects to the RAND Corporation) if one seemed in order. Arthur D. Little has been asked if they could furnish us preliminary results by the middle of May and the final report by the first of July.

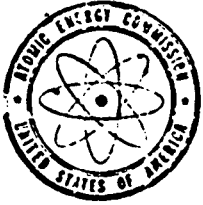
We would, of course, make any such report available promptly to your Committee. I am looking forward to the opportunity to discuss this study with you on Friday.

Sincerely yours,

Paul W. McCracken

cc: Honorable Craig Hosmer

Honorable Chet Holifield  
Chairman  
Joint Committee on Atomic Energy  
Congress of the United States  
Washington, D. C. 20515



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

COPY NO. \_\_\_\_\_  
April 18, 1969

INFORMATION MEETING 897

3:45 p.m., Friday, April 18, 1969, Room 1115, D. C.

1. Chairman's Oral Report on 2:00 p.m. Meeting Today with JCAE Members and Messrs. McCracken and DuBridge
2. Chairman's Report on His Minneapolis Discussion with Mr. Earl Ewald, Northern States Power, re Monticello Nuclear Power Plant

Commissioners Ramey and Johnson will meet with Mr. Ewald and a discussion of the problem will then be scheduled. (Ryan-Helfrich-SECY)

3. Governor McNair's April 11 Letter re Exhibit at Aiken, South Carolina

Staff views are requested. (AGMA)

4. April 7 Letter from Don Samuelson, Governor of Idaho, re MTR

Staff will prepare a reply. (AGMR)

5. Agenda for the Week of April 21, 1969

Approved. (SECY)

6. Appointment of Deputy Manager, NVOO

Approved. (PER)

7. Mr. Bloch's April 16 Memorandum re AEC Policy Regarding Participation by Industry in Uranium Enriching Activities

Approved with revisions for transmittal on Tuesday, April 22, 1969.  
(AGMP&P)

8. AEC 459/66 - Correspondence re A. D. Little Study of Diffusion Plant; Transfer, and;  
AEC 459/70 - Rand Corporation Letter re Diffusion Plant Transfer Study

Identification of material and information for discussion at the April 24 meeting is requested. (AGMP&P-AGM)

9. AEC 459/69 - Correspondence on Study of Uranium Enrichment Plants

A brief acknowledgment referring to the April 24 meeting is requested.  
(AGMP&P)

10. AEC 459/67 - Proposed Letter to JCAE re Uranium Enrichment Plants Study

Signed and dispatched April 17, 1969.

11. Mr. Holifield's April 15 Letter to Chairman Seaborg re Disposition of Gaseous Diffusion Plants

To be discussed at the April 24 meeting. (AGMP&P)

12. AEC 459/68 - Foreign Comments on Future of U.S. Enrichment Facilities

Transmittal with a revised letter is approved. (AGMIA)

13. AEC Liaison Representatives for the White House Study

The Chairman will telephone Mr. Whitehead, White House staff, tomorrow.  
(Rubin)

14. Mr. Quinn's April 16 Memorandum to Commissioner Johnson re Congressman Craig Hosmer's Request for Additional Information re Diffusion Plant Disposition

Commissioner Johnson will call Congressman Hosmer. (Helfrich)

15. AEC 1283/50 - JCAE Budget Hearings - Reactor Products

Approved with changes. (P)

16. AEC 1282/41 - Execution Data for a Portion of the Bowline IV Events

Approved. (AGMMA)

17. NTS Events (See General Giller's April 16 Memorandum)

Noted. (AGMMA)

18. AEC 141/128 - Questions Concerning Weapons Testing

Staff plans for the April 26 NVOO visit are approved with a request. Response to the Hughes Organization queries is in preparation. (AGMMA-PI)

19. AEC 89/140 - Proposed Assignment of Australian National to LASL

Approved. (AGMIA)

20. AEC 102/50 - Proposed Letter to BOB re Statutory Authority for R&D

Approved. (GC)

21. AEC 783/122 - Proposed National Science Academy (H. R. 576)

Approved. (GC)

22. AEC 901/432 - Proposed Visits to AEC Headquarters and BNL by USSR National

Noted. (AGMIA)

23. Pending Contractual Matters Report No. 304

Noted. (PAR)

24. Death of Mr. Walter C. Youngs, Jr., Pinellas Area Manager



**25. Topics for Commissioners' Discussion with the General Advisory Committee,  
April 23, 1969**

Scheduled for consideration on Monday, April 21, 1969. (SECY)

W. B. McCool  
Secretary

6:00 p. m.

**PRESENT:**

**COMMISSIONERS:**

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

**STAFF:**

Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Abbadessa  
Mr. Rubin  
Mr. Kull  
Mr. Quinn  
Mr. McCool  
Mr. Erlewine\*  
Mr. Kavanagh\*  
Mr. Sinclair\*  
Mr. Baranowski\*  
Mr. Tesche\*  
Mr. Kratzer\*  
Mr. Harris\*  
Mr. Stokely\*  
Mr. Clark\*  
Mr. Slezak\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

Eric, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going along the White Horse Trail and Cross Trails 3 and 4 past the Police Headquarters and returning to our starting point.

Saturday, April 19, 1969 - D.C.

I worked in the office until 1 p.m. and then Justin Bloom and I went to the Paramount Coffee Shop (18th Street) for lunch. I sent letters to Henry Kissinger, Lee DuBridge, Gerard Smith, Dr. Tom Whitehead and Elliot Richardson inviting them to visit our classified exhibit of nuclear weapon models which will be on display at our D. C. Office on April 22 and 23.

I sent a letter to President Nixon (copy attached) acknowledging his letter to me of April 15 (copy attached) congratulating me on my birthday. I sent a letter to Kenneth Pitzer (copy attached) decrying the method he used to suggest that the AEC make public the safety aspects of its nuclear underground testing.

Eric and I played nine holes of golf at the Chevy Chase Club; I shot a 52, Eric a 74.

At dinner Helen, Steve, Eric and Dianne had a surprise birthday cake for me and they gave me neckties and a sport shirt.

In the evening I worked on my talk, "The Environment - And What To Do About It" which I will give at the NAS-NRC Solid State Physics Group dinner at Argonne National Laboratory on May 5.

Sunday, April 20, 1969

Helen, Eric, Dianne, Scott Luria, Suki and I drove to Bull Run Regional Park where we participated in an eight-mile hike with a group of some 150-200 people. Carrying our lunches we hiked as far as the outskirts of Clifton on Yates Ford road, passing a number of the first Battle of Bull Run battlefields. The hike was under the direction of Darrell G. Winslow, Director of Parks for the Northern Virginia Regional Park Authority.

In the evening I read material in preparation for my appearance on April 23 before the Subcommittee on Government Research (Harris Committee) of the Senate Committee on Government Operations to testify on the subject of indirect costs and cost sharing in connection with Federal support of project grants.

Monday, April 21, 1969 - Germantown

I presided over Regulatory Information Meeting 339 (notes attached) at 9:55 a.m. at which Harold Price and Bob Hollingsworth and some of their staff members were present and at 10:30 a.m. over Information Meeting 898 (notes attached). The Commissioners reiterated their request of a few weeks ago to set up a mechanism for responding to requests for speakers when the nuclear power reactor construction programs are attacked. They also decided to create a task force to study and make recommendations regarding the thermal pollution

April 19, 1969

Dear Mr. President:

I was deeply touched, and delighted, to receive your thoughtful letter recognizing my birthday today. It was characteristic of your generosity to speak as you did of my career as scientist, educator and government official.

I recall vividly our meeting in Chattanooga in January, 1948, when we were both honored as members of the group of ten chosen by the Junior Chamber of Commerce. Since then our paths have crossed many times in the course of our friendship over the intervening years. I, too, am pleased that we continue to be associated, perhaps as a consequence of the impelling force of our stars, as we are today, in our nation's vital quest for peace and progress.

Respectfully,

Signed Glenn L. Seaborg

Glenn T. Seaborg

The President

The White House

GTS:MJ

THE WHITE HOUSE

WASHINGTON

April 15, 1969

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NOV 86

Dear Glenn:

My warm congratulations and very best wishes as you celebrate your birthday. May I take this opportunity to express again my appreciation and that of the nation for your many services to our society over the past three decades, and particularly for your record-setting tenure as Chairman of the Atomic Energy Commission.

I notice that the astrological sign under which you were born is that of Aries, which is supposed to mean that you were destined to be a pioneer or an architect. I don't suppose that nuclear chemists put much stock in horoscopes, but in this instance, at least, the stars seem to have made a good prediction. For you have been a truly outstanding pioneer and architect in each of your three careers: as scientist, educator and government official.

I still recall one of our first meetings in 1948 when we were both honored as men of the year by the Junior Chamber of Commerce. And just as I was pleased to be associated with you then, so I am pleased that we can be associated as we are twenty-one years later, working together in our nation's quest for peace and for progress.

Sincerely,



Dr. Glenn T. Seaborg  
3825 Harrison Street, NW.  
Washington, D. C. 20015

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

April 19, 1969

OFFICE OF THE CHAIRMAN

President Kenneth S. Pitzer  
Stanford University  
Stanford, California 94305

Dear Ken:

My fellow Commissioners and I were surprised, and dismayed, that you chose the means you did to express your views on the AEC's underground testing program. Might it not have been better to first make known your views directly to the Commissioners, or at least to have indicated your intentions to us, so that we could have acquainted you with the many steps we are taking to inform the public of our program? We believe it would have been helpful to you in formulating your own views to have known the extent of our efforts.

Some of these efforts are as follows. Governors of western states and their advisors were invited to a conference on test activities and to a tour of the Nevada Test Site on April 1 and 2, at which time matters of safety were openly discussed. Individual briefing teams have responded to requests for information on safety issues at numerous state and local governmental offices to convey further our interest and efforts in this regard. The Commissioners themselves have also worked hard in the production of a summary report on activities for insuring the safety of underground nuclear testing, a copy of which I am enclosing. In addition, we have been working with technical societies in order to foster public discussion of the issues involved. I am enclosing a copy of the program for the 50th Anniversary Meeting of the American Geophysical Union, to be held in Washington on April 21-25. You will note that the session to be held on April 25 is entirely devoted to papers on seismicity and tectonophysics, in large measure related to our specific interests. I am also enclosing copies of

President Kenneth S. Pitzer - 2 -

our correspondence with Professor Bruce A. Bolt concerning our cooperation with the Bulletin of the Seismological Society of America.

The Commissioners would appreciate seeing a copy of your remarks so that we could study them further.

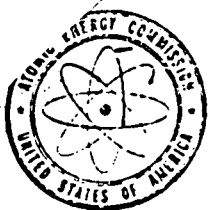
Cordially,



Glenn T. Seaborg

**Enclosures:**

1. Summary Report on Activities for Assuring the Safety of Underground Nuclear Testing April 1969
2. Program for American Geophysical Union 50th Annual Meeting
3. Letter Seaborg to Bolt dtd 4-17-69
4. Letter Bolt to Seaborg dtd 3-27-69
5. Letter Seaborg to Bradbury & May dtd 4-7-69
6. Letter Bradbury to Seaborg dtd 4-10-69
7. Letter May to Seaborg dtd 4-15-69



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 8

April 21, 1969

REGULATORY INFORMATION MEETING 339

9:55 a. m. , Monday, April 21, 1969, Room A-458, Germantown Headquarters

1. April 11 Letter from John D. Badalich, Minnesota Pollution Control Agency, re Minnesota's Future Role in Radioactivity (See also Mr. Price's April 15 Letter to Mr. Badalich)

The Commissioners provided advice for the position staff should take in its meeting with Mr. Badalich on Thursday, April 24. (ADRA)

2. Mr. Earl Ewald's, Northern States Power Company, Meeting with Commissioners Ramey and Johnson, 4:30 p. m. , Friday, April 25

(SECY)

3. Mr. Price's March 7 Memorandum re Request for Adjustments in Regulatory Personnel Ceiling

The Chairman requested a study by Commissioners Ramey and Johnson with staff participation. (ADRA-AGMA)

4. AEC Policy on Public Relations re Nuclear Power

The Commissioners' request at Regulatory Information Meeting 330 on February 25 is reiterated. (ADRA-PI-AGMR)

5. Mr. Price's April 18 Memorandum re Information Provided Senator Aiken - Environmental Data

Staff will establish a procedure for obtaining information on thermal effects from utilities. (ADRA)

The Commissioners requested establishment of a Task Force on thermal effects from nuclear power plants. (ADRA-RDT)

6. Mr. Price's April 11 Memorandum re General Electric Boiling Water Reactor Design Safety Approval

Noted.

7. Forthcoming Report on Problems with GE Nuclear Power Plants

W. B. McCool  
Secretary

10:30 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Price  
Mr. Henderson  
Mr. Hennessey  
Mr. Rubin  
Mr. Hollingsworth  
Mr. Bloch  
Mr. Abbadessa  
Mr. Yore  
Mr. McCool

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COPY NO. 2

April 21, 1969

INFORMATION MEETING 898

10:30 a. m. , Monday, April 21, 1969, Room A-458, Germantown Headquarters

1. April 16 Telegram from J. Laurence Kulp re SNAP 29

Staff review is requested. (AGMR)

2. April 17 Memorandum from Dr. Harry Kissinger re BOWLINE IV

The Chairman, Commissioner Tape, and Mr. John Foster, DOD, will see Messrs. Kissinger and DuBridge. (Rubin-Rosen-AGMMA)

3. May 5, 9:00 a. m. AEC Briefing of National Science Board

Messrs. English and McDaniel will attend for the Chairman. (AGMR&D-R)

4. Topics for Commissioners' Meeting with the General Advisory Committee, Wednesday, April 23, 1969

- a. Awards
- b. MTR
- c. Diffusion Plant Study
- d. FY 1970 Budget Estimates
- e. Public Criticism of Nuclear Power
- f. Howard Hughes' Organization Queries
- g. Vienna Discussions with the USSR re Plowshare
- h. Hanford Reactors
- i. Cape Keraudren and Project Rulison
- j. IAEA

5. AEC 1285/48 and 1283/49 - Five-Year Projections and Fact Sheets for the JCAE  
Approved. (OC)
6. AEC 292/9 - Nominees for Appointment to Advisory Committee for Biology and Medicine  
Approved with a request. (BM)
7. AEC 1282/42 - Proposed Letter to Assistant to the President for National Security Affairs Regarding JORUM  
Deferred. (AGMMA-SECY)
8. AEC 853/29 - Plutonium Sales for FY 1970; April 11 Letter from Plutonium Export Association; and, AEC 853/30 - Proposals of Plutonium Export Association  
Approved. Commissioners Ramey and Johnson will discuss with the JCAE. (AGMIA)
9. AEC 720/203 - Implementation of Restrictions on Enriching Foreign Uranium  
Approved with a disclaimer in the transmittal letter. (AGMIA-AGMP&P)
10. AEC 610/165 - U.K. Gas Centrifuge Exchange  
Approved subject to comments from Commissioners Ramey and Tape. (AGM-Ryan-Rosen-SECY)
11. AEC 988/173 - Correspondence with JCAE re Classified US/UK Relations  
Noted. (EAGM)
12. Mr. Hennessey's April 15 Memorandum re AEC 921/2 - Criteria for Use of AEC Seal and AEC Flag  
Noted. (SECY)

13. Arrangements for 1969 Lawrence Award Ceremony (See Secretary's April 4 Memorandum)

Approved with a request. (SECY)

W. B. McCool  
Secretary

11:40 a. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Abbadessa  
Mr. Hennessey  
Mr. Rubin  
Mr. Brown  
Mr. Kull  
Mr. McCool  
Mr. Benglesdorf\*  
Mr. Pender\*  
Mr. Kratzer\*  
Mr. Quinn\*  
Mr. Corso\*

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General Counsel  
Secretary

\*Attendance by Topic (s)

problem. I also suggested a study of the serious manpower shortage, due to Congressional and Bureau of the Budget actions, which has led to a sort of crisis in the Commission's ability to carry out its administrative responsibilities. It will be necessary to reassign people in order to meet the priority issues, and I suggested that Commissioners Ramey and Johnson, Harold Price and people like John Vinciguerra should constitute a committee to study this in detail and make recommendations. We also decided in principle to lower the price of plutonium from its present \$43 per gram to approximately \$30 per gram in view of the fact that there have been no customers at the higher price; this will be discussed with the White House and the JCAE before we take the official action to lower the price.

I had lunch in the cafeteria with Justin Bloom, Julie Rubin, John Harris, Joe Fouchard and Ed Stokely. We discussed in general the Public Information program and, in particular, the need for positive programs in the field of nuclear power reactors and Nevada testing, where a great deal of criticism is developing.

At 2:30 p.m. I participated in a Bond Drive meeting with leaders held in the Auditorium. John Derry, General Chairman of the AEC campaign, introduced me and I made some remarks encouraging the purchase of bonds. Then Sylvester Watkins of the Treasury Department, who is chairman of the Savings Bond campaign of the Washington District, spoke briefly and showed a Rowan and Martin film.

I presented a gold blood donor pin to Raymond Swan of the Division of Construction who has donated twelve gallons of blood, a record amount. Ed Westcott took our picture.

I went to the DPI viewing room to see the film on the Sea Otters. Then I stopped by the Division of Public Information where they were having a farewell party for Bill Perkins who has been permanently transferred to my staff.

At 4:15 p.m. I met with Commissioner Tape, Joe Hennessey, Howard Brown, John Vinciguerra, Enzi DeRenzis, W. B. McCool, John Storer, John Reich and Julius Rubin to discuss special awards to Dr. Norman Anderson, Dr. George C. Cotzius and Hal Anger for their work in the medical field. I suggested that this matter be discussed at an Information Meeting and, assuming the other Commissioners would agree to go forward and to obtain the necessary clearances to grant this award, I suggested we initiate more formal checks with the White House, the JCAE and the BOB.

I received a memorandum from President Nixon dated April 18, 1969 (copy attached) addressed to Heads of Executive Departments and Agencies, asking that we give full consideration to the employment and selective placement of the handicapped.

I sent a letter to Jeanette and Ray bringing them up to date on our family.

Tuesday, April 22, 1969 - D.C.

Accompanied by Justin Bloom I went to Federal City College to participate in a program to mark the opening of the Oak Ridge Mobile Radioisotope Laboratory.

THE WHITE HOUSE  
WASHINGTON

April 18, 1969

TO HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

Policy for Federal Employment of the Handicapped

It is the policy of this Administration, in staffing the Federal service, to give full consideration to the employment and selective placement of the handicapped.

Administrations of both parties, since World War II, have set examples of national leadership in opening the Government's doors to more than one-quarter million citizens who, though handicapped, have nonetheless been occupationally qualified. Today throughout the economy we find general acceptance of the reminder: "Hire the Handicapped -- It's Good Business."

I have personally observed the mutual benefits that derive from hiring the handicapped, and I want this "good business" to continue and prosper.

Therefore, I ask each of you to make a commitment to removing any remaining barriers to the Federal employment of

- the physically impaired who are not occupationally handicapped when assigned to the right jobs.
- the mentally restored whose only handicap is that they once suffered an emotional illness.
- the mentally retarded who can demonstrate ability to perform the simple and routine tasks that need doing in all organizations, regardless of size.

The Civil Service Commission will provide leadership and direction for the overall Federal effort in carrying out this policy.

I am confident that you will give this policy and the Commission your earnest support.

*Richard Nixon*

The program was opened by Dr. Arthur H. Webb, Chairman of the Natural Science Division, and a few words of welcome were spoken by Dr. David W. Dickson, Vice President for Academic Affairs. I then gave my remarks entitled "Nuclear Science and Federal City College." Following the ceremony, which was held in a conference room of the college, we visited the Mobile Radioisotope Laboratory which was parked on the street in front of Federal City College. A number of students visited the laboratory and a number of pictures were taken.

When I returned to the office I presented Amy Wiening with a 20-Year Service Pin.



Presentation of 20-Year Service Pin to Amy Wiening; April 22, 1969.  
L to R: Doris Knief, Seaborg, Amy Weining.

Deleted

At 12 noon I attended a luncheon hosted by Lee DuBridge in honor of Dr. Omond M. Solandt, Chairman of the Canadian Science Council, in the Martin Van Buren Room No. 3 of the State Department. Also present were: Dr. McTaggart-Cowan (Staff Director, Canadian Science Council), J. Ward Greenwood (Scientific Counselor, Canadian Embassy), James M. Beggs (Transportation), Harold Finger (HUD), Dr. John Foster (DOD), Dr. Leland J. Haworth (NSF), Dr. Thomas O. Paine (NASA), Herman Pollack (State), Dr. Myron Tribus (Commerce) and David Z. Beckler and David S. Freeman (OST).

After the lunch DuBridge called on Solandt to describe the new mechanism for policy determinations in the field of science in Canada. Solandt described briefly the functions of the Canadian Science Council which is composed of representatives, about equal in number, from universities, the government and industry appointed by the Prime Minister for three-year terms. Solandt said that one of the problems facing the Council is the development of more activity by industry in scientific research. He indicated that there is a shortage of social science professors in Canada while there is a substantial increasing interest in this field by Canadian students. He expressed the view that the social sciences should be handled by a separate council in Canada.

Before the luncheon I spoke to John Foster about the apprehension concerning the forthcoming high yield test in Nevada (JORUM) from the standpoint of its possible exacerbation of the ABM problem. He agreed with me that we should discuss this policy issue with Kissinger in the immediate future.

I told DuBridge that Tape has decided that his last day as Commissioner will be April 30 and, therefore, we should try to get word from the President on Tommy Thompson's appointment as soon as possible. I also told him that I received a note (copy attached to April 18, 1969 Journal) from President Nixon yesterday approving the recommendation that the 200 Bev Accelerator Laboratory be named in honor of Dr. Enrico Fermi. I suggested that I might now write members of Congress such as Annunzio, Pastore, Holifield, Price and others informing them that this is now our plan, and DuBridge concurred. I also mentioned to him the AEC's suggestion that Vannevar Bush, James Conant and General Leslie Groves be given special awards, perhaps designated as Atomic Pioneer awards, by President Nixon at a special ceremony at the White House; DuBridge indicated general concurrence with this plan.

Herman Pollack rode back to the H Street office with me and I gave him a guided tour of the model weapons display that has been set up in the Commission Meeting Room for two days.

I sent copies (attached) of the Commission's Tentative Policy Regarding Participation by Industry in Uranium Enriching Activities to Robert Mayo, Paul McCracken and Lee DuBridge.

Professor Robert Rex of the University of California, Riverside, dropped by to describe a project which might use geochemical heat to produce deuterium so cheaply that the U.S. might consider turning toward heavy water moderated reactors; I attempted to discourage him from thinking this is a feasible path of endeavor.

Around 4 p.m. I escorted Gerard Smith and Benjamin Huberman of ACDA through the weapons exhibit. Allan Labowitz, Toni Joseph, Julie Rubin and several members of the Division of Military Application were present. In the course of the conversation I described to Smith the results of the talks that Jerry Tape had with Federov and Morokhov during their recent discussion of the technical aspects of Plowshare in Vienna. I described in particular the attitude of the Soviets toward the interpretation of the Limited Nuclear Test Ban Treaty in connection with excavation projects, namely that they don't think that amending the Treaty is feasible but think rather that a definition of allowable radioactivity in the atmosphere should be agreed upon.

I sent my biweekly report to the White House (copy attached).

APR 22 1969

Honorable Robert P. Mayo  
Director  
Bureau of the Budget

Dear Mr. Mayo:

Your letter of April 7, 1969, providing Budget Bureau guidance for the Fiscal Year 1971 planning and budgeting cycle, identifies the future of the AEO's premium enrichment complex as one of the principal program issues. One of the questions identified in Attachment A to your letter requests AEO recommendations concerning an Executive Branch position on this question.

As you know, the Commission has been considering over an extended period of time the various aspects of the question of future responsibility for uranium enrichment in the United States. Our staff report, which was provided to you last month, identifies and discusses a number of difficult problems on which decisions are required. You are also familiar with our current effort to obtain the views of industry, other Government agencies, as well as our foreign enrichment customers on these questions. Pending receipt and analysis of comments on the staff report, however, the Commission has, after extensive consideration and discussion, adopted on a tentative basis a Policy Statement in this regard. A copy of this Statement is enclosed.

Because of its relationship to the study of this question being undertaken by the Executive Office of the President, I am also sending copies to Dr. Macraeken and Dr. Dubridge.

Dist w/Encl:  
Chairman - 2

Cordially,

Comr. Ramey - 1  
Comr. Tape - 1  
Comr. Johnson - 1  
Comr. Costagliola - 1  
Sacy - 2

(Signed) Sam T. Shroy

Chairman

Enclosure

GM - 2



U. S. ATOMIC ENERGY COMMISSION  
TENTATIVE POLICY REGARDING PARTICIPATION BY  
INDUSTRY IN URANIUM ENRICHING ACTIVITIES

ENCL. BY DOE  
NOV 88

BACKGROUND

The future market projected for the existing U.S. uranium enriching capacity - three Government-owned gaseous diffusion plants located at Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio - is largely for civilian nuclear power, both within the United States and abroad. The requirements for uranium enriching services to produce the fuel for nuclear power plants are growing rapidly. Plans to meet these demands include increased operating levels and plant improvements to increase production from the existing plants during the 1970's and the construction of new plants to come into operation in the 1980's. The first increment of new plant capacity will be required by about 1980.

The existing plants represent a Government investment of \$2.3 billion, and the planned program for improving and uprating them will involve a further capital investment of at least \$600 million, exclusive of the investment in facilities to supply the additional amounts of electric power which will be required. After completion of this program, production from the existing plants at full capacity will represent a value of more than \$600 million per year at the current \$26 charge for separative work. .

Because the production from these plants will be largely for the civilian sector of the economy, and because major capital expenditures will be required for the necessary plant improvements and new construction, it is appropriate to consider the feasibility and desirability of transferring the responsibility for uranium enriching activities in the U.S. from Government to industry. In order to identify and assess the most important alternatives for the provision of uranium enriching services in the future, the Commission staff has undertaken extensive preliminary studies. In addition, the Commission cooperated with a committee established by the Atomic Industrial Forum to conduct a study of this

question. The AIF Committee report <sup>1/</sup> was published in June 1968.

The Commission staff study <sup>1/</sup> has identified a number of possible alternatives for future responsibility for uranium enrichment activities; these are described in Appendix A. In general, these alternatives may be summarized as falling in the following three categories:

- Continued Government operation for an indefinite period.
- Continued Government responsibility, possibly through a Government Corporation, for an interim period, with the objective of effecting a transfer of responsibility to the non-Federal <sup>2/</sup> sector of the economy at such time as transfer is determined to be feasible and desirable, with due consideration to all aspects affecting the public interest.
- Transfer to and operation by the non-Federal sector as soon as possible, with or without Government regulation.

The Atomic Energy Act provides that the development, use and control of atomic energy shall be directed to make the maximum contribution to the general welfare and strengthen free competition in private enterprise, but subject at all times to the paramount objective of making the maximum contribution to the common defense and security. In considering the possible alternatives for uranium enrichment in the light of its responsibilities under the Act, the Commission has been concerned with a number of policy and problem areas, including:

1. National Security - Uranium enriching technology useful for the production of nuclear fuel for civilian power plants is equally applicable to the production of weapons material. Steps pursuant to any decision to transfer uranium enriching activities to industry would include extending access to sensitive classified technology.

1/ See Appendix B for references.

2/ Non-Federal sector of the economy, as used herein, is intended to include privately owned industrial organizations and utilities, publicly owned utilities except those owned by the Federal Government, and non-profit organizations.

Actions that could increase unduly the risk of compromising such classified technology could correspondingly increase the risk of proliferation of nuclear weapons. On the other hand, widespread adoption and effective implementation over a period of several years of the Non-Proliferation Treaty should substantially reduce the risks of proliferation, even with extended access to classified technology and its use in commercial channels.

2. Competition and Regulation - Any transfer of responsibility for uranium enriching activities to private enterprise must be accomplished in a manner which provides either reasonable assurance of an adequately competitive industry or suitable Governmental regulatory authority to protect the public interest. As identified in the AIF Committee report, there are differing viewpoints concerning the number of independent operators required to give reasonable assurance of adequate competition. In addition, there are questions related to the eligibility of horizontally or vertically integrated companies to be potential transferees of the AEC plants.
3. National Economic and Government Financial Interests - Transfer of responsibility for uranium enriching to the non-Federal sector and the type of enriching industry which is established could result in significant economic differences from continued Government operation; careful evaluation of alternatives is thus required. In addition, in the case of transfer, the amount of the return to the Government on its equity in the enriching enterprise would depend on the firmness of the market and the reliability of an assessment of the costs of alternative capacity at the time of transfer. Both of these factors will be changing with time.

On the basis of an initial assessment of these factors, the Commission has adopted, on a tentative basis, the following Policy Statement.

TENTATIVE POLICY STATEMENT

The Atomic Energy Commission believes that it should be the objective of the Government ultimately to establish the uranium enrichment step of the fuel cycle for civilian nuclear power plants as a part of the non-Federal sector of the economy. To that end, the AEC will consider practicable means of transfer to that sector of one or more of the Government-owned and operated plants. Any transfer of responsibility for uranium enriching, however, must make adequate provision for the national defense and security, provide adequate compensation to the Government for its equity in the enterprise transferred, provide for the assumption by the transferee(s) of existing Government supply commitments, and otherwise be in the public interest.

Any decision to proceed with transfer of responsibility for uranium enrichment must specify a course of action which will itself be predicated upon policy, technical and economic determinations that have been made to assure that the above criteria would be satisfied. Political and technical developments over the next several years may substantially affect the manner in which transfer might best be accomplished. As examples:

- Widespread adoption and effective implementation of the Non-Proliferation Treaty could substantially alleviate current concerns regarding the increased risk to proliferation resulting from expanded access to sensitive enriching technology.
- The feasibility of, and the difficulties of achieving, an adequately competitive enriching industry could be greatly affected by changes in technology.
- The return on the Government's investment in any transfer of the enriching activity to the non-Federal sector of the economy would be expected to change with changes in the firmness of the future market for the plant capacity and the reliability of cost estimates for new plants, relative to which the existing capacity should be evaluated.

In view of these and related factors, it is the considered judgment of the Commission that it would be premature to prescribe at the present time the time and manner of transfer which would assure that the above criteria would be satisfied. Accordingly, the Commission will be giving further consideration to the determination of the feasibility and desirability of an ultimate competitive enriching industry, as opposed to one requiring Government regulation, as well as to the kind of organizational framework for such a non-Federal service and to an appropriate time schedule on which such service might be established. In these further studies, the Commission will consider, as appropriate, input and comments from industry.

Even if a prompt decision to effect transfer of responsibility for uranium enrichment were practicable, an appreciable period of time would be required before the transfer could be effected. In any event, during such period as the Commission continues to be the sole source of uranium enriching services in the United States, the Commission recognizes that it will have the continuing responsibility of assuring that adequate enriching capacity will be available to meet future requirements. The Commission has determined that to meet anticipated requirements most efficiently, it will be necessary to increase production in the existing plants through the 1970's by contracting for additional supplies of power and by major capital investments to improve and uprate the present facilities.

The annual budgetary and appropriations process does not assure the timely commitment of future capital and operating costs necessary for proceeding with such a planned program.

The Commission, therefore, recommends to the President and the Congress that it be empowered to conduct the uranium enriching program on a business-type basis, including the authority to reapply revenues and to obtain financing by borrowing either from the Treasury or by issuing revenue bonds to the public, or both. Such authority might provide for the establishment of a Government-owned

corporation to conduct the enriching program until such time as transfer of the program to the non-Federal sector proves feasible and in the public interest.

The Commission will continue to study possible feasible methods, and associated timing, of transfer of the enrichment function to industry and will report regularly to the President and the Congress on the outcome of such studies so that appropriate action may be initiated on a timely basis.

APPENDIX A

SPECTRUM OF ALTERNATIVES FOR OWNERSHIP AND OPERATION  
OF URANIUM ENRICHMENT FACILITIES

CASE I - (Current Organization) - The AEC would continue to operate the enriching facilities under existing arrangements for an interim - or indefinite - period. Funding would be provided through the annual budget and appropriation process. Transition in the future to any of the alternative cases would be feasible.

CASE II - (AEC Enterprise) - The AEC would operate as in Case I, but would obtain authority to finance the enrichment activities through Treasury bonds and reapplication of revenues from the Enterprise activities. The management structure within the AEC would remain unchanged. This mode of Government operation would continue for an interim - or indefinite - period. Transition in the future to private operation would be feasible.

CASE III - (Government Corporation) -

A. (Under AEC) - As in Cases I and II, the enrichment operations would continue to be performed under existing contractual arrangements, but managed by a wholly Government-owned corporation within AEC. In addition to obtaining authority to borrow from the Treasury and to reapply revenues, authority would also be obtained to borrow from the public. Organizationally, the Corporation would be managed by the Commissioners serving as the Board of Directors. Other operational realignments would be made as necessary to specifically define the existence of the Corporation within the AEC. This mode of Government operation would continue for an interim - or indefinite - period. Transition in the future to private operation would be feasible.

B. (Exterior to AEC) - Under this alternative, a special Government Corporation would be established to continue the enriching function. It would be authorized to issue revenue bonds to the public and/or to the Treasury and to reapply its revenues to its enriching operations. The Corporation would be under the control of a Board of Directors, possibly including one or more of the AEC Commissioners. The Corporation's activities would be administered by direct corporation officers and employees, with actual plant operations performed under contract with industrial firms as at present. This mode of Government operation would continue for an interim - or indefinite - period. Transition in the future to private operation would be feasible.

APPENDIX A

- CASE IV - (Mixed Government-Industry Corporation) - This arrangement represents an attempt "to go private" with a corporation that would initially be a privately owned monopoly, but with a charter which would provide for later division into competitive enterprises and which would also require the monopoly to work under certain restraints imposed by the AEC. Equity capital would range from 15 to 30 percent, owned entirely by private interests. Initial debt financing would include deferred payments to the Treasury for 20 to 40 percent of the total value of assets acquired; the remaining debt financing would consist of bonds offered for sale in equal portions to the public and to persons holding enrichment contracts. Organization of the corporation would be managed by a Board of Directors, possibly including members of the Atomic Energy and Federal Power Commissions.
- CASE V - (Private Monopoly) - Under this alternative, existing uranium enrichment facilities and the responsibility for provision of new capacity would be transferred to a Government-regulated, private corporation. In a proposal of this type submitted to the AEC, the corporation would be wholly owned by eight to twelve of the major U.S. utilities, and financed by at least 90 percent debt, and would function under the broad supervision of Federal regulatory commissions.
- CASE VI - (Partial Sale of Plants) - Early sale of two AEC plants to industry would be effected as soon as practicable and AEC would retain the third plant for an indefinite period. Industry would be responsible for constructing all new plants. Ownership by each participating company would be limited to one plant. The plant retained by AEC would be used to provide the Government's enriched uranium requirements and a part of the foreign and domestic enrichment service requirements; would provide accessibility for study and training purposes to additional firms desiring to build new plants and thus ease the technology entry barrier. AEC plant would also be used for plant scale tests of continuing research and development advances in the diffusion process. When a sufficient number of companies are engaged in the enriching enterprise and firmly committed to the construction and operation of additional plants so as to provide adequate competition, AEC would sell the third plant to an additional private participant.
- CASE VII - (Sale of all Plants) - Early sale of the enrichment facilities (by 1972, if possible) to three independent private operators. AEC would continue barrier manufacturing activities pending development of capability by the private operators. New capacity to be provided by private industry as required.



SIGNIFICANT PARAMETERS RELATING TO OWNERSHIP AND OPERATION OF URANIUM ENRICHMENT FACILITIES

|  | SOURCE OF FUNDS  | ESTIMATED DEBT/EQUITY | OBLIGATIONS TO REPAY TO TREASURY FOR ASSETS ACQUIRED              | METHOD OF CHARGING AEC PROGRAMS   | METHOD OF CHARGING OTHER GOVERNMENT PROGRAMS                            | INDUSTRY ACCESS TO ENRICHING TECHNOLOGY | ECONOMIC OR OTHER CONTROLS  | METHOD OF CONTROL                         | RESTRICTIONS ON PARTICIPATION                          | ORGANIZATIONAL STRUCTURE AND AEC INVOLVEMENT                                     | MONOPOLY OR COMPETITIVE                  | TRANSFER OF AEC FACILITIES  |
|--|--|-----------------------|---|---|---|---|---|---|--|--|--|---|
| <b>CASE I - Current AEC Organ.</b>                   | Budget process.  | -                     | Not applicable.   | Not applicable.   | Usually, less than published charge.                                    | No.                                     | None.   | AEC.                                      | -  | Same as now.   | Monopoly.                                | No change; permits transition to alternate case at later date.            |
| <b>CASE II - Enterprise in AEC.</b>                  | Borrow fm Treasury, reapply revenues.                        | -                     | Alternatives:<br>a) No.<br>b) Yes, with deferred payments.        | Alternatives:<br>a) Published charge.<br>b) Less than pub. charge.<br>c) No charge. | Alternatives:<br>a) Published charge.<br>b) Less than published charge. | No.                                     | None.   | AEC.                                      | -  | Same as now.   | Monopoly.                                | Interim; permits continued AEC ownership or later transfer to industry.   |
| <b>CASE III - Govt Corp.:</b>                        |  |                       |   |   |   |   |   |   |  |  |  |   |
| <b>A. In AEC</b>                                     | Borrow fm Treasury & public, reapply revenues.               | -                     | Alternatives:<br>a) No.<br>b) Yes, possibly w/ deferred payments. | Alternatives:<br>a) Published charge.<br>b) Less than pub. charge.<br>c) No charge. | Alternatives:<br>a) Published charge.<br>b) Less than published charge. | No.                                     | None.   | AEC.                                      | Industry participation in advisory capacity.           | Separate AEC organ., Comm. is Board of Directors.                                | Monopoly.                                | Interim; permits continued AEC ownership or later transfer to industry.   |
| <b>B. Extern. to AEC</b>                             | Revenues plus borrowing fm Treasury & public.                | -                     | Alternatives:<br>a) No.<br>b) Yes, possibly w/ deferred payments. | Market price.   | Market price.   | No.                                     | Probably; on price, scope of service, tails assay, manner of incr. capacity.                      | Corp. Charter.                            | Possibly, industry participation in advisory capacity. | Separate Govt. organ. could have some Comm. participation on Board of Directors. | Monopoly.                                | Interim; permits continued Govt. ownership or later transfer to industry. |
| <b>CASE IV - Mixed Govt.-Industry Corp.</b>          | Sale of bonds to TE contractors & public.. Equity capital.   | 70/30 to 85/15.       | Yes, but partially deferred.                                      | Market price.   | Market price.   | Yes.                                    | Price, scope of service, tails assay, manner of increasing capacity.                              | Regul. by AEC and/or Corp. Charter.       | Open.  | Two Comm. mbrs. on Board of Directors of 10-15.                                  | Initial monopoly eventually competitive. | Transitional; commits transfer to industry.                               |
| <b>CASE V - Private Monopoly - Utility Owned</b>     | Small amt. of equity capital, sale of bonds.                 | 90/10.                | Yes.  | Market price.   | Market price.   | Yes.                                    | Price, scope of service, tails assay.   | Regul. by pertinent Commission(s).        | Only largest utilities.                                | 8-12 utilities. No AEC involve.  | Monopoly.                                | Complete transfer to industry.  |
| <b>CASE VI - Two Plants in Industry; One in AEC.</b> | Private-equity capital & sale of bonds. AEC - Cases I or II. | ?                     | Yes, for two plants. AEC plant - as in Cases I or II.             | AEC plant - as in Cases I or II.  | Two plants, market price. AEC plant - as in Cases I or II.              | Yes.                                    | Price, scope of service, tails assay & manner of incr. cap. until compet. is adequate.            | Regul. by AEC or pertinent Commission(s). | Possible limitations re horiz. & vert. integration.    | AEC - Cases I or II. Private - no AEC involve.                                   | Eventually competitive.                  | Partial transfer with complete transfer committed.                        |
| <b>CASE VII - Early Sale of Three Plants.</b>        | Equity capital, sale of bonds.                               | ?                     | Yes.  | Market price.   | Market price.   | Yes.                                    | Price, scope of service, & tails assay; possibly, manner of incr. cap. until compet. is adequate. | Regul. by AEC.                            | Possible limitations re horiz. & vert. integration.    | Industrial. No AEC involve.  | Possibly competitive eventually.         | Complete transfer to industry.  |

REFERENCES

1. Summary Report by AEC Staff on Future Ownership and Management of Uranium Enrichment Facilities in the United States, March 1969.
2. ORO-658, AEC Gaseous Diffusion Plant Operations, February 1968.
3. ORO-668, Selected Background Information on Uranium Enriching, March 1969.
4. WASH-1084, Forecast of Growth of Nuclear Power, December 1967.
5. Private Ownership and Operation of Uranium Enrichment Facilities, Atomic Industrial Forum Study Committee Report, June 1968.

APPENDIX B

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

April 22, 1969

OFFICE OF THE CHAIRMAN

Honorable Lee A. DuBridge  
Science Adviser to the  
President  
The White House

Dear Lee:

Enclosed is the biweekly status report  
on significant developments in the atomic energy  
program for April 22, 1969.

Cordially,

Glenn T. Seaborg

Enclosure

AEC BIWEEKLY STATUS REPORT FOR APRIL 22, 1969

1. The discovery of a new man-made chemical element, 104, was strongly indicated on the basis of research reported at the recent meeting of the American Chemical Society. This research was carried out at the University of California, Lawrence Radiation Laboratory, Berkeley, with AEC support. Russian scientists claim to have discovered element 104 in 1964, but the University of California researchers, headed by Albert Ghiorso, have been unable to replicate the results on which the Soviet claim is founded. The Russian results and their suggestion of the name "kurchatovium" are now being considered by the international authority on chemistry that determines the validity of claims to element discoveries and assigns a name to newly-discovered elements.
2. The two nuclear powered generators on the Nimbus B-2 weather satellite, which NASA launched on April 11, constitute the first civilian use of nuclear energy in space. Nuclear power can give satellites longer lifetimes and help them perform some functions more effectively than would be possible with other energy sources. Nuclear power will also be essential for missions to the moon and beyond.
3. The nuclear detonation for Project Rulison; a forthcoming Plowshare experiment in Colorado, will probably be delayed beyond the scheduled date of May 22 to permit the completion of safety studies. Public meetings in five Colorado communities explaining the Project (including the public safety program and the effects of the detonation) were held last week by the AEC, the Bureau of Mines, and the industrial sponsors. Rulison will involve a detonation 8,400 feet underground to study the feasibility of using nuclear explosions to increase the recovery of natural gas.
4. AEC testified at hearings before the Joint Committee on Atomic Energy on AEC authorizations for Fiscal Year 1970, on April 17, 18, and 22. These hearings are scheduled to continue on April 23, 24, and possibly 25. Other AEC testimony to Congress will be given on April 23 before the Subcommittee on Research of the Senate Committee on Government Operations about research and development programs financed by the Federal Government; on April 29 before the Subcommittee on Education of the House Committee on Education and Labor about a bill to provide for the establishment of a national science retrieval system (H.R. 8809); on May 1, 2, and 5 before the Subcommittee on Public Works of the Senate Committee on Appropriations about AEC appropriations for Fiscal Year 1970.

5. The AEC participated in technical discussion with the Soviet Union on the status of the technology for the applications of nuclear explosions to peaceful purposes. These discussions were held last week in Vienna. The information presented by the Soviets showed they are greatly interested in that technology and have carried out nuclear explosions to develop it. Since the Soviets had not previously revealed any work in this field, the information is quite significant. But they presented more information on their future plans than on past experience; on the latter, they could have been more forthright. In public statements concerning the meeting, they acknowledged for the first time both the existence of an active Soviet Plowshare-type program and their intention to provide peaceful nuclear explosion services as contemplated by Article V of the Non-Proliferation Treaty. (The U.S. had already announced its intentions to provide such services.)
6. The Howard Hughes organization, which opposes continuation of underground nuclear testing in Nevada, submitted a list of 18 questions about test safety to the AEC on April 17. This list followed a list of 10 questions on the same subject submitted previously, which AEC has already answered. AEC is now considering the second list of questions.
7. The AEC's Nevada Operations Office announced locally on April 19 that a report on the safety aspects of underground nuclear testing was available. This report evaluates the effects of underground tests, explains what is being done to prevent those effects from becoming hazards, and describes measures that are being taken to develop a clearer insight into the problems involved.
8. AEC's invitations to its suppliers of uranium concentrate to reduce deliveries for which AEC had previously contracted are expected to save about \$46 million during Fiscal Year 1970 and Fiscal Year 1971.
9. AEC's estimates of uranium ore reserves in the western U.S. as of January 1969 show a substantial increase compared to those made at the beginning of 1968. The reserve increased from 64 to 70 million tons. The number of tons of uranium concentrate considered recoverable at \$8 or less per pound of  $U_3O_8$  increased during 1968 by 13,000 tons to 161,000. (Uranium concentrate now sells for about \$4 to \$8 per pound.) The leading states in uranium ore reserves are New Mexico and Wyoming; their combined resources add up to approximately 85 percent of the nation's reserves.

10. The worldwide demand for uranium by 1973-74 will increase by 60-70 percent over current annual demand, according to a report by the International Atomic Energy Agency and the European Nuclear Energy Agency. The report also stated that this demand for uranium concentrate can be met at a price under \$10 per pound. Another recent report by Chase Manhattan Bank's Energy Group, predicted that uranium reserves will be adequate to meet worldwide demands through 1980 at a price of \$10 per pound or less (based on current dollars).
11. A U.S. team recently examined safeguards practices and procedures of EURATOM as applied to the control of 210 kilograms of highly enriched uranium supplied by the U.S. In summary, the U.S. team concluded that the EURATOM safeguards for assuring that nuclear material is not diverted for nonpeaceful purposes are satisfactory for the quantity of material now supplied by the U.S., but that the problem will grow significantly more complex when larger quantities, such as those characteristic of U.S. commercial nuclear fuel operations, begin to be processed in European facilities.
12. Senator Jordan and Representative Hansen of Idaho made an all-day tour on April 11 of the AEC's National Reactor Testing Station at Idaho Falls.
13. The International Atomic Energy Agency, in cooperation with the AEC, will sponsor a symposium on the Nature, Induction, and Utilization of Mutations in Plants, which will be held at Washington State University on July 14-18, 1969. This meeting, which will be co-sponsored by the Food and Agriculture Organization, will be the fifth scientific symposium sponsored in the U.S. by the IAEA with AEC's cooperation.
14. AEC has awarded a contract to develop a nuclear (radio-isotopic) heat source to power an artificial heart that would be surgically implanted in cardiac patients.
15. An AEC film, dealing with the concept of a nuclear-agro-industrial complex and produced for a recent international exhibit at Rome, has won first prize in its category over 250 competing films from 12 countries at the U.S. Industrial Films Festival.
16. In light of the decision not to proceed with the Cape Keraudren harbor feasibility study, the Australian AEC

has suggested that the two Commissions undertake a joint general feasibility study of possible nuclear harbor projects. The proposed study would cover the entire region of western Australia where the need for harbors exists and would consist mainly of collecting and analyzing existing data. The Commission believes it would be desirable to conduct such a study.

Between 5 and 6 p.m. WWDC Radio Station broadcast a transcript of part of the remarks I made at Federal City College this morning.

Eric, Suki and I hiked in Rock Creek Park, starting at Oregon and Nebraska Avenues, going along the White Horse Trail and Cross Trails 3 and 4 past the Police Headquarters, returning to our starting point.

Wednesday, April 23, 1969 - D.C.

This morning I testified before the Subcommittee on Government Research (Harris Committee) of the Senate Committee on Government Operations. Representing the Subcommittee were Senator Fred Harris (Oklahoma), the Chairman; Leslie Kreps, Staff Director; and Dennis Brezino and Fred Munsbridge, staff members. Accompanying me to the hearing were Walt Hughes and Enzi DeRenzis, who sat at the witness table with me, Spof English, John Reisch and Dick Griffin.

The subject of the hearings was Federal financing in research for universities with emphasis on the question of indirect costs and cost sharing by the universities. In my prepared statement, I spoke against having a ceiling on indirect costs and against having compulsory cost sharing. Senator Harris' questions, following my testimony, were directed toward eliciting the difference between research grants and contracts. He also asked whether Federal support of science has had an adverse effect on universities, and I indicated that I think this has been over-emphasized by some and that the net effect on balance has been good.

The White House announced about 11 a.m. the intention of President Nixon to nominate Dr. Theos J. Thompson as a member of the Atomic Energy Commission.

At 11:15 a.m. I attended a meeting of the General Advisory Committee (all members except Lombard Squires) with the Commissioners (except Ramey). I gave my usual report covering important items since the last meeting. Among the items I covered were (1) the Commission's intention to ask President Nixon to give a new atomic pioneer award to Bush, Conant, and Groves; (2) the consternation created in the Rocky Mountain States because of our need to shut down the MTR for financial reasons; (3) the issue of the transfer of the gaseous diffusion plants to private ownership and the involvement of the White House Committee in this and its relations to the AEC and the JCAE; (4) the changes in the Fiscal Year 1970 budget proposed by President Nixon; (5) the mounting public criticism of nuclear power plants and the AEC's plans to counter this; (6) the mounting criticism of high yield underground testing in Nevada and the commission's program to counter this; (7) Commissioner Tape's visit to Vienna for technical discussions on Plowshare with the Soviets; (8) the deferral of the Plowshare Rulison agreement in order to complete a safety study; (9) a number of IAEA organizational matters including the decision of the U.S. to support the reappointment of Sigvard Eklund as Director General and President Nixon's reappointment of Harry Smyth as the U.S. Representative; and (10) the recent definite identification of isotopes of element 104 by Ghiorso and his co-workers in Berkeley.

Chairman Vesper brought up a number of other matters, including the status of the uranium miners' problem and our plans to deal with it. We described the recent activity in this field involving JCAE hearings, held March 17 and 18, on the subject of radiation standards in uranium mines.



I had lunch at the Metropolitan Club with Jerry Tape, Howard Vesper and Bill Webster; we continued our discussion of GAC-AEC areas of mutual interest.

At 3 p.m. Claude C. Wild, Jr. (Vice President, Governmental Relations Department, Gulf Oil Corporation) called on me to advise me of an important change in the management of Gulf General Atomic. Wild said that Gulf management has decided to replace Fred de Hoffmann as President of Gulf General Atomic with Zane Q. Johnson of the Gulf Houston office. De Hoffmann will assume the position of Vice President and Vice Chairman of the Board, reporting to Johnson. R. M. Foster will become Vice President for Finance of GGA and Tom Dietz will move to San Diego and give his full attention to GGA. These changes are being made in order to make the operation of GGA more businesslike. I suggested to Wild that we would like to have B. R. Dorsey, President of Gulf Oil Corporation, come in to give us more background concerning this change. Wild informed me on a confidential basis that Gulf has recently made a substantial uranium strike in Canada and has also found some uranium in New Mexico. The extent of the strikes are still being surveyed but the Canadian find is reported to be extremely rich.

I was then visited by Wallace C. Fife (Minister for Mines, New South Wales, Australia) accompanied by Stephen C. Hocking (First Secretary, Australian Embassy) and Dr. Jack M. Rayner (Technical Advisor, Department of Commerce). Julie Rubin was also present. Mr. Fife wanted to discuss the future of nuclear power in Australia. He indicated that, contrary to some reports, a national decision has not yet been made between the natural uranium heavy water reactor and the enriched uranium reactor. He is talking to Westinghouse and others during his visit to the United States in order to assess the relative merits of these reactors.

Bob Silber of the American Chemical Society called regarding the April 17 letter I received from William B. Cook, Chairman of the ACS Division of Chemical Education, asking me to serve as a member of the Steering committee for an International Symposium on Education in Chemistry, to be held at Snowmass-at-Aspen, Colorado, during the summer of 1970, in commemoration of the 50th Anniversary of the ACS's Division of Chemical Education. He said it would be helpful to have me on the committee at least for consultation by phone and mail, and I said I'd be happy to do that; Silber and I agreed that I would serve on the committee under those conditions.

Helen and I attended a farewell party given by the Division of Military Application for Jerry and Jo Tape at the Bethesda Naval Officers Club. The Tapes, the Gillers, Helen and I, and Jack Rosen formed a receiving line and about 400 people came by. Among those present were Admiral Hyman Rickover, Congressman and Mrs. Melvin Price, Dr. and Mrs. Leland Haworth, Dr. and Mrs. T. Keith Glennan, Dr. and Mrs. Carl Walske, Atomic Energy and Scientific Attaches from many embassies, and Norris Bradbury and many members of the GAC. Ed Giller, the master of ceremonies, introduced me and I made some brief remarks, emphasizing the tremendously high regard in which the AEC staff holds Jerry Tape and my own high regard for him. This was followed by a humorous dubbed taped interview with Jerry, the presentation of a number of humorous gifts to him and a scroll to Jo Tape. Jerry then responded with some moving remarks of appreciation. (List of Non-AEC attendees attached.)

MASTER

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LIST OF NON-AEC ATTENDEES

| <u>Name</u>   | <u>Organization</u>                              |
|---|--|
| Honorable & Mrs. Melvin Price                                 | Representative from Illinois<br>Member of JCAE   |
| Honorable & Mrs. Leland Haworth                               | National Science Foundation                      |
| Honorable & Mrs. T. Keith Glennan                             | Former AEC Commissioner                          |
| Honorable & Mrs. Carl Walske                                  | Department of Defense                            |
| Mr. & Mrs. John S. V. Andrews                                 | Embassy of Great Britain                         |
| Mr. & Mrs. Harold S. Weeks                                    | Embassy of Great Britain                         |
| <del>Mr. &amp; Mrs. G. Ferrari</del> <i>Amalgamation 7/23</i> | <del>Embassy of Australia</del>                  |
| Dr. & Mrs. Ronald G. Shuttleworth                             | Embassy of South Africa                          |
| Mr. & Mrs. Jean Dard  | Embassy of France                                |
| Mr. & Mrs. Louis Groven                                       | Embassy of Belgium                               |
| Dr. & Mrs. Gaetano Lanzano                                    | Embassy of Italy                                 |
| Mr. & Mrs. Wolfgang Opfermann                                 | Embassy of Germany                               |
| Dr. & Mrs. Takao Nakajima                                     | Embassy of Japan                                 |
| Mr. & Mrs. Tervo Ichinose                                     | Embassy of Japan                                 |
| Mr. & Mrs. J. Ward Greenwood                                  | Embassy of Canada                                |
| Mr. & Mrs. Curt Heidenreich                                   | Director, European Communities<br>Liaison Office |
| Mr. W. J. Lehmann   | Department of State                              |
| Mr. & Mrs. Nelson Sievering                                   | Department of State                              |
| Mr. & Mrs. George F. Murphy, Jr.                              | JCAE Staff                                       |
| Captain Edward J. Bauser                                      | JCAE Staff                                       |
| Lt. General A. W. Betts                                       | Department of the Army                           |
| Vice Admiral Hyman Rickover                                   | Department of the Navy                           |
| Dr. William W. Carter   | Department of Defense                            |

| <u>Name</u>                | <u>Organization</u>                        |
|----------------------------|--|
| Dr. & Mrs. Paul Tompkins   | Federal Radiation Council                  |
| Mr. & Mrs. Claire Palmiter | Federal Radiation Council                  |
| Dr. Norris E. Bradbury     | Director, Los Alamos Scientific Laboratory |
| Dr. Jane H. Hall           | Los Alamos Scientific Laboratory (GAC)     |
| Dr. John C. Bugher         | General Advisory Committee                 |
| Mr. Howard Vesper          | General Advisory Committee                 |
| Dr. Norman Ramsey          | General Advisory Committee                 |
| Dr. Edwin Goldwasser       | General Advisory Committee                 |
| Dr. Stephen Lawroski       | General Advisory Committee                 |
| Dr. Melvin A. Harrison     | General Advisory Committee                 |
| Mr. & Mrs. William Webster | General Advisory Committee                 |
| Mr. & Mrs. Anthony Tomei   | General Advisory Committee                 |

Thursday, April 24, 1969 - D.C.

Lee DuBridge called to say he called Holifield the other day and informed him of the imminent appointment of Theos Thompson to the Commission. Holifield felt that, if the AEC Commissioners and DuBridge agree on the choice, he "thought it was great." DuBridge asked whether I have been in touch with Thompson, and I said I notified him a little in advance of the President's announcement. DuBridge said I should make an appointment to see the President and to introduce Thompson to him. I mentioned that Commissioner Costagliola's term expires June 30 and, out of fairness, he should be told what the plans are. DuBridge said I should tell him that the White House is looking for someone to take his place. DuBridge said he would like more input on the matter of a successor; I said I would discuss this with the Commissioners and will come up with suggestions. I again brought up the matter of Rabi and his future with regard to the IAEA. DuBridge said he talked to Pollack about that the other day. I told DuBridge I would send him a copy of a letter from a Congressman who is very much against Rabi because of Rabi's strong public stand against the ABM. I said that there is a New York Times clipping which quotes Rabi very strongly on this issue.

B. R. Dorsey (President, Gulf Oil Corporation) called as a follow-up to Claude Wild's visit with me yesterday. Dorsey explained that Gulf Oil has had the conviction for over a year that things were not organized quite right at GGA. Gulf Oil talked to Fred de Hoffmann yesterday afternoon to inform him of the changes, and everything went very amicably. De Hoffmann will become Vice Chairman of Gulf Oil, with no operating responsibility or authority. Zane Johnson will take over as President of GGA, and Tom Dietz will also assist Johnson. Dorsey said he told Johnson that on the HTGR, as well as other matters, he is to get Fred's thinking. Dorsey said he talked to Bob Person this morning, and he understands; he talked to Philadelphia Power & Light, and they understand; even in GGA itself, people like Landis and Rolander have understood for a long time that HTGR would have to be pulled loose and somebody would have to make tough decisions regarding it. I asked whether Zane Johnson could come in to talk to the Commissioners and General Manager sometime, and Dorsey agreed but asked that he have a couple weeks on the job first.

At 12 noon I met with Professor A. I. Alikhanyan (Director, Institute of Physics, Armenian Academy of Sciences at Yerevan in the Soviet Union) who was accompanied by Dr. Lawrence Parsegian, an Armenian and a friend of Professor Alikhanyan. Julie Rubin, Mel Abrahams and Abe Friedman were also present. Alikhanyan said he was talking to me at the suggestion of A. M. Petrosyants (Chairman, State Committee on Atomic Energy, USSR), regarding the CDC 6400 computer that they would like to buy for use in connection with their high energy physics program at Yerevan. I indicated that in order to obtain the export license, which involves consultation with the Departments of Commerce, Defense, etc., it would probably be necessary that the computer be under U.S. control; that is, it would be operated, supervised, and programmed solely by Americans, and it would have to be subject to return to the U.S. at the discretion of the U.S. Alikhanyan didn't seem to think that these conditions would make the deal impossible, although he clearly felt that it involved prestige considerations and unnecessary expense from the standpoint of the USSR since it was so clear that the computer couldn't be used for any unauthorized purposes.

I had lunch at the Roger Smith Hotel with Dick Hewlett and Julie Rubin to discuss my proposed project to re-create the history of my Chemistry Section at the Metallurgical Laboratory on a more or less day to day or week to week basis for the period 1942-1946. We identified a number of items that would be required for this endeavor. Hewlett was quite enthusiastic about this and will cooperate in every way possible.

I received a letter (copy attached) from Peter M. Flanigan, recently appointed by the President to assume the responsibilities formerly handled by Bob Ellsworth, suggesting that we arrange a get together to discuss the various aspects of AEC's activities.

Jerry Tape today sent around to the Commissioners a detailed report of his trip to Vienna to discuss the technical aspects of peaceful nuclear explosions (copy of press release attached).

From 2:15 to 3:15 p.m. the Commissioners met with the McCracken Committee in Room 312 of the Executive Office Building. Present were: Paul McCracken, Bob Mayo, Lee DuBridge, Tom Moore, Commissioners Ramey, Tape, Costagliola and Johnson, George Quinn and I.

The purpose of the meeting was to discuss the White House study on the future of the gaseous diffusion plants. McCracken and DuBridge described the rationale of the need by the White House to have enough information to evolve a position on this important issue; in view of the lack of personnel, they thought that the use of a consultant firm, such as A. D. Little, was the proper approach. Bob Mayo indicated that he had come to doubt this approach because of apparent, although probably not real, conflict of interest situations that could plague the study; he mentioned, for example, that Bill Carey, who has been a member of the BOB staff, is now with A. D. Little.

I indicated that I thought it had been a mistake to use an outside consultant firm for this purpose in view of the complexity of the problem and the short time scale involved. I also identified the problems involved in furnishing much sensitive material to such consultants. Ramey and Tape also indicated that they have problems with such a consultant arrangement. Ramey described the possible conflict of interest situation with two Rand employees (Victor Gilinsky and William Hoehn) and the Arthur D. Little consultant, Manson Benedict. He also indicated that he feels the Commission should have a representative directly on the McCracken Committee rather than just as an observer. McCracken indicated that he had no objection to such AEC involvement; as the result of further discussion, it was decided that McCracken would recommend to the White House that the Committee be reconstituted to include, in addition to McCracken, Mayo and DuBridge, representatives of the AEC, Departments of Treasury, Justice and State.

McCracken indicated that he now has doubts as to the wisdom of having a consultant group and indicated that probably from here on the emphasis would be on obtaining the required material through intra-governmental means, involving especially the AEC. It was indicated that perhaps the assignment to A. D. Little would be narrowed so as to focus on the problem of competition in the uranium isotope enrichment area.

I raised the matter of our response to Congressman Holifield's letter of April 15 which asked whether the Commission can still meet the June 1, 1969,

THE WHITE HOUSE  
WASHINGTON

April 22, 1969

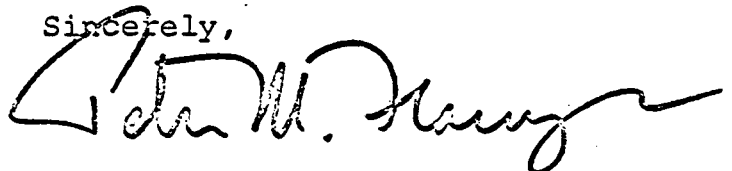
Dear Mr. Chairman:

The President has requested that I assume the responsibilities formerly handled by Mr. Robert Ellsworth relating to your agency. Dr. DuBridgde will continue to share these responsibilities.

I hope that you will continue to keep my office informed on all significant matters in a timely way. This should include your monthly reports on the activities of your agency, routine forwarding of all significant releases and advance notices of important events.

In order that we can get to know one another, would you please contact Miss McFadden in my office to set up a time convenient to you when we can get together to discuss the various aspects of your agency's activities.

Sincerely,



Peter M. Flanigan  
Assistant to the President

Honorable Glenn T. Seaborg  
Chairman  
Atomic Energy Commission  
Washington, D.C. 20545

## JOINT US-USSR PRESS STATEMENT IN VIENNA

The Soviet-US technical discussions on peaceful uses of nuclear explosions took place in Vienna from the 14th to the 16th of April, 1969.

Soviet participants included Academician Federov, First Deputy Chairman of the State Committee on Atomic Energy Morokhov, Messrs. Kedrovskiy, Israel, Rodionov, Grinewskiy, and Gudkov.

U. S. participants included U. S. Atomic Energy Commissioner G. F. Tape, Messrs. R. E. Batzel, A. Holzer, J. S. Kelly, J. Rosen, H. Scoville, N. Sievering, and G. C. Werth.

The parties were of the view that underground nuclear explosions may be successfully used in the not so far off future to stimulate oil and gas production and to create underground cavities. It may also be technically feasible to use them in earth-moving work for the construction of water reservoirs in arid areas, to dig canals and in removing the upper earth layer in surface mining, etc.

Although the economics will vary from project to project, the use of nuclear explosions for these purposes is promising and would permit operations under conditions where conventional methods are either impossible or impracticable. Provided that certain requirements are met, the present state of technology will make it possible to carry out underground explosions fully meeting national or generally accepted international safety standards for the protection of the public from radiation.

Both delegations concluded that the exchange of views on the status of this technology was very useful and the experts deem it desirable to have additional technical exchanges. Although these talks were not concerned with how peaceful nuclear explosion benefits are to be provided pursuant to Article V of the NPT, the parties considered these talks very timely in light of this provision of the NPT which ensures that potential benefits from any peaceful applications of nuclear explosions will be made available to the non-nuclear weapon states adhering to the Treaty.

April 16, 1969



readiness date to testify on the problem of disposition of the Commission's gaseous diffusion plants; McCracken indicated that we can inform Holifield that we will be ready on that date. I called their attention to the Commission's tentative policy statement on the future of the gaseous diffusion plants.

At 5 p.m. Jerry Tape and I went to the White House to meet with Henry Kissinger. Carl Walske and Spurgeon Keeny were present. We discussed the high yield underground test (JORUM) scheduled to take place in Nevada near the end of May. We discussed whether it might not be better to postpone this test for a month or two in view of the controversy in Congress over the ABM. It was agreed that Kissinger would check with the President and then Kissinger and I would discuss it further.

I attended the White House News Photographers annual dinner at the Sheraton-Park Hotel. The President, the Vice President, and all but one or two Cabinet members were present. I sat at a table with Manny Alpert, Major James Barnum, James Burton, Gary P. Fookes, Saul Gefter, George Gerlach, Norman Hatch, Phil Martin, Jhoon Rhee, Alfred Rosenthal and William Wilson. Edie Adams and Ray Bolger, who sang his trademark song "Once In Love With Amy," entertained. Both the President and the Vice President spoke briefly and in a humorous vein. All in all, it was an interesting and entertaining evening, although perhaps not as exciting as the occasions that President Kennedy attended.

Friday, April 25, 1969 - D.C.

The Commissioners and I participated in a luncheon meeting with the General Advisory Committee (all members were present) in the Commissioners Dining Room. Others present were A. Tomei, Secretary, and Melvin Harrison, Scientific Officer of the GAC, as well as Bob Hollingsworth, Ed Bloch and Julius Rubin. Chairman Howard Vesper gave the usual oral report summarizing the results of the GAC meeting. He indicated their concern about the inadequate budget for Plowshare, the drop in equipment money in the research program, and the potential for the Pitzer Panel report, on the safety of underground testing, leaking to the press with the resultant problems due to its negative conclusions. He also indicated GAC's satisfaction with the many important and interesting advances in the Biology and Medicine program and noted the fact that research funds for nuclear engineering are being increased, the favorable report on the molten salt reactor and the Reactor Subcommittee's request to visit with Rickover in order to make an assessment of the light water breeder reactor.

I received a letter from the Austral Oil Company regarding the follow-on experiment to Project Rulison (copy attached.)

At 1:30 p.m. the Commissioners and I met with the In-House Study Group (the group that was created last July for the purpose of making a study of the Commission's reactor licensing program). Present were Harold Mangelsdorf (Chairman), Peter Morris, Edson Case, John Crawford, Marcus Rowden and Ray Smith, Secretary. Also present were Harold Price, Algie Wells, Warren Nyer, Bob Hollingsworth, Justin Bloom and other staff. Mangelsdorf gave an oral report based on the written draft report, which is nearly ready and which will be submitted to the Commission within a week or two.

# AUSTRAL OIL COMPANY

INCORPORATED

2700 HUMBLE BUILDING

TRAVIS AT BELL

HOUSTON, TEXAS 77002

NEW YORK OFFICE

280 PARK AVENUE

NEW YORK, N. Y. 10017

TEL: 212-986-9360

TELEPHONE  
CA 8-9461

C. WARDELL LEISK  
CHAIRMAN

April 22, 1969

UNCL. BY DCE  
NOV 86

~~Mr. Walter J. Hickel  
Secretary of the Interior  
Department of the Interior  
Interior Building  
Washington, D. C. 20240~~

✓ Mr. Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Gentlemen:

As we discussed with you at the signing of the Rulison contract, Austral Oil Company Incorporated desires to move forward as soon as possible with a follow-on experiment to Project Rulison. This should, we think, consist of a tandem shot inasmuch as the economic development of nuclear stimulation will require a method of breaking across the entire gas formation in the Rulison Field. We are working with CER Geonuclear Corporation on the choice of the next location and the calculations of production which would result from two shots fired simultaneously. We would like to have your engineers work out the details for a firing and stemming system for such a two-shot experiment. We would look forward to a firing date shortly after re-entry and evaluation of Project Rulison.

Assuming that such a follow-on experiment is successful, Austral further desires to move promptly into the commercial exploitation of the gas underlying the Rulison leases. The requirements of the Federal unit agreement with the Department of Interior and our commitment in lease expenses make it mandatory that we develop the Rulison Field as rapidly as possible. Further, development of this huge gas reserve by use of nuclear explosive technology should be an ideal vehicle to move nuclear explosives from the experimental stage to widespread commercial application

AUSTRAL OIL COMPANY

INCORPORATED

Mr. Walter J. Hickel  
Mr. Glenn T. Seaborg

April 22, 1969  
Page 2

In this connection, during negotiation of the Project Rulison contract, Austral Oil Company Incorporated requested the Government Board to consider a proposed Article concerning the intention of the Government to make available additional nuclear devices for follow-on projects in the Rulison Field. A copy of Austral's proposal entitled "Further Assurances" is attached. The position of the Government Board was that this Article should not be included in the contract, but that the Division of Peaceful Nuclear Explosives would be willing to make such assurances by a separate letter.

We would appreciate an expression from you concerning your desire to move forward with a follow-on Rulison experimental shot, and, ultimately, with the commercial development of the Rulison Field.

Very truly yours,

AUSTRAL OIL COMPANY INCORPORATED



C. W. Leisk  
Chairman

FURTHER ASSURANCES

Government Agencies recognize that Program Manager and Austral both prior to and subsequent to the execution of this contract have or will have expended substantial sums in the acquisition and unitization of a block of oil and gas leases in Garfield and Mesa Counties, Colorado, in the drilling of wells thereon and in other manners which contribute to the successful accomplishment of the research purposes of Project Rulison. In the light of these expenditures and to further the desire of the Parties that the objectives of Project Rulison may be fully achieved; Government Agencies shall use their best efforts to make available to the extent practicable and permitted by law such additional nuclear devices as will further the ultimate objectives underlying Project Rulison and the Plowshare Program. Further, at such time as there exists legislation which will enable the Government Agencies to make available nuclear devices for commercial purposes, Government Agencies will use their best efforts to furnish such numbers of nuclear devices at such times as will enable the commercial exploitation of the oil and gas underlying said leases to be achieved.

At 3 p.m. I met with Tom Ayers of Commonwealth Edison and Commissioner Ramey. Ayers wanted to discuss the serious nature of the attacks that are being made on nuclear power and to urge counteraction by the Commission. Ramey and I explained to him that the Commission recognizes the severity of these attacks and is making plans to counteract them.

I called George T. Bell (Office of Harry S. Flemming, Special Assistant to the President) to give him a report on the status of the 13 individuals the White House referred to us for possible employment with the AEC. I said that all appear to be people of very high caliber. I said there is a question in our minds as to whether the individuals whose folders we have received know that they have been recommended to the AEC for employment. Bell said they do not; in fact, they try not to tell people where the folders are. I said that, in that case, we can make the contacts when we actually have something to offer, rather than building up false hopes through Bell, and he said that is right. He asked me to return the folders of the ones that are completely out of the question.

I signed letters to Senator Pastore and Congressmen Holifield, Price and Annunzio, which forwarded copies of the statement (copy attached) we plan to release next Tuesday (April 29) that reflects the Commission's plan to name the 200 Bev Accelerator Laboratory, upon completion of construction, in honor of Dr. Enrico Fermi.

I received a letter from Attorney General Mitchell (copy attached) in which he suggested that someone from the Commission conduct a thorough interview with an official of a fuel processing firm in connection with the possible diversion of enriched uranium fuels by that official.

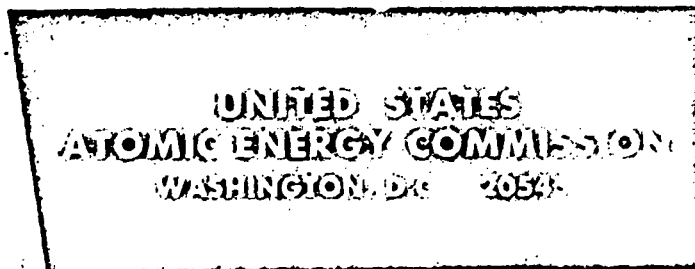
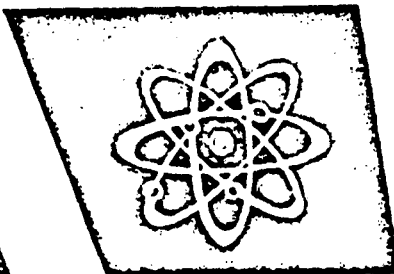
At 3:45 p.m. I presided over Commission Meeting 2371. The Commission agreed to the NASA Administrator's recommendation that a letter be sent to Vice President Agnew, in his capacity of Chairman of the Space Council, requesting approval for the use of Apollo Lunar Radioisotope Heaters on the Apollo 11 spacecraft (scheduled for flight to the moon next July), without a Space Council meeting. (Copy of letter from T. O. Paine of April 23, 1969, and proposed letter to Vice President attached.)

I presided over Information Meeting 899 at 3:05 p.m. and Regulatory Information Meeting 340 (notes attached) at 4:30 p.m.

Steve, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north on the White House Trail, then on Cross Trails 3 and 4, continuing north on the Black Horse Trail, then on Cross Trail 2 and returning south on the White Horse Trail to our point of origin. We saw the effects of a fire that occurred a couple of weeks ago which covered the territory to the north of Cross Trail 2 between the White Horse and Black Horse trails, bounded by the Cross Trail and extending north a couple of hundred yards.

Saturday, April 26, 1969 - D.C.

I worked in the office until 1 p.m. when Julie Rubin and I went to the World Buttery (on 18th Street between Pennsylvania Avenue and G Street) for lunch.



No. M-104  
Tel. 973-3335 or  
973-3446

FOR IMMEDIATE RELEASE  
(Tuesday, April 29, 1969)

ENCL. BY DOE  
NOV 66

### ACCELERATOR LABORATORY TO BE NAMED IN HONOR OF ENRICO FERMI

Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission, today announced that the Commission will name the National Accelerator Laboratory, now under construction near Chicago, in honor of the late Dr. Enrico Fermi.

Formal dedication and naming of the Enrico Fermi Laboratory will not take place until major construction work has been completed and the facility is in operation, probably in the fall of 1972.

Dr. Seaborg, in announcing the AEC's plans, said: "It is particularly fitting that we honor Dr. Fermi in this manner, for in so doing we further acknowledge his many contributions to the progress of nuclear science, particularly his work on nuclear processes.

"Enrico Fermi was a physicist of great renown who contributed in a most significant way to the defense and welfare of his adopted land and to the enhancement of its intellectual well being. His great achievement, the first sustained nuclear chain reaction, took place in a small laboratory in Chicago. It seems singularly appropriate, therefore, that the Federal Government recognize the memory of a man who was at the forefront of science in his day by naming in his honor a laboratory near Chicago -- a laboratory which will have a major international impact on our understanding of the basic structure of matter."

When completed, the laboratory will be the home of the world's highest energy proton accelerator and will cost approximately \$250 million plus outlays for experimental

(more)

equipment. The laboratory is being developed on a 6,800-acre site about 30 miles west of Chicago near the town of Batavia, Illinois. By 1975 it is expected to have a permanent staff of about 1,650 scientists and supporting personnel, and about 350 visiting scientists are expected to be at the laboratory at any given time.

The Universities Research Association (URA), consisting of 49 leading universities in the United States and one in Canada, is under contract to the AEC for design and construction work and is expected to operate the laboratory. Dr. Norman F. Ramsey is President of URA, which has established the National Accelerator Laboratory on the site with Dr. Robert R. Wilson as Director.

The proton accelerator will have an energy of 200 billion electron volts (BEV), greater than now available at any accelerator. The design incorporates features to permit the energy to be extended to about 400 BEV at a later date.

(NOTE TO EDITORS AND CORRESPONDENTS: This information also is being issued by the Commission's Chicago Operations Office, Argonne, Illinois.)

Doc # 910958

CROSS REFERENCE SHEET

TITLE OF DOCUMENT Ltr. Attorney General Mitchell to  
Seaborg dated 4/23/69 Re. "IN MY  
letter I told you we had no evidence ...

This document requires further classification review and has been removed from this folder.

LV. T. Leich  
Name

10/22/86  
Date

NOT Copied For Coord. Currently being  
reviewed by DOJ under SAN official  
request for Seaborg  
WLT Per R. Hamburger

100258





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON, D.C. 20546

UNCL. BY DOE  
NOV 86

OFFICE OF THE ADMINISTRATOR

APR 23 1969

Honorable Glenn T. Seaborg  
Chairman  
U. S. Atomic Energy Commission  
Washington, D. C. 20545


Dear Dr. Seaborg:

As you know, the Atomic Energy Commission has delivered  $^{238}\text{PuO}_2$  fueled heaters to NASA at the Kennedy Space Center on April 4, 1969, for use on the Early Apollo Surface Experiments Package (EASEP). The safety test program has been completed, and in accordance with the procedures outlined in our letter of March 10, 1969, to you and DoD, the Inter-agency Safety Review Panel coordinators have met, reviewed the extensive safety test data, and have written their Safety Evaluation Report (SER) covering this proposed use.

Based on the assurances provided in the SER, the briefings previously given, and the basic safety data which have been accumulated in the SNAP-27 safety review and evaluation, we recommend that the enclosed letter be sent to the Vice President by NASA requesting launch approval without a Space Council meeting. If you agree with this approach, please send us a letter of concurrence which we will attach to the enclosed letter.

We are pleased with the excellent response by all those involved in this program. The time scale was short, but the philosophy of over-design and over-test to eliminate the requirement for recycling the safety efforts paid off very well.

Sincerely yours,

  
T. O. Paine  
Administrator

Enclosure: as stated

D R A F T



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

The Vice President  
Washington, D. C. 20500

Dear Mr. Vice President:

The National Aeronautics and Space Administration plans to include an Early Apollo Surface Experiments Package (EASEP) as an important scientific objective on the Apollo 11 lunar landing mission. Two 15-watt,  $^{238}\text{PuO}_2$  fueled radioisotope heaters will be used to maintain a key experiment within acceptable temperature limits during lunar nights so that a year or more of valuable data can be obtained. The heat from each of these units is produced by the radioactive decay of 450 curies of plutonium in the form of microspheres.

Numerous tests and analyses have been run to determine survivability of the units under various abort conditions. The results of these tests and analyses have been reviewed by representatives of AEC, DOD, NASA, USPHS, and others. Copies of the Safety Evaluation Report (copy enclosed), which was prepared by the representatives of AEC, DOD, and NASA, have been transmitted to your staff and others concerned.

Based on the risk assessment made by the Interagency Safety Evaluation Panel, we conclude that these units are acceptable with respect to aerospace nuclear safety. Copies of letters from AEC and DOD concurring in the safety of the heaters and recommending flight approval are also enclosed. Accordingly, it is requested that Presidential

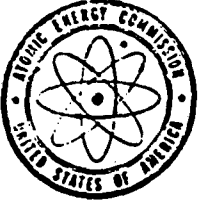
approval for use of the heaters on the first Apollo lunar landing mission be granted. This request has been coordinated with your staff and other appropriate agencies.

Sincerely yours,

T. O. Paine  
Administrator

Enclosures:

Safety Evaluation Report  
Concurring letters from AEC and DOD



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

ENCL. BY DOE  
NOV 86

COPY NO. --- 2  
April 25, 1969

INFORMATION MEETING 899

3:05 p.m., Friday, April 25, 1969, Chairman's Conference Room, D. C.

EXECUTIVE SESSION

1. Personnel Item
2. Commissioners' Special Meeting, 4:00 p.m., Friday, May 2, 1969  
Scheduled: (Rubin-AGM-SECY)
3. Conflict of Interest Exemption for Commissioner Tape  
Noted the General Manager would execute the exemption determination.  
(GC)
4. AEC 811/235 - Status Report on Project Rulison  
Procedures review is requested. (PNE)
5. Chairman's Report on Commissioners' April 24 Meeting with the White House Study Group  
(Rubin-SECY)
6. Chairman's Report on April 24 Meeting with Henry A. Kissinger, Assistant to the President for National Security Affairs, re the JORUM Event  
(Rubin-SECY)

7. General Giller's April 25 Memorandum re Plans of Dr. Edward Teller for Activities in Israel

The Commissioners will discuss with Dr. Teller. (Rubin-AGM-SECY)

8. April 22 Letter from Peter M. Flanigan, Assistant to the President, re His Designation as the White House Liaison Representative with the AEC

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9. April 18 Letter from Donald Glower, Ohio State University, re Request for Meeting on Behalf of American Society for Engineering Education

A meeting will be scheduled. (Rubin-SECY)

10. April 18 Letter from the President re Naming of 200 BEV Accelerator Laboratory

Noted. (Rubin-SECY)

11. JCAE May 6, 7, and 8 Hearings on Plowshare

We will distribute proposed responses to the JCAE questions. (PNE-SECY)

12. AEC 141/129 - NVOO Briefing for Nevada Legislature

Commissioner Johnson's request is noted. (AGMMA)

13. Agenda for the Week of April 28, 1969

Approved. (SECY)

14. NTS Events (See General Giller's April 24 Memorandum)

Noted. (AGMMA)

15. AEC 1282/43 - Execution Data for a Portion of Bowline IV Events

Approved with a request. (AGMMA)

16. AEC 988/174 - U.S. -U.K. Mutual Defense Agreement

Approved. (AGMIA-Rosen)

17. AEC 1251/7 - Guidance on Exchange of Unclassified Scientific and Technical Information with Countries with which We Do Not Have Diplomatic Relations

A revised recommendation is requested. (AGMIA)

18. Mr. Kratzer's Oral Report on the Selni Reactor Problem

19. AEC 293/90 - South American Visit by Grand Junction Geophysicist

Approved. (AGMIA-RM)

20. April 21 Letter from Keith Waller, Australian Embassy Forwarding Message from Commissioner Timbs re Plowshare Studies; and, AEC 811/238 - Future of Australian Plowshare Study

Approved. (Rubin-AGMIA-PNE) *Dispatched*

21. AEC 811/236 - Humble Oil Proposal for Alaskan Harbor Study

A revised letter is requested. (PNE)

22. AEC 783/123 - Proposed Letter to Director, BOB, Commenting on S. 1371 re Strikes at Construction Project

Approved. (GC)

23. Cost of Construction of Nuclear Power Plants

Commissioner Ramey requested some thought be given to this matter. (LABR)

24. Pending Contractual Matters Report No. 305

Noted. (PAR)

25. Mr. Hennessey's April 17 Memorandum re AEC Jurisdiction Over Nuclear Facilities and Materials Under the Atomic Energy Act

Approved. (GC)

W. B. McCool  
Secretary

4:30 p. m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

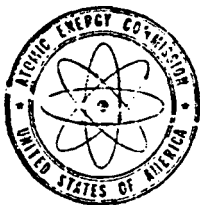
Mr. Hollingsworth  
Mr. Rubin  
Mr. McCool  
Mr. Bloch\*  
Mr. Brown\*  
Mr. Hennessey\*  
Mr. Kratzer\*\*  
Mr. Kelly\*\*  
Mr. Minsch\*\*  
Mr. Herrick\*\*  
Mr. McBride\*\*

DISTRIBUTION:

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Secretary

\*Partial Attendance

\*\* Attendance by Topic (s)



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

April 25, 1969

REGULATORY INFORMATION MEETING 340

4:30 p.m., Friday, April 25, 1969, Chairman's Conference Room, D. C.

1. Mr. Price's Oral Report on April 24 Meeting with John Badalich, Minnesota Pollution Control Agency re Minnesota Problem
2. Mr. Price's April 23 Memorandum re Plan for Industry Briefing on Nuclear Power Plant Quality Assurance Needs

Approved with changes. (ADRA)

W. B. McCool  
Secretary

4:35 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Price  
Mr. Hennessey  
Mr. Hollingsworth  
Mr. Brown  
Mr. Rubin  
Mr. Wells  
Mr. McCool

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Secretary



After I arrived home, Eric, Suki and I took a hike in Rock Creek Park. We started at Oregon and Nebraska Avenues, going north on the White Horse Trail to Cross Trail 2, then on Cross Trail 2 to the Black Horse Trail, then south to Cross Trails 3 and 4 and the White Horse Trail to our starting point.

From 4 to 6:30 p.m. I presided over a meeting of the Board of Trustees at Science Service headquarters (1719 N Street, N.W.) We discussed our serious financial plight and the status and future of our fund raising activities. We made the historic decision to sell the Science Service headquarters property and to rent space instead. We also decided to replace Allied as the advertising agent for Science News.

At 7:30 p.m. I flew to Cincinnati on American Airlines Flight No. 511 from National Airport, arriving about 8:50 p.m. I was met at the airport by Professor John Buckingham of the Department of Chemistry, Miami University, who was accompanied by Chemistry Department Professors Joe Cantrell, Dave Phillips (who got his Ph.D. degree with George Jura at Berkeley during the period 1961-1964), and Percy Mundell. Buckingham drove us to Oxford, the site of Miami University. He drove through the downtown district; we passed McGuffey Museum, which is the former home of W. H. McGuffey of "McGuffey Reader" fame. I was then driven to the Climer Guest Lodge where I occupied Room 36. In the central lounge area I met President Phillip R. Shriver, some of the Miami University administrators and fellow honorary degree recipients (including Mr. Leslie Brady, who is in the American Embassy in Paris and was formerly with the USIA when Ed Murrow was Director).

Sunday, April 27, 1969

I had breakfast at President Shriver's home, having ridden there with John Dolibois (Vice President for Development and Alumni Affairs) and Mr. and Mrs. Leslie S. Brady (Counselor for Public Affairs, U.S. Embassy, Paris). Here, I also met Mr. and Mrs. Robert B. Mautz (Chancellor of the Florida State University system), Edgar B. Ribas (Brazilian public health official and President of the Brazilian Federation of the Partners of the Alliance), Mrs. Shriver, the Shriver's three daughters and the roommate of one of the daughters. I told Ribas that I think Brazil's anti-NPT posture is unfortunate.

Mr. and Mrs. Brady, Ribas, Mautz and I rode with President Shriver to the new John D. Millett Assembly Hall. There I met Mr. O'Hara (Chairman of the Miami University Board of Trustees), Dr. and Mrs. Cunningham (Dean of Research and friends of Bill Rice, the architect for our Lafayette home), David Griffing (Physics Department), William Beckett (a paper company executive and member of the Board of Trustees), Dean Bunker Wright (Graduate School), and Messrs. Steup, Amos, and Moloney (members of the Board of Trustees) and many others.

I witnessed the presentation of a portrait of Dr. John Millett (Chancellor of Ohio State University system) to Miami University by the Interfraternity Council and Pan Hellenic. President Shriver accepted the portrait in Chancellor Millett's presence. Chi Beta Phi (a sorority) then presented a bronze statue of a Miami Indian to President Shriver for the University.

We then proceeded to the robing room where Bob Hope joined us. The five honorary degree recipients (Brady, Mautz, Ribas, Hope and I) then had our pictures taken with President Shriver. Someone asked Hope or me to adjust the other's cap for a picture--Bob said that I was too tall for him to do it for me, so I did it for him.

We marched into the auditorium in academic procession; I walked with William Beckett. President Shriver presided at the program which started at 10 a.m. Bob Hope delivered the Commencement Address and he spoke humorously and very well. He concluded his talk with some serious comments on the futility and danger of the extremist activity of some of today's college students. At one point he said that the reason we are settling on the moon is because Howard Hughes is about to dispossess the earth. After the conferring of degrees on the graduating students, President Shriver conferred honorary degrees on Brady, Mautz, Ribas, Hope and me. Beckett presented me and Dean Wright placed the hood on me.

After the graduation ceremony, I rode to the Cincinnati airport with David Griffing, his son Bruce, Bruce Weidner (Department of Chemistry), Phil Macklin (Department of Physics), and Reo Salavan (a political science student). Salavan interviewed me on the evolution of the Franck Report and the activities of the scientists at the Metallurgical Laboratory in the area of the social and political implications of atomic energy.

I flew back to Washington on American Airlines Flight No. 548, leaving Cincinnati at 1:50 p.m. and arriving at National Airport about 3 p.m.

I then rode with Joe Gibson to the University of Maryland to attend the dedication of the Cyclotron laboratory. I was met at the Physics Building by Harry Holmgren (Director of the Cyclotron laboratory), John S. Toll (President of State University of New York at Stony Brook), Sanders Wall (Cyclotron laboratory), and others. Wall took me on a tour of the entire Cyclotron facility (100-inch magnet, 140 MeV protons, 185 MeV helium ions, etc.). The machine is expected to produce a usable beam in a few weeks.

We joined a reception where I met and talked to Chet and Cam Holifield, President and Mrs. Wilson H. Elkins, Vice President for Graduate Studies and Research and Mrs. Michael J. Pelczar, Jr., Charles P. McCormick (Chairman, Board of Regents), Dr. Thomas B. Symons (Regent and University of Maryland supporter since the days when there were only 400 students), Bob Livingston (Oak Ridge), Louis Rosen (Los Alamos), Martin Reiser, who has new ideas on the electron ring accelerator, and many others. Elkins, Toll and I had our picture taken in the Control Room.

The dedication program for the Cyclotron Laboratory began at 4:30 p.m. in the modern auditorium of the Physics Building. Pelczar presided and introduced the speakers. President Elkins gave welcoming remarks, followed by Paul A. Weinstein (representing the Governor's office), Chet Holifield and me. My remarks, "New Cyclotron Facility Broadens Research Scope at the University of Maryland" mentioned the expected role of two of my students, Vic Viola and Glen Gordon, in the research program. Dr. Toll gave the dedication address which was entitled, "What is Really Happening in Universities?" He was introduced by Dr. Lee Hornbake, Vice President for Academic Affairs.

In the evening, from 7 to 9:30 p.m. Helen and I hosted our annual reception and buffet supper for our friends and their wives in town for the annual meeting of the National Academy of Sciences. A total of 60 guests attended. Luis Alvarez and Joe and Maria Mayer stayed on to talk. Luis told us that the results of the Pyramid experiment, which used mu mesons to try to detect hidden chambers, came out negative.

Monday, April 28, 1969 - D.C.

I presided over Information Meeting 900 (notes attached) at 9:50 a.m. We approved a consultant arrangement for Commissioner Tape, to be in effect when he leaves his commissionership, in order that we might continue to call on him for a number of special assignments. We also approved an exception to the conflict of interest regulation, such as we make in a number of cases when it is to our advantage, which will allow Tape to represent the AUI with the Commission in certain instances. Tape abstained in both of these actions.

I then presided over Commission Meeting 2372 where we heard Curt Nelson give quarterly Inspection Reports covering the last two quarters. We also discussed the special analytical studies that we have been doing for the Bureau of the Budget in order to make them more effective and more responsive to our needs.

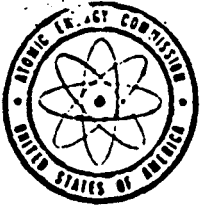
I called Earl Hyde and told him that I received a letter, April 24, 1969, from Prentice-Hall regarding our three-volume series The Nuclear Properties of the Heavy Elements. Hyde said he had heard from them also, and he has now informed Dover Publications that we are free to negotiate with them to have the books published in paperback; he will send me a copy of his letter. He doesn't think we should go any further at present with Prentice-Hall until we have some response from Dover.

Dwight Chapin's secretary (White House) called me in response to my attempt on Friday, April 25, to reach Chapin. She asked whether I was calling to inquire about rescheduling the President's visit to Germantown. I said no, but rather that I was calling to inquire whether the President might like to meet with Dr. Theos Thompson, whom the President has just nominated for appointment to the Commission. I said he could be in town on Wednesday, but Chapin's secretary said she thought that would be out. I said we could do it anytime--except for May 5, when I will be in Chicago. She will check with Chapin. Regarding the President's visit to AEC, she said that it is probably two to three weeks away. She called me later to say that since the President plans to meet with all the members of the AEC Commission in the not too distant future, he would rather put off meeting Dr. Thompson until that time.

Justin Bloom and I had lunch at the Madison Sandwich Shop and then took a walk around Lafayette Square.

From 2 until 3:30 p.m. I attended the caucus meeting of the Chemistry Section of the National Academy of Sciences. About 60 members of the Section were present and we agreed on the eight candidates we will support for election to the Academy. We also discussed the Chemistry Section procedures.

At 4 p.m. I met with P. S. Neporozhnyi (Minister of Power and Electrification, USSR), Nikolai P. Galochkin (Administrator of Kanakov Electric Station, USSR), and Viktor S. Evlanov (Second Secretary, Soviet Embassy). Abe Friedman, Mel Abrahams, and Julius Rubin were also present. Neporozhnyi brought me greetings from A. M. Petrosyants (Chairman, State Committee of the USSR on the Utilization of Atomic Energy). We discussed the nuclear power programs in the Soviet Union and in the United States. He said that Petrosyants is trying to convince him to turn more to nuclear power, but he is not convinced yet that it is economically feasible--he is given financial objectives to meet in his program but is not sure he can meet them with nuclear power plants. He did



UNITED STATES  
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WASHINGTON, D.C. 20545

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COPY NO. 12  
April 28, 1969

INFORMATION MEETING 900

9:50 a.m., Monday, April 28, 1969, Chairman's Conference Room, D. C.

1. Certification re Commissioner Tape

Noted.

2. Commissioners' Meeting with Gulf General Atomic, and Gulf Oil Corporation,  
2:00 p.m., May 20, 1969

Scheduled. (Rubin-SECY)

3. Non-Government Representatives for Ad Hoc Panel on Space

The Commissioners' suggestions are requested. (Rubin-PNE)

4. Consultant Contract for Commissioner Tape

Approved. (SECY-GC)  
(Commissioner Tape did not participate in this decision.)

5. Reaction to Commissioner Costagliola's April 24 Statement re Hughes  
Organization Queries re Tests at NTS

(SECY)

✓ 6. AEC 1301/2 - ~~Candidates for Membership~~ on NAS Advisory Committee on  
Radioactive Waste Management

The appointment of Mr. Ken Davis is approved. (AGMO)

✓ 7. AEC 811/237 - Plowshare Program Commitments

Approved with changes. (PNE)

✓ 8. AEC 1083/137 - U. S. Participation in 1969 Conference on High Energy Accelerator Conference in the USSR

A planning figure of 60-70 is approved. (R-OC)

✓ 9. AEC 1036/104 - Report of SLAC Scientific Policy Committee

The Chairman expressed a word of caution re plans for an additional machine. (R)

10. Arrangements for E. O. Lawrence Award Ceremony and Reception, 4:00 p.m., April 30 (See Secretary's April 25 Memorandum)

Approved. (SECY)

W. B. McCool  
Secretary

10:25 a.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Erlewine\*

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General Counsel  
Secretary

\*Attendance by Topic (s)

say, in answer to a question from me, that they do intend to build up to 40 million kw of nuclear power capacity in the 1970s.

Neporozhniy seemed to be very interested in our nuclear power developments; I described in some detail the utility setup, how nuclear power plants are built, the present and projected levels of nuclear power, the role of the fast breeder and the high temperature gas-cooled reactor and the future molten salt reactor. I also gave him a rather complete outline of our licensing procedures. Our discussions were briefly summarized by Neporozhniy as my being confident that nuclear power is reliable and economic at the present time and any problems encountered could be successfully resolved. He presented me with an autographed copy of a book, Electrification USSR, 1917-1967, and I gave him an autographed copy of my book, Man-Made Transuranium Elements.

Following that meeting I met briefly with Dr. Ray Smith (President, Michigan Technical University) who was accompanied to my office by Loren K. Olson. Julius Rubin was also present. This was a courtesy call, and we talked about Michigan Technical University, its present plans and its plans for the future.

I received a telephone call from Professor V. I. Goldanskii (Deputy Director, Institute of Chemical Physics, Moscow), calling from the office of Dr. Gerhart Friedlander at Brookhaven. He told me that he has verified with Moscow that I have been invited to the Mendeleev Centennial in Leningrad in late September. I said that I have informed the USSR that I would attend the symposium leaving Vienna on Friday, September 26, and arriving in Leningrad that evening.

I sent a letter to Chet Holifield (copy attached) in response to his letter of April 15, advising him the Commission still anticipates being ready to testify on the disposition of our gaseous diffusion plants by June 1, 1969, and another letter (copy attached) justifying our shutdown of the MTR at the National Reactor Test Station in Idaho.

Members of the Council of the NAS and of the Board of the NSF met with President Nixon at 3:30 p.m. this afternoon to discuss the Franklin A. Long affair. The President indicated to them that he thinks he had made a mistake in not appointing Frank Long as the director of the National Science Foundation because of his views against the ABM. He said that, therefore, he has offered the position to Long but that Long has decided not to accept because he feels that the political situation is distasteful to him and he prefers not to have it reopened. In the course of the meeting President Nixon referred to his interest in the international exchange of scientists and mentioned that the 100th anniversary of the Mendeleev Periodic table was about to be observed. (This had been called to his attention in one of our reports to his office.) The President mentioned my role in this and made reference to the naming of Element 101 after Mendeleev.

Helen attended a reception given by Mrs. Nixon for the wives of the Academy members at the White House this afternoon. About 150 ladies participated.

Eric, Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north along the White Horse Trail and on to Cross Trail 3, continuing south on the Black Horse Trail (the Turtle Trail) to Cross Trail 5, and returning to our starting point.

APR 23 1969

Honorable Chet Holifield  
Chairman  
Joint Committee on Atomic Energy  
Congress of the United States

Dear Mr. Holifield:

This is in response to your letter of April 15, 1969. You inquired whether the undertaking of a further study by the Executive Office of the President would affect the Commission's ability to meet the June 1 readiness date to testify before the Joint Committee on the subject of future responsibility for uranium enriching activities.

As you know, the Commission staff has completed and distributed for comment a summary report which identifies and discusses the many complex issues involved in this question. We have requested that the recipients of that report provide comments to AEC by May 1 in order that we may be cognizant of industry's views and comments before the June 1 date. Accordingly, the Commission still anticipates being able to discuss this subject in hearings before the Joint Committee as early as June 1. The study by the Executive Office of the President will, of course, be proceeding.

Cordially,

(Signed) Glenn T. Seaborg

Chairman

APR 28 1969

Honorable Chet Holifield  
Chairman  
Joint Committee on Atomic Energy  
Congress of the United States

Dear Mr. Holifield:

As you know, the Materials Testing Reactor (MTR), located at the National Reactor Test Station in Idaho, will be withdrawn from engineering test service at the end of this fiscal year. In anticipation of that event, many people from the Western States have, over the past year or so, written to members of the Joint Committee and to the Atomic Energy Commission, urging that the MTR be continued in operation as a research reactor after its test service is over. The State of Idaho has been particularly interested in this matter.

Recently, the Idaho State Legislature appropriated the sum of \$200,000 to be used through the State Board of Education, until June 30, 1971, for nuclear-oriented research associated with the MTR. In this connection, I am forwarding for the Joint Committee's information a copy of Governor Don Samuelson's letter to me, concerning this particular action, as well as Idaho's increasing interest in nuclear activities.

While I am quite pleased with the very active interest being shown in nuclear activities and would like to encourage a continuing interest, I do not believe that the MTR can continue to play a role very much larger in our cooperation with the educational institutions of the Western States. The reactor is fast becoming surplus to this agency's needs, and we would have little justification for continuing its operation beyond FY 1970 on the basis of AEC program requirements. Current plans call for (a) removal of engineering test experiments and test gear beginning at the end of this fiscal year; (b) installation of the experimental Phoenix core (a long-lived plutonium core with a high Pu-240 content), and operation with that core for a period of four to five months and (c) termination of reactor operations. If the expected schedule holds, the reactor will be shut down and removed from service in the spring of 1970.



Honorable Chat Holifield

- 2 -

I am writing to Governor Samuelson to inform him of the above-stated plans. Although I doubt that the Western States would find it practical to support operation of the MTR for their own account, I intend to let the Governor know that the Commission would be receptive to such a proposal, should one be forthcoming.

Please let me know, if you desire additional information.

Cordially,

(Signed) Glenn I. Seaborg

Chairman

Enclosure

Letter - 4/7/69 from  
Governor Samuelson.

bc: Chairman (2) ✓  
Comm. Ramey  
Comm. Tape  
Comm. Johnson  
Comm. Costagliola  
GM (2)  
AGMR  
Secretary (2)  
Cong. Rela. (2)

EES - subj  
EES - rf  
MS - rf  
RDT - 2 rf  
MS - adv  
AG - adv

Tuesday, April 29, 1969 - D.C.

Helen went on a tour for the wives of the National Academy members this morning. They visited the National Collection of Fine Arts, the National Portrait Gallery, stopped for lunch at the Delian Gallery and then visited the Smithsonian's "Renwick Castle."

At 10 a.m. I testified before the Subcommittee on Education of the House Committee on Education and Labor on H.R. 8809 regarding the establishment of a National Science Research Data Processing and Information Retrieval System, in Room 2261 of the Rayburn House Office Building. Present were Chairman Roman Pucinski (Illinois), Congressman John Dellenback (Oregon) and Allan Kuron (staff adviser). Ed Brunenkant sat at the witness table with me. I read my prepared statement which was followed by questions from Pucinski and Dellenback. Among the questions was a request for my views as to the solution to the national science retrieval problem; I indicated that I favor the continuation of the present pluralistic system of abstracting and science information retrieval with some kind of government coordinating system. At the end of the testimony, Pucinski, in a somewhat jocular vein, said, "I suppose you don't want to comment on the Long controversy," and I agreed with him that I did not.

I then went to the National Academy of Sciences where I attended part of the Business Meeting. Following the election of the members, President Frederick Seitz described to those present in the Great Hall the Franklin Long affair and included a rather detailed description of the meeting with the President yesterday afternoon. Seitz went on to suggest that perhaps scientists should not enter, as groups, in political campaigns and controversies, but as individual citizens. For example, he expressed doubt that scientists should band together in "Scientists and Engineers for...." in presidential campaigns. He thought that scientists tend to be naive and sometimes turn out to be the tools of professional politicians when they depart in this manner from their areas of expertise.

We had lunch in the Refectory of the Academy, where I sat at a table with Alvin Weinberg, Kenneth Cole and Anthony Turkevich. Leaving the luncheon, I discussed with Bob Marshak, who was on the Selection Committee, the Atoms for Peace awards that were announced this morning. The seven recipients of \$15,000 each were: Aage Bohr (Denmark), Ben R. Mottelson (Denmark), Floyd L. Culler, Jr. (United States), Henry S. Kaplan (United States), Anthony L. Turkevich (United States), M. S. Ioffe (Soviet Union) and Compton A. Rennie (England). In addition a special honorarium of \$50,000 is being presented posthumously to former President Dwight D. Eisenhower in tribute to his contribution to international efforts for the peaceful use of atomic energy. At the request of General Eisenhower before his death, the money will be given to Eisenhower College in Seneca Falls, New York. Marshak had come in to talk to me about these awards on September 12, 1968, and assured me that my strong support for Bohr, Mottelson and Culler had played an important role in their selection. I expressed great disappointment that Albert Ghiorso hadn't been among those chosen, and Marshak indicated that if the other members of the committee hadn't insisted on cutting the number of recipients from 10 to 7, perhaps Ghiorso would have been included.

Alvin Weinberg, who had stopped by my office after I returned from the Hearing, rode to and from the Academy with me. He expressed his concern over

the polarization of the American scientists into groups that are opposed to things like the ABM and those that go all out for such things as the ABM. We also discussed the mounting public relations problem of the AEC in the nuclear power area. Weinberg suggested that maybe we should use the remarkable safety record of the nuclear navy to a greater extent in our public education campaign on the safety of nuclear power reactors.

At 2:30 p.m. I met with Peter Flanigan and Tom Whitehead in Flanigan's office on the second floor of the West Wing of the White House. The purpose of my visit was to get acquainted with Flanigan who, in replacing Bob Ellsworth, is responsible for liaison with the independent agencies. We first talked in a general way about the status of nuclear power in the United States. I described the present status of water-cooled reactors, the role and time scale for fast breeder reactors, and the role of the high temperature gas-cooled and the molten salt reactors. We also discussed the recent adverse publicity about the safety of nuclear reactors and the problem of thermal pollution. I also described the regulatory process and its independent nature. (I learned that Flanigan had met with the executive officers of the regulatory agencies yesterday--Chris Henderson represented the AEC at this meeting.) I described the growing uses of radioisotopes in medicine, agriculture and industry.

We then got into a discussion of the problem of the disposal of the AEC's gaseous diffusion plants, and Flanigan assured me that the reason for the White House study is to inform themselves on this important issue, and that they do not have any preconceived notions as to the outcome of the study. Flanigan referred to the reconstitution of the White House study group to include the Atomic Energy Commission; I indicated that I thought this is a good move. (Attached is a copy of a memorandum I received today from Flanigan on the reconstitution of the White House study group on uranium enrichment facilities.) I told Flanigan that, although I have good relations with the Joint Committee on Atomic Energy, the President should be assured that I am working for him and that I have his interests at heart in all of my dealings with the JCAE. Flanigan said he understood this, and we both agreed that we would keep in touch with each other on all issues of importance.

At 4 p.m. I met with Paul Tompkins and Claire Palmiter of the Federal Radiation Council in my office; Justin Bloom was also present. Tompkins said that he is very disturbed by the remarks he has been hearing to the effect that some members of HEW (he mentioned Charlie Gregg and Leon Jacobs) are trying to isolate the Federal Radiation Council from Secretary Finch and the DHEW. He said they feel that the FRC is a tool of the AEC and has too close relations with the JCAE. Of course, this is not true and is the result of someone's overactive imagination. Tompkins gave me examples of the difficult relationship problems that this is generating for the FRC. My reaction to these remarks was that often apprehensions like this prove to be unfounded and that my personal contacts with Secretary Finch have not indicated that he is thinking of any adverse actions with regard to the FRC. I said that I would keep abreast of the situation and assured them of AEC's cooperation.

The GAC report on their 108th meeting, April 23-25, arrived today (copy with security deletions attached).

Jerry Tape today sent a reply to Sir William Cook's letter to him of March 14 on the matter of the renewal of the U.S.-U.K. Agreement for Cooperation on the

THE WHITE HOUSE  
WASHINGTON

ENCL. BY DOE  
NOV 85

April 26, 1969

MEMORANDUM FOR

The Secretary of State  
The Secretary of the Treasury  
The Attorney General  
The Chairman, Atomic Energy Commission

On March 19, 1969, the White House requested a study of the uranium enrichment facilities currently owned by the U.S. Government and requested that the Chairman of the Council of Economic Advisers chair a committee of CEA, OST, and BOB to direct the study.

So that the work going on in other agencies can be included in their study, I have asked Dr. McCracken to chair a larger task force which would also include AEC and the Departments of Justice, Treasury and State. The task force should examine the four alternatives (including the status quo) set out in the original study request. The purpose will be to evaluate the benefits and the costs of each alternative for consideration by the President.

The national security aspects of the various alternatives will be considered through the National Security Council machinery, which will involve some of the agencies on the expanded task force. I am sure you will want to cooperate with the NSC study so that the two reports are compatible.

Dr. McCracken will be in touch with you shortly to discuss the selection of a representative from your department, and to suggest the date of the first meeting.



Peter M. Flanigan  
Assistant to the President

GENERAL ADVISORY COMMITTEE  
TO THE  
U.S. ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

April 25, 1969

Dr. Glenn T. Seaborg, Chairman  
U. S. Atomic Energy Commission  
Washington, D. C.

Dear Glenn:

The General Advisory Committee held its 108th Meeting at the H Street offices of the Atomic Energy Commission on April 23, 24 and 25. The members of the Committee are John C. Bugher, Herbert Friedman, Jane H. Hall, Edwin L. Goldwasser, Stephen Lawroski, Lombard Squires (absent on the first day), Norman F. Ramsey, William Webster, and Howard G. Vesper, chairman. Melvin A. Harrison, scientific officer, also attended.

We would like to take this opportunity to express our pleasure over the advice furnished by Commissioner Tape at the last GAC meeting that you are continuing in the post of Chairman of the Commission. This view had been formulated at that meeting, but due to an oversight it was not recorded in the report thereon.

Recommendations, comments, and actions relative to this meeting are summarized below.

1) Session with Commissioners and General Manager

The Committee was interested in the Commission's plan to establish a new award tentatively titled "Atomic Pioneer", to recognize the important contributions of some of the early-day participants in the atomic energy program. We agree with this recognition and feel that such awards are appropriate and serve a useful purpose. We trust, however, that receipt of such an award will not prejudice the eligibility of anyone for other, established awards (such as Fermi) if he is otherwise fully qualified.

We are pleased to know that subsequent to the summary in your letter of April 10, 1969, on the matter of radiation in uranium mining, an Inter-agency Uranium Mining Radiation Review Group has been set up under the

direction of HEW Secretary Finch as Chairman of the Federal Radiation Council (FRC). This should provide the correlation and information so necessary to the FRC late next year when they make their review and recommendations on this subject prior to the January 1, 1971, date when the 4 WLM guidance is now scheduled to go into effect. In view of the great importance of this subject, we know that the AEC representatives on this Review Committee and its subgroups will do everything possible to assure the best and most complete information being available for this review.

2) Gas Centrifuge Program

The Committee received an excellent briefing by Mr. Howard Brown relevant to recent activities in Europe on the gas centrifuge process for enrichment of uranium. The most significant development has been the effort and plans being mounted in the joint program by the British, Dutch and West Germans. There appears to be an intense interest and a strong determination by this group to push ahead vigorously toward a production-scale application of the gas centrifuge process for enriched uranium. The Committee feels that this provides further reason why the Commission should proceed expeditiously with its plans to build the gas centrifuge pilot plant at K-25. The developments abroad should be watched closely for signs of a need to have the Commission's security policy reconsidered.

3) - Intelligence Briefing

The GAC received a comprehensive briefing from Dr. Charles Reichardt on intelligence matters concerning foreign weapons tests and related developments.

4) Session with Assistant General Manager for Military Application

Recent modifications in the High Altitude Test Readiness plans were discussed. It was noted that the increase in funding in the Readiness Program will provide the capability to test the Spartan warhead at high altitude before its IOC date.

Budget and other restrictions have reduced the number of underground development tests from about 45 in FY 1969 to about 36 in FY 1970. The reduction will have the effect of delaying some tests into FY 1971 but need not be considered to be serious although the laboratories would like to maintain the current level of testing.

The Committee appreciated the invitation by the DMA to attend the farewell party on April 23, 1969, for Commissioner Tape. Those who attended had a most enjoyable evening, especially when "Taped" excerpts from past interviews with Dr. Tape were played.

#### 5) Space Electric Power Program

The Committee received an excellent briefing on the space electric power program and was impressed by the overall balance and progress in that program. The approach has changed substantively and appropriately. Previously each system was developed ad hoc for a particular mission, and frequently on a tight time schedule. Now the tendency is more to look at the general mission needs and to establish a balanced program which will provide a few qualified systems, some of a modular nature, which will match the full spectrum of needs that can be foreseen for projected space missions.

Perhaps the most important development during the past year is a clear shift in NASA planning to favor nuclear power over solar converters for their principal energy sources for many future missions.

The Committee is impressed by the improvements that have been achieved in isotopic power sources, particularly in the degradation rate of lead-telluride thermo-electric converters. In addition, we are pleased by the continuing record of good work and promising results in the life-tests of thermionic diodes. We continue to feel this program should be supported.

#### 6) Artificial Heart Program

This challenging and potentially invaluable program was comprehensively reviewed by Dr. Theodore Cooper, Director of the National Heart Institute, and Mr. Eugene Fowler and Dr. William Burr, both of AEC. In the management of heart disease there is an area of substantial need for devices that can temporarily assist heart action or, in special cases, completely replace that organ.

The systems that are attractive are separable into a power package and a pump. For the completely implantable system, a nuclear power system seems essential. It also appears that the power package which, with its feedback controls, would be suitable for implantation within the body would be equally satisfactory for a situation in which it might be desired to operate with an external power unit.

From the engineering standpoint, the power package should be approached as a single developmental problem and in our opinion should be the responsibility of AEC with the necessary funding support.

The pump development is substantially a materials problem and this section of the program is appropriately the immediate responsibility of the National Heart Institute. The latter, as Dr. Cooper emphasized, does not have an inhouse capability to do this. Such materials and fabrication competence does exist in the laboratory system of AEC. It would be highly productive, in our opinion, for the NHI to utilize the AEC resources in a joint program in which each agency would provide its proper funding. We recommend, therefore, that:

- a. AEC continue to regard the development of the nuclear power package with high priority, and seek the necessary funds.
- b. NHI be urged to consider a joint program in which it would utilize the laboratory resources of AEC to advance the development of the various pumps for circulatory assistance and for heart replacement.



## 7) Reactor Siting Policy

We had a fine briefing by Dr. Clifford K. Beck on the subject of Reactor Siting. He brought out very clearly the dilemma that is involved here and the inherent difficulty of establishing firm figures. We feel that his "rule of reason" attitude is sound and intelligent. We endorse the present policy of the Commission in handling this matter as flexibly and carefully as Dr. Beck explained it to us.

## 8) Research and Development

We received an interesting and informative report from Dr. Spofford G. English and his Division Directors on the AEC Research and Development programs. The severe budgetary restrictions this year have caused real difficulties. Many of the programs have been severely reduced and one - food preservation - has been cut off entirely. Even in most of those cases where there have been budgetary increases the dollar increases have been so small that they have resulted in a decrease in the numbers of scientists whose research could be supported. The difficulties which are unavoidable in such a budgetary situation are made worse by the artificial separation of operating and equipment funds in the budget. In manufacturing, there is a meaningful distinction between the costs for operating and those for plant equipment since the latter dominantly correspond to plant expansion. In research and development the distinction loses most of its meaning since effective research requires continual modification of experimental apparatus with interconnected components that come from both budgets. The AEC staff and the research scientists could function more efficiently, particularly in times of austere budgets, if separate accounting were not required for operating and equipment funds. This year the problem was made worse by the imposition of separate ceilings for obligations and expenditures. The necessity for keeping separate accounts of actual expenditures, of operating obligations and of equipment obligations does not save money but decreases flexibility and increases accounting costs.

In the field of Biology and Medicine, we are impressed by the valuable developments that have come from such AEC-supported research as the biological applications of centrifuges, the treatment of Parkinson's disease, and the development of improved instruments, including the scanning electron microscope and radiation detectors.

We were disturbed to learn of the high toxicity of plutonium as revealed by studies of rat lungs. In the light of these and other studies it may be necessary to revise the standards for maximum permissible plutonium exposure.

In the isotope development work there has been a marked increase in the number of applications for isotope heaters in the space program. On the other hand the food preservation program has been badly crippled by the changed acceptability rules of the Food and Drug Administration. We hope that the cutoff in funds for the food preservation program will not preclude an orderly termination of this program. The technique of utilizing the ratio of sulfur isotopes as a tracer in pollution studies appears promising.

At our request, the Plowshare program was particularly emphasized in the briefing. It is puzzling that just as the applied interest in Plowshare has markedly increased, the financial support for the program has been severely cut. The rapid fluctuations of the annual Plowshare budget necessarily diminish the efficiency of the program. The results of the Gasbuggy shot have been particularly interesting and already demonstrate substantial stimulation in the flow of natural gas. For increased usefulness of the produced gas, efforts are being made to diminish its tritium concentration. The Plowshare program needs increased funds for research and development, for the development of better nuclear explosives, and for further excavation studies; also to assure this country's leadership in the field and to fulfill our NPT obligations.

Although only little time was left to discuss the Physical Research Program, we were pleased to note the marked increase in funds allocated to the support of nuclear engineering research. This increase results from the new procedure of reserving some research funds specifically for such work. In the thermonuclear field we feel that the recent progress is sufficiently great that we are requesting a special thermonuclear briefing at the time of our next Washington meeting.

#### 9) Reactor Subcommittee Report

The GAC endorses the attached report by the Reactor Subcommittee regarding its recent examination of the Molten Salt Reactor Program. We are much impressed by the accomplishments at Oak Ridge on this program and by its future possibilities. We would urge the Commission to make further effort to fund this work in FY 1970 at the \$15 million level originally requested.

#### 10) Departure of Commissioner Tape

We will greatly miss our pleasant and effective associations with Dr. Tape. In the six years of his Commissionership, we were constantly impressed by his performance. We appreciate the cooperation and background information we received from him throughout this period, and wish him every success in his forthcoming capacity.


11) 109th GAC Meeting

The next meeting of the Committee will be held at the National Reactor Testing Station near Idaho Falls, Idaho, on July 29, 30 and 31. We will write to Mr. W. L. Ginkel, AEC Manager at Idaho, to suggest these dates and to ask that he schedule the first afternoon and the entire second day for discussions of selected NRTS programs. We also will consider the 1969 Fermi Award nominations then, and will forward our views to you shortly thereafter. As always, agenda topics which the Commission may want to have included would be incorporated.

12) 110th GAC Meeting

The next following GAC meeting is tentatively scheduled to be held in Washington, D. C., November 10, 11 and 12, 1969.

Sincerely,

  
Howard G. Vesper  
Chairman

Attachment

Uses of Atomic Energy for Mutual Defense Purposes. (Copies of this exchange of correspondence are attached.)

I received a letter from Chet Holifield (copy attached) expressing the Joint Committee's concern about GAO reports on the Commission's equipment management activities and biology and medicine research program.

I sent a note to Australian Ambassador Waller transmitting a reply to Maurice Timbs of the Australian AEC (copies attached) in response to his letter of April 21, inquiring about our participation in a preliminary assessment of the suitability of various sites in Australia for the construction of harbors with nuclear explosions.

At 5 p.m. I attended a ceremony in the office of the Secretary of Defense at the Pentagon for the presentation by Secretary Laird of the Secretary of Defense Meritorious Civilian Service Medal to Commissioner Gerald F. Tape. Among those present were Deputy Secretary of Defense David Packard, Daniel L. Henkin (Assistant Secretary of Defense for Public Affairs), Roger Kelley (Assistant Secretary of Defense for Manpower and Reserve Affairs), Carl Walske, General Betts, General Wheeler, Commissioners Johnson and Costagliola, Mrs. Tape, Mr. and Mrs. James Tape (their son) and their little boy, and Tapes' youngest son, Thomas. There were also many members of the AEC and DOD staffs present. Following the laudatory presentation remarks by Secretary Laird, Dr. Tape responded with moving remarks expressing his appreciation. (A press release noting this occasion is attached.)

Helen and I attended a reception and dinner (black tie) of the National Academy of Sciences at the Statler Hilton Hotel. There were about 400 people present, including many officials of the Washington governmental agencies that have a science aspect to their programs. Helen and I sat at a table with Mrs. Hugh Dryden, Mr. and Mrs. Sterling Hendricks, Mr. and Mrs. Harry Finger and Mr. and Mrs. Homer Newell. Lee DuBridge gave a very good speech on the subject of science in government. This was an historic dinner in that it was the last appearance of Fred Seitz at an annual dinner in his capacity as President of the Academy. The Academy Public Service Award was given to Senator Lister Hill in recognition of his contributions to the program of health sciences. President-Elect Philip Handler closed the evening with a moving tribute to Fred and Betty Seitz for their fine record as President and President's helpmate.

Wednesday, April 30, 1969 - D.C.

From 10:30 until 11:30 a.m. I attended a meeting of the National Security Council in the Cabinet Room of the White House.

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UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

This document consists of 1 pages  
No. 2 of 24 Copies, Series A

APR 29 1969

Sir William Cook  
Ministry of Defense  
Main Building, Whitehall  
London, S.W.1., England

Dear Bill:

Thank you for your letter of March 14, 1969, regarding the possible extension beyond 1969 of those provisions of our Mutual Defense Agreement which provide for the transfer of materials and equipment for the nuclear weapons program.

We are glad to take your request under consideration and are consulting with the other interested U.S. agencies. As further consideration proceeds there may be questions as to the details of an extension and whether it would be possible to accomplish it precisely in the form you suggest. Also, I believe that it would be most advantageous to get a more definitive indication of your requirements in order to be able to move forward on a timely schedule. Therefore, we may find it desirable to explore this matter with you in greater detail before a formal request for an amendment is made through diplomatic channels.

We will be in touch with you as soon as our review is completed.

Distribution:

- SO- Addressee, 1A
- Chairmen (2), 2A & 3A
- Comm. Ramey, 4A
- Comm. Tape (2), 5A & 6A
- Comm. Johnson, 7A
- Comm. Costagliola, 8A
- GN (2), 9A & 10A
- AGMIA, 11A
- OGC, 12A
- SEC. (2), 13A & 14A
- DYA, 15A
- A. Friedman, DIA, 16A
- W. Lehmann, Dept. of State, 17A

- C. Walske, DOD, 18A
- J. Gouré, JAIEG, 19A
- DIA M&R Yellow, 20A
- DIA M&R Green, 21A
- DIA M&R Pink, 22A
- DIA AMA Pink, 23A
- DIA AMA White, 24A

Sincerely,

Gerald F. Tape  
Commissioner

ILLEGIBLE DOCUMENT

DOCUMENT NO. 910980

PAGES 100306-100309

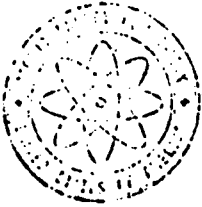
DOCUMENT DATE 3/14/69

DOCUMENT TITLE British Document - Ltr from Bill  
Cook to Gerald Tape

THE COPY OF THIS DOCUMENT IN OUR POSSESSION IS  
NOT READABLE. WE ARE IN THE PROCESS OF OBTAINING  
A LEGIBLE COPY.

Jeffrey B Hall  
Signature

9/3/86  
Date



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86

March 26, 1969

MEMORANDUM FOR CHAIRMAN SEABORG ✓  
COMMISSIONER RAMEY  
COMMISSIONER JOHNSON  
COMMISSIONER COSTAGLIOLA  
GENERAL MANAGER

I have received the attached letter from Sir William Cook of the U.K. Ministry of Defense regarding the renewal of those clauses in our 1958 Mutual Defense Agreement, as amended, which provide for the transfer of materials and equipment for nuclear weapons and which terminate under the present arrangement on December 31, 1969.

With this memo I am requesting that the General Manager prepare for Commission consideration comments and suggestions for inclusion in a response to Sir William.

*G. F. Tape*  
G. F. Tape

Attachment

cc: Myron B. Kratzer  
Joseph F. Hennessey  
W. B. McCool





UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

OFFICE DIARY  
GLENN T. SEABORG  
Chr USAEC, 1961-72  
FOLDER-PAGE 100310

March 13, 1969

UNCL. BY DOE  
NOV 86

910981

Sir William Cook  
Chief Adviser (Projects)  
Ministry of Defence  
Main Building, Whitehall  
London, S. W. 1, England

Dear Bill:

As you know, [REDACTED] are scheduled for transfer in 1969 to the U.K. under the barter arrangement pursuant to our Mutual Defense Uses Agreement for Cooperation.

In reviewing our over-all program needs, we find that there would be some advantage to us to provide this final quantity on a straight sale basis at our published price [REDACTED]

[REDACTED] Would you please consider this possibility. We are, of course, prepared to proceed under the present terms of the agreement for this final increment if the U.K. so desires.

Sincerely,

*Gerald V. Tape*  
Gerald V. Tape  
Commissioner

Distribution:  
Chairman Seaborg ✓  
Comm. Ramey  
Comm. Johnson  
Comm. Costagliola  
General Manager  
Secretariat  
Myron B. Kratzer, DIA  
W. Lehmann, State

CLASSIFICATION CANCELLED  
WITH DELETIONS  
BY AUTHORITY OF DOE/OC

R. H. A. BUREAU 7/21/84  
REVIEWED BY P. L. FORD 7/21/84 DATE

CHET HOLIFIELD, CALIF.,  
CHAIRMAN  
MELVIN PRICE, ILL.  
WAYNE N. ASPINALL, COLO.  
JOHN YOUNG, TEX.  
ED EDMONDSON, OKLA.  
CRAIG HOSEMER, CALIF.  
WILLIAM H. BATES, MASS.  
JOHN S. ANDERSON, ILL.  
WILLIAM M. MCCULLOCH, OHIO  
EDWARD J. BAUSER, EXECUTIVE DIRECTOR

Congress of the United States  
JOINT COMMITTEE ON ATOMIC ENERGY

WASHINGTON, D.C. 20510

April 28, 1969

JOHN O. PASTORE, R.I.,  
VICE CHAIRMAN  
RICHARD B. RUSSELL, GA.  
CLINTON P. ANDERSON, N. MEX.  
ALBERT GORE, TENN.  
HENRY M. JACKSON, WASH.  
GEORGE D. AIKEN, VT.  
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CARL T. CURTIS, NEBR.  
MORRIS COTTON, N.H.

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NOV 86

Honorable Glenn T. Seaborg  
Chairman  
U.S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Dr. Seaborg:

The Committee has, as I stated during the April 1969 authorization hearings, received a group of General Accounting Office reports on the Commission's equipment management activities and biology and medicine research program.

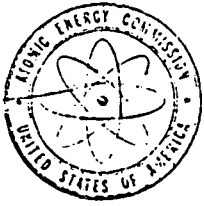
In view of the significance of the matters discussed in the GAO reports, I want to express my concern and that of the other Committee members regarding the need for improvement in the areas mentioned in these reports.

While I was pleased to learn from the Committee staff that the AEC General Manager has initiated action designed to effect a number of improvements in the area of equipment management, including implementation of many of GAO's suggestions, I would appreciate it if you and the Commissioners would take a personal interest in seeing that the matters discussed in both GAO reports receive close attention.

Sincerely yours,



Chet Holifield  
Chairman



UNITED STATES  
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

APR 29 1969

UNCL. BY DOE  
NOV 86

His Excellency Sir Keith Waller, C.B.E.  
Ambassador of Australia  
1700 Massachusetts Ave. N.W.  
Washington, D. C. 20036

Dear Mr. Ambassador:

I was pleased to receive your letter of April 21, 1969, transmitting Mr. Timbs' proposal to conduct a study of possible application of Plowshare to harbor construction on the West Coast of Australia. I would appreciate it if you would communicate my reply, which is enclosed, to Mr. Timbs.

Cordially,

(Type) *Chairman*

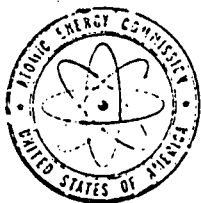
Chairman

Enclosure:

Letter to M. C. Timbs  
from Chairman Seaborg,  
with copy for Ambassador  
Waller

UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

UNCL. BY DOE  
NOV 86



APR 29 1969

Mr. M. C. Timbs  
Executive Commissioner  
Australian Atomic Energy Commission  
Post Office Box 41  
Coogee, N.S.W. Australia

Dear Maurice:

I was pleased to receive your letter of April 21, inquiring whether the Commission would be prepared to participate with the Australian Atomic Energy Commission in a general, preliminary assessment of the suitability of various sites in Australia for the construction of harbors with nuclear explosions.

We will be happy to participate in the general survey-type study you have proposed. It is our opinion that the first step should be for your technical people to identify those possible locations in Western Australia that are of interest from this standpoint and then to provide our Laboratory people with the data needed to evaluate such locations for their suitability for nuclear excavation. I understand Dr. Alan Wilson of the AAEC, during his recent trip to the United States, visited the Plowshare staffs at the Lawrence Radiation Laboratory, Livermore, and the Nevada Operations Office, and received from them an idea of the data they would need for initial analyses. Based on the initial analyses by our technical staff, additional data or input, including site visits by our people, may be required before evaluation of the most promising locations proposed can be completed.

I believe the outcome of this survey study should take the form of a report which will provide as complete an evaluation as possible of the various locations proposed by the AAEC. It is most likely that some locations or sites will be found to be unsuitable for nuclear excavation techniques while some will appear suitable. However, it is likely that all of the suitable sites would require more detailed study if specific interest in developing a port actually arises.

Because of the USAEC's need to develop nuclear excavation technology, we, of course, would like this survey study to identify not only

those sites suitable for nuclear excavation generally, but also to evaluate or determine the type of nuclear excavation which would be possible or required for each site.

It is our understanding that the survey study will be directed to examining the economic, safety, and technical aspects of the proposed locations and will not address legal or political questions. It is also our understanding that you will undertake data collection and work in Australia while we will provide our technical assistance, including any travel of our technical experts on the same basis as that applied to Dr. Werth and Mr. Kelly's visit to Australia last year. We do not interpret this survey study to involve any commitment on the part of either government to undertake a detailed feasibility study of a specific site. The conduct of any such intensive study would, of course, be subject to subsequent mutual agreement.

I am happy we are able to continue this effort of interest to both our Governments. As with the Cape Keraudren study, Mr. John S. Kelly will be the responsible USAEC official for the survey study, and I am sure you will be hearing from him shortly regarding the detailed arrangements for getting it under way.

Cordially,

(Signed) Glenn T. Seaborg

Chairman



# NEWS RELEASE

OFFICE OF ASSISTANT SECRETARY OF DEFENSE (PUBLIC AFFAIRS)

WASHINGTON, D.C. 20301

PLEASE NOTE DATE

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IMMEDIATE RELEASE

April 29, 1969

SECRETARY LAIRD PRESENTS MERITORIOUS CIVILIAN SERVICE MEDAL  
TO DR. GERALD F. TAPE, ATOMIC ENERGY COMMISSION MEMBER

Secretary of Defense Melvin R. Laird today presented the Secretary of Defense Meritorious Civilian Service Medal to Dr. Gerald F. Tape, member of the Atomic Energy Commission, at a Pentagon ceremony.

Dr. Tape is leaving the Commission to become President of Associated Universities, Incorporated. He has served as Commissioner since 1963.

The text of the citation follows:

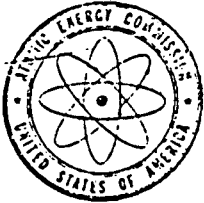
"For exceptionally meritorious civilian service to the Department of Defense for the past six years. As a member of the Atomic Energy Commission, he worked closely with the Department of Defense and took a personal interest in defense needs. Dr. Tape was particularly active and effective in assuring that the Commission's capability was fully adequate to meet Department of Defense requirements. He was a vigorous leader of the AEC's research and development activities related to nuclear weapons programs and helped plan adjustments in weapons production to meet new and changing demands. Drawing on his deep understanding of the role of nuclear weapons in national defense, he was instrumental in assuring a viable stockpile of weapons in support of a credible strategic deterrent and of modern tactical forces. Commissioner Tape brought an outstanding talent and rare insight to bear on national security matters and in so doing contributed greatly to our strong defense posture. Dr. Tape's contributions to the Department of Defense represent the highest type of patriotic service to the nation and I am pleased to award to him the Secretary of Defense Meritorious Civilian Service Medal."

END

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Just prior to this NSC meeting I spoke to DuBridge about the President's new position on the Franklin Long appointment. DuBridge said that Henry Kissinger deserved a lot of credit for convincing the President to reverse his stand on this. I also spoke to Elliot Richardson before the NSC meeting, and we discussed the future of the U.S. Representative to the IAEA. Richardson indicated that he thought the appointment of John Palfrey to the spot a year from now, when Harry Smyth might retire from the position, would be a good move. He thought we should take definite steps in this direction.

I presided, at 11:45 a.m. and 1:55 p.m. respectively, over Information Meetings 901 and 902 (notes attached). We discussed the content of an interim regulatory policy for the industrial applications of Plowshare. We also discussed a talking paper that might be used in discussions with State, the White House, and the JCAE on the question of developing a policy for U.S. cooperation with foreign countries in the uranium enrichment field--this would



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

COPY NO. 2  
April 30, 1969

INFORMATION MEETING 901

11:45 a. m. , Wednesday, April 30, 1969, Chairman's Conference Room, D. C.

1. JCAE Plowshare Hearings, May 8, and 9, 1969

Executive Session testimony by the Chairman and Department of State representatives is planned for late morning on May 9. Commissioner Tape will accompany the Chairman. (PNE-Congr.)

2. Senate Subcommittee Appropriation Hearings, May 1, 2, and 5, 1969

The schedule is confirmed. The Chairman will meet with staff May 1 prior to his testimony at 10:00 a. m. (OC)

3. House Appropriations Subcommittee Hearings

The possible rescheduling to May 20, 21, and 22, 1969, is noted. (OC-SECY)

4. May 2 Meeting of the Reconstituted White House Study Group on Uranium Enrichment Facilities, 4:30 p. m.

Commissioner Johnson will attend. (Rubin-AGMP&P)

5. Assumption of Office by Commissioner Designate Thompson

To be checked. (SECY)



6. TID Report on Safety of Underground Nuclear Testing

Commissioner Ramey requested a report on release procedure. (AGM)

7. Meeting of Sir Solly Zuckerman, Chief Scientific Advisor, U.K. Ministry of Defense, with the Commissioners

to be scheduled. (SECY)

8. GAO April 29 Draft Report on the Gaseous Diffusion Plants

Noted.

9. AEC Study of the Laboratories

W. B. McCool  
Secretary

12:05 p. m.

PRESENT:

COMMISSIONERS:

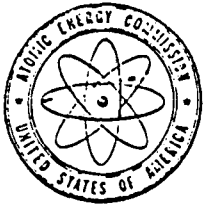
Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Kull  
Mr. Rubin  
Mr. McCool

DISTRIBUTION:

Commissioners  
General Manager  
General Counsel  
Secretary



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

EXCL. BY DOE  
NOV 86

COPY NO. 2  
April 30, 1969

INFORMATION MEETING 902

1:55 p.m., Wednesday, April 30, 1969, Room 1115, D. C.

1. JCAE Staff Request for Copies of the Draft In-House Study Report

Approved. (Congr.-SECY)

2. AEC 811/239 - Plowshare Hearings - Organization and Procedure for Commercial Services;

AEC 811/240 - Plowshare Hearings - Indemnification;

April 25 Memorandum from John Kelly re JCAE Questions on Plowshare - Answers 5 through 11

Approved with changes. Additional comments will be submitted to staff and Commissioner Costagliola's May 8 testimony will be circulated.

(PNE-SECY)

3. April 22 Letter from Austral Oil Company re Follow-on Experiment to Project Rulison

A response is requested. (PNE)

4. April 28 Letter from Chet Holifield re Termination of Food Irradiation Program

Noted. (OC)

5. AEC 610/166 - Proposed Talking Paper Concerning U.S. Cooperation with Foreign Enrichment Projects

A letter to the Department of State is requested. (AGMIA)

6. AEC 688/68 - Draft Letter to the Chairman, JCAE, on Public Information Activities

Commissioners Ramey and Johnson will discuss with Chairman Chet Holifield, JCAE. (AGM)

7. AEC 688/62 - Nuclear Public Understanding Activities;  
April 28 Draft Talking Paper re Public Information Activities

To be rescheduled. (SECY)

8. Commissioners' Meeting with Sir Solly Zuckerman, Chief Scientific Advisor,  
U.K. Ministry of Defense, 11:30 a.m., Saturday, May 3, 1969

Scheduled. (SECY)

9. AEC 780/43 - Proposed Awards of AEC Citation;  
AEC 1305 - Special Presidential Award;  
AEC 1306 - Award for Medical and Other Achievements

Discussed and to be rescheduled. (SECY)

10. Commissioner Gerald F. Tape's Last Day in Office

W. B. McCool  
Secretary

2:55 p.m.

PRESENT:

COMMISSIONERS:

Chairman Seaborg  
Commissioner Ramey  
Commissioner Tape  
Commissioner Johnson  
Commissioner Costagliola

STAFF:

Mr. Hollingsworth  
Mr. Bloch  
Mr. Brown  
Mr. Hennessey  
Mr. Rubin  
Mr. Kull  
Mr. McCool  
Mr. Price\*  
Mr. Kelly\*  
Mr. Mann\*  
Mr. Henderson\*  
Mr. Kratzer\*  
Mr. Oakley\*  
Mr. Minsch\*  
Mr. Greenleigh\*  
Mr. Harris\*  
Mr. Fouchard\*

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Commissioners  
General Manager  
General Counsel  
Secretary

\*Attendance by Topic (s)

indicate phased, limited cooperation and one aim would be to try to slow down the foreign development of the gas centrifuge enrichment process.

I attended a luncheon in the Alexandria Room of the Sheraton-Park Hotel, given by Luis Alvarez in honor of the group that had worked with him in Egypt on the Pyramid project. There were some 50 to 60 people present. I sat at a table with Luis and Jan Alvarez, Lee DuBridge, Dr. Ahmed Fakhry, an Egyptian archaeologist who was my host when I visited the pyramids in 1965, and R. Salah Kotb, an Egyptian physicist (who is in charge of the Pyramid project at Ein Shams university). During the luncheon, Luis Alvarez called on Lee DuBridge who made some remarks emphasizing the internationality of science. Dr. Kotb, who spoke about the value of the experiment in terms of international relations, presented me with a beautiful silver humidor in recognition of what he said was my role as chief supporter of the experiment in the United States. I responded by thanking him and pointing to the value of the experiment in furthering international relations and in the applications of science to the humanities.

I sent a letter (copy attached) to HEW Secretary Robert Finch telling him I think it would be well for the FRC to vigorously pursue the uranium mining review group procedure (copy of letter from Finch to Congressman Price is also attached).

President Nixon today appointed Sterling Cole as the Federal Representative to the Southern Interstate Nuclear Board, replacing former Governor Edward T. Breathitt of Tennessee who resigned earlier this year.

At 4 p.m. I presided over the 10th Annual Lawrence Awards Ceremony, held in the Carnegie Institution auditorium (1530 P St., N.W.). I introduced the



E. O. Lawrence Award Ceremony, The Carnegie Institution, Washington, D.C.; April 30, 1969.

L to R: Dr. F. Newton Hayes, Dr. Ely M. Gelbard, John H. Nuckolls, Seaborg, Dr. Don T. Cromer, and Dr. Geoffrey F. Chew.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

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NOV 86

APR 30 1969

Honorable Robert H. Finch  
Secretary of Health, Education  
and Welfare

Dear Bob:

I very much appreciate receiving a copy of your reply to Mr. Price.

With regard to the current posture of the FRC, having established the uranium mining review group, I think it best that the Council pursue this procedure vigorously. I agree that it would probably not be fruitful for the Council to attempt to review its current guidance on uranium miner radiation exposure levels, until it has the benefit of the review group's efforts.

As you know, the AEC intends to participate very actively in the review group and will cooperate in every way to assure that the review is as productive as possible in the limited time period.

Cordially,

A handwritten signature in cursive script, likely belonging to the Chairman of the Atomic Energy Commission.

Chairman

MAIL ROOM  
NOV 68

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE  
WASHINGTON



APR 24 1969

Dear Glenn:

I thought you would want to see a copy of my reply to Chairman Melvin Price whose April 3 letter on Federal Radiation Council matters was also sent to you for information.

The views I expressed as FRC Chairman before Mr. Price's subcommittee on March 17 seem to me both sound and defensible, and I trust you concur in this response to him as well.

Warm personal regards.

Sincerely,

A handwritten signature in dark ink, appearing to be "J. Edgar Hoover", written over the typed name "Secretary".

Secretary

Enclosure

The Honorable  
Glenn T. Seaborg  
Chairman  
Atomic Energy Commission  
Washington, D.C. 20545

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE  
WASHINGTON, D. C. 20201

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NOV 86

APR 24 1969

Dear Mr. Chairman:

Thank you for your letter of April 3. It was good of you to send me your views on the current FRC guidance with respect to uranium mining exposures, along with your suggestions for review of that guidance.

As I noted in my testimony before your Subcommittee on March 17, I proposed to the other FRC Members the establishment of a uranium mining review group. The first meeting of the Interagency Uranium Mining Radiation Review Group was held on April 9, under the chairmanship of Dr. William H. Stewart, the Surgeon General of the Public Health Service. Other Review Group members are:

Atomic Energy Commission: Dr. Gerald F. Tape  
Department of Agriculture: Dr. A.B. Park  
Department of Commerce: Dr. Wilfrid B. Mann  
Department of Defense: Dr. Carl Walske  
Department of the Interior: Dr. Earl T. Hays  
Department of Labor: Mr. David Swankin

(Observers from the Bureau of the Budget and the Office of Science and Technology were also present.)

In setting up this group, I encouraged the nomination of representatives who were technically qualified and could also speak for their respective principals. I feel sure that the Review Group members in fact possess these qualifications.

As FRC Chairman, I took the lead in this regard in order to carry out recommendation 7 of the Council's December 27, 1968 Memorandum for the President, which committed the Council to establish an interagency group to keep relevant information under surveillance and to report to the Council. This recommendation, in turn, followed from recommendation 5, which provided for Council consideration of all pertinent information to determine whether or not to modify the 4 WLM individual



annual exposure limitation scheduled to come into effect on January 1, 1971. Because of differences of opinion and allegations of lack of objectivity in the past, I am well aware of our present and future obligations. I intend to see that this review is as comprehensive, thorough, and objective as is humanly possible.

At the time of the first Review Group meeting, I prepared introductory remarks which were delivered in my absence by the Surgeon General. I enclose a copy for your information, and to stress the attitude with which I approach the task ahead.

Prior to the April 9 meeting, the Surgeon General circulated an outline of categories of data and information the Review Group should undertake to collect. This outline was thoroughly discussed at the meeting, and responsibility was assigned to group members as "lead agencies" for the various categories. Each "lead agency" member will be responsible for working out detailed statements of information and sources, as well as definite time schedules. This first step is scheduled for completion and presentation to the Review Group for approval by the middle of next month.

Although I anticipate that most of the substantive work will be done by the Review Group members themselves and their personal staffs, I believe a certain amount of staff effort will be required to support the Review Group as a whole. For this purpose, Dr. Stewart will deeply involve both his own and the FRC staff. Decisions, of course, will be made only after all issues are thoroughly aired. In my view, this method of acquiring and preparing information for Council use offers a good prospect that the FRC will be able to conduct a productive review of guidance in 1970. I will keep the Joint Committee informed of progress during this period.

I have most carefully considered your suggestion that a review of the substance of the December 1968 FRC action be undertaken at this time. On reviewing my statement to your subcommittee of March 17, I have come to the conclusion that the views I expressed then were sound:

"I want to assure you that I intend to review exposure guidance thoroughly, and with a fresh and unbiased mind. In doing this, I believe that it would be best for me --and this should apply equally to all of the newly appointed cabinet officers-- to have the benefit of the review for which the previous Council members provided in their December 27, 1968, action. This action represented the judgment of members who had been involved in uranium mining guidance for a substantial period of time. The data available then from the Public Health Service epidemiological study of uranium miners is still the most recent available and, as I will indicate later, will not be supplemented substantially until the spring of 1970.

"This leads me to conclude that the action I am taking to establish a uranium mining review group to report to the Council in mid-1970 is the appropriate one. I do not believe that it would be productive to convene a Council meeting to attempt to review and affirm or modify, up or down, the existing Council guidance now. The time schedule will permit the Council to consider and, if warranted, change the 4 WLM guidance prior to the 1971 effective date."

The current Council recommendations appear to me to be well based in the Public Health Service epidemiological study and related scientific knowledge. This, together with the prospect that determined effort by the industry will result in substantial improvement in mining conditions in the coming months, seem to me to counsel reserving the review of guidance until the latter part of 1970. At that time, I can assure you, a thorough and objective review will be carried out. We will have a much better idea then of the consequences of the continued application of available technology. We will also have a better understanding of the costs and other economic effects of exposure reduction.

Again, I want you to know how grateful I am for the benefit of your thoughts. I genuinely look forward to a continuing exchange of views that will be of great help to me always.

Warm personal regards.

Sincerely,

7s/Robert H. Finch

Secretary

Enclosure

Honorable Melvin Price  
Chairman, Subcommittee on  
Research, Development and Radiation  
Joint Committee on Atomic Energy  
Washington, D.C. 20510

SECRETARY FINCH'S REMARKS / April 9, 1969

As Chairman of the FRC, I want to thank you for taking your time today to put in motion this uranium mining exposures review group. We have a big job to do, a job with major political, economic, and health implications, and a job that has to be timely. Just a little over a year from now, the Members of the FRC will have to institute their review of the 1968 guidance and prepare to make recommendations to the President -- all against the target date of January 1, 1971, when the 4 WLM guidance is scheduled to go into effect.

I really don't have to tell you any of this: most of you have been deeply involved in the whole process for several years.

What I do want you to know is how keenly interested I am in a rigorous scientific review, and of my willingness to give full support to the effort that begins today. Staff resources of every sort will be put at the disposal of this review process, and I will also involve the FRC staff in it. I earnestly hope that each of the Departments and Commissions represented here will do the same.

Whatever it takes -- in-house research, outside research contracts, plus key inputs from industry and labor -- I expect that you will mobilize. When the FRC convenes to consider its recommendations to the President, I want it to have in hand every available piece of hard data on which an objective judgment may then be based.

I know you will undertake today to construct a research and review agenda that will make it possible for us on the Council to make just such a judgment next year.

I have asked the Surgeon General to represent me on this review group. Through him, my office and all the resources of my Department will be made available to you.

distinguished guests present, including John Lawrence and Bud Wilkinson, who sat on the stage with the recipients, and then presented the first award to Geoffrey F. Chew. Commissioners Costagliola, Ramey, Johnson and Lape presented, in turn, awards to Don T. Cromer, Ely M. Gelbard, F. Newton Hayes and John H. Nuckolls. Commissioner Lape made a few remarks in recognition of the fact that this was his last official act before leaving the Commission, and I responded by commending him for his outstanding record of service on the Commission. Pictures were taken before and after the ceremony. A reception followed the ceremony.

Suki and I took a hike in Rock Creek Park, starting at Oregon and Nebraska Avenues, going north along the White Horse Trail and onto Cross Trail 3, continuing south on the Black Horse Trail (the Turtle Trail) to Cross Trail 2, and returning to our starting point.

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