

**Source:** National Security Council, "Discussion at the 443rd Meeting of the National Security Council, Thursday, May 5, 1960," 5 May 1960, NSC Series, Box 12, Eisenhower Papers, 1953-1961 (Ann Whitman File), Dwight D. Eisenhower Library, Abilene, Kansas.

---

May 5, 1960

---

**MEMORANDUM**

**SUBJECT:** Discussion at the 443rd Meeting  
of the National Security Council,  
Thursday, May 5, 1960

Present at the 443rd Meeting of the NSC were the President of the United States, Presiding; the Acting Secretary of State (C. Douglas Dillon); the Secretary of Defense; and the Director, Office of Civil and Defense Mobilization. Also attending the Meeting and participating in the Council actions below was the Director, Bureau of the Budget. Also attending the Meeting were the Director, U.S. Information Agency; the Director of Central Intelligence; the Assistant to the President; the Special Assistants to the President for National Security Affairs, for Science and Technology, and for Security Operations Coordination; the White House Staff Secretary; the Naval Aid to the President; Herbert . York, Department of Defense; Central Intelligence Agency; the Executive Secretary, NSC; and the Deputy Executive Secretary, NSC.

There follows a summary of the discussion at the Meeting and the main points taken.

\* \* \* \* \*

The Meeting convened in the President's Conference Room at (DELETION) Participants in the Meeting. (DELETION) were flown to the Meeting from Washington as part of OPERATION ALERT 1960. Council Members were not provided with advance notice of the change in the place of the Meeting but were advised by telephone calls from the Office of the Executive Secretary, NSC, beginning at 7:20 a.m. that the Meeting would be held outside Washington and that helicopters would be available for transportation to the site of the Meeting.

Mr. Gray reported that General Twining had been left in Washington, Mr. McCone had a conflicting engagement and was unable to attend and Secretary Anderson was ill. Mr. Gray said he understood Secretary Gates and Mr. Dillon were so completely taken by surprise by the telephone calls this morning they had been unable to obtain official transportation to the site of the helicopter take-off. Mr. Dulles said he was able to obtain official transportation but it broke down in the first hundred yards. Secretary Gates said he had no identification and at first the marines would not let him inside the gates to board the helicopter. Mr. Gray felt the exercise indicated that a meeting of the National Security Council could be assembled on rather short notice. The President believed the exercise of moving a Council Meeting to a relocation site had been a desirable one. He remarked that he had arrived (DELETION) early in order to inspect the facilities.

**I. HISTORY OF U.S. AND USSR LONG-RANGE MISSILE DEVELOPMENT (NSC Action No. 2137)**

Mr. Gray recalled that at the Council Meeting on October 15, 1959 (NSC Action No. 2137) the President had requested the Secretary of Defense to arrange for the preparation of a factual history of the development by the U.S. of long-range guided missile weapons systems. The President had also requested the Director of Central Intelligence to arrange for the preparation of a history of the development by the USSR of such missile systems. These histories had now been prepared and summaries of them would be presented by Dr. York for the Department of Defense and ( DELETION) for the Central Intelligence Agency.

Dr. York said that before and during World War II, the development of missiles had been primarily in the hands of the Germans. Following World War II U.S. armed forces instituted a number of study programs of long-range missiles, which were considered to be missiles with a potential range greater than 1000 miles. He displayed a bar chart entitled

"Development of Long-Range Missiles by the U.S." which portrayed our long-range missile programs from 1945 to the present. Dr. York called attention to the Army HERMES B and C programs which involved a winged ram-jet and a study of rocket missiles. All of the study programs, Dr. York went on, were characterized by rapidly changing plans through 1950. Dr. York also called attention to the REDSTONE program which later became the JUPITER program and to TRITON, which was a Navy study at an applied physics laboratory but never an actual missile. However, out of TRITON developed the REGULUS I and REGULUS II, both of which were eventually cancelled because of the prospective development of POLARIS. Dr. York then called attention to a number of Army Air Corps and later US. Air Force studies which involved some work on rockets, although the bulk of the work was concerned with air breathers. Most of these studies ended after a year except for SNARK which went on into the development phase. However, at the times of the Korean War it was decided that no program should be given priority unless it involved a missile which could be ready by 1954. After this decision SNARK reverted to study status.

Dr. York then reported on developments which resulted in a change from the emphasis on broad research studies to emphasis on early operational missiles. He referred to the Keller Survey which had examined all types of missiles in order to determine which ones should be selected for development. As a result of this Survey, study of the ATLAS was reinstated. At this time long-range missile programs had the lowest priority because the yield of the warhead which could be carried in them and the inaccuracy of their guidance systems made them unattractive in comparison to other weapons systems. In 1953 Secretary Wilson ordered a review of surface-to-surface missiles. One committee under Von Neumann studied long-range surface-to-surface missiles while another committee under Trevor Gardiner studied all other missiles. The Von Neumann Committee recommended development of a long-range missile weapons system. Dr. York pointed out that by the time the Von Neumann Committee formulated its recommendations, the thermo-nuclear bomb had been exploded by the U.S. and the possibility of achieving high yields from warheads of limited weight was better understood. A second Von Neumann Committee instituted ATLAS as a development program in 1954 although the final configuration of the ATLAS was not clear at this time. ATLAS at one time was a seven engine vehicle; later its engines were reduced to five in number and then to three as at present. As a result of the studies of the second Von Neumann Committee, the Ramo-Wooldridge set-up, and other studies, a decision was made to provide backup programs for all ATLAS components. These backup programs early in 1955 evolved into the TITAN program. The Killian Committee then made studies of the missile question and concluded that an IRBM could be made operational sooner than an ICBM. The Secretary of Defense, after review of the Killian Committee conclusions, instituted the THOR and JUPITER programs. Originally JUPITER was conceived of as a land or sea missile while THOR was to be a land missile only. As nuclear yields in relation to the size of the warhead increased, it became apparent in the summer of 1956 that the required payload could be delivered by a missile four-tenths the size of the JUPITER. At the same time it became apparent that progress was being made with solid propellants and that liquid fuel rockets would be unsuitable for use in submarines. Accordingly, both JUPITER and THOR became land-based missiles exclusively; POLARIS began to be thought of as the submarine missile. JUPITER and THOR became operational about three years after development of them began. ATLAS became operational about 1959, about 4\_ years after it was decided to give the highest priority to the three-engine ATLAS design. POLARIS would become operational about four years after it was instituted.

Dr. York said that 1958 was marked by further progress on solid propellants, progress which led to the initiation of MINUTEMAN. Dr. York then pointed to the figures on the chart which indicated the funds spent or obligated for various missile programs through FY 1960. He pointed out that practically all the funds spent by the U.S. on long-range missiles, amounting to between \$9 and \$10 billion dollars, had been spent since 1953.

The President asked whether the figures given by Dr. York included short-range missiles. Dr. York said he had given the figures for long-range missiles only. Dr. Stans asked why the SNARK was not shown on the chart as operational. Dr. York said SNARK was not operational at the end of 1959; and Secretary Gates added that SNARK was just now becoming operational.

Secretary Gates said that the development of a U.S. long-range missile program, most of which had taken place since 1953, was a remarkable achievement when compared with the development of other weapons systems, e.g. fighter aircraft. The President agreed that the achievement was indeed remarkable but said that it was difficult to explain to the Russians that we had virtually lost the years 1945-1953 so far as the development of long-range missiles was concerned. Dr. York felt that our decisions in the years 1945-1953, not to give the highest priority to long-range missile development, had been based on the fact that we had the nucleus of a strategic air force with bases near enough to the USSR to reach vital targets in that country. By contrast, during this period, the Soviet Union did not have the bases or the means of delivery to place atomic weapons on the U.S.

Dr. Kistiakowsky, noting that he had been associated with some of the early studies, including the Von Neumann Committees, said that in 1953 when a survey of the ATLAS program was made, all the plans provided that ATLAS would carry a Nagasaki-type bomb. Since that time, of course, the yield of the ATLAS warhead has been constantly increased. Secretary Gates thought the concept of the ATLAS had once been the same as the concept of the present Russian ICBM. Dr. York agreed that ATLAS had been through the phase mentioned by Secretary Gates but noted that ATLAS had achieved its present configuration in 1955. Kistiakowsky said that in addition to the two Von Neumann Committees mentioned by Dr. York there had been a third Von Neumann Committee which had produced information on the new possibilities of achieving high yields in relation to weight of warhead. Dr. York said the seven-engine and five-engine concepts for ATLAS would have made the gross weight of ATLAS about the same gross weight of the present Soviet ICBM.

The President felt the discussion explained why the Soviets had produced such large missiles. Dr. York agreed, adding that the Soviets had frozen the design of their missiles earlier in history as well as earlier in the design stage. They had frozen their designs at a time when it was thought a very large warhead would be required in order to produce a large explosion. (DELETION) Mr. Allen asked whether there was such difference between THOR and JUPITER. Dr. York replied that these two missiles were practically the same. The President recalled that there had been a controversy about which of the two missiles would be retained and which would be scrapped. At one time it had been agreed that both THOR and JUPITER would be given the highest priority but that the Secretary of Defense would decide which to keep and which to discard within six months. After the six months period was up, the Secretary of Defense said he needed another year to make this decision.

Mr. Gray inquired about the time which elapsed from the initiation of a missile program to the operational capability of the missile. He said he gathered it was 4\_ to 5 years. Dr. York said to be more precise ATLAS became operational after 5\_ years, TITAN after 5\_ years, THOR and JUPITER after 3 years, POLARIS after 4\_ years and MINUTEMAN after 4\_ years.

The President asked Dr. York to furnish him with a chart similar to the one displayed during Dr. York's briefing and asked whether, in addition, it would be difficult to indicate our effort involving short-range missiles on a chart. Dr. York believed a chart showing our work on short-range missiles would be difficult to prepare because these missiles were initiated and then discarded with such great rapidity. About fifty short-range missiles had been developed. The president said in that case he would be satisfied with the chart on long-range missiles.

Mr. Allen asked whether POLARIS would be the next missile to become operational. Dr. York answered in the affirmative, adding that POLARIS would become operational at the end of this calendar year.

Mr. Gray felt that the information in Dr. York's presentation should be made available to the public. He wondered why the chart was classified SECRET. Secretary Gates believed there was no reason for classification of this information. He added that information of this kind had appeared in speeches and testimony already. Dr. York said that an unclassified history of our missile development had been published in the Congressional Record. Mr. Stans felt that if the chart were to be made public, the dollars spent each year on the missile programs shown on the chart should be indicated.

Mr. Allen asked what function TITAN and MINUTEMAN would be expected to perform. Dr. York said TITAN would display the same gross performance as ATLAS but would be a better missile because it was different in significant details, e.g. reaction time. MINUTEMAN would require less logistic support, was adaptable to firing from silos, and could be rail-mobile. The President said he had recently been visited by a Dr. Long, whose appointment had been arranged by Dr. Kistiakowsky. Dr. Long had indicated that scientists think highly of the MINUTEMAN and believed we should be giving it a high priority.

Mr. Allen asked which missile was used for the man-in-space program. Dr. York replied that ATLAS was used for this program primarily because it was a year ahead of other missiles in its development and was more reliable. Secretary Gates said TITAN had the potential of carrying a larger warhead. Dr. York agreed that TITAN had advantages as far as payload was concerned but said that ATLAS was more reliable.

Mr. Gates said he felt we had made a correct military decision when we decided to develop a smaller engine for ATLAS rather than a SATURN-type engine. This correct military decision, however, resulted in our not having large rockets for

space programs. Dr. York said the ATLAS became available for space work two years later than the comparable Russian rocket. This caused a big difference in U.S. and Russian space programs. The President said he thought some space work had been done with a combination of ATLAS and THOR. Dr. York said this was not the case; THOR and JUPITER with added stages had been used in space work.

Dr. Kistiakowsky believed that we were equal to or even ahead of the Russians with respect to the scientific information being derived from our earth satellite program. The President agreed but added that the public sometimes asked whether scientific information would enable us to defend ourselves against the USSR. Dr. York said the fact that ATLAS was available two years later than the comparable Russian rocket had attracted a great deal of attention. The President said we know that the Russians were working earlier on the large rocket engine but it was difficult to get the public to appreciate the real significance of missile developments. Mr. Allen said as a result of our recent successes in space activities, we have recouped much U.S. prestige abroad which had been lost after SPUTNIK. Secretary Gates believed it was essential to separate space activities from military requirements in talking to the public about missile programs. The President noted that such a separation was one of the reasons for creating NASA. Secretary Gates believed the public was somewhat fearful of lunar probes. Dr. York said the Russians had simply demonstrated a capability for lunar probes which we knew they possessed. Mr. Stans wondered whether we were making high enough claims for our scientific achievements in space. (DELETION)

was then called upon to summarize the CIA report on the history of USSR long-range missile development. (DELETION) said the Soviets had no guided missile program before or during World War II, although Soviet scientists had worked on liquid fuel propulsion systems. The Soviets had been impressed by German achievements with the V-1 and the V-2. Consequently, immediately after the war they had devoted a major effort to exploiting German scientists and technicians who had been engaged in the German V-1 and V-2 programs. At first these Germans had been exploited in Germany. Later, in 1946, German scientists and technicians had been evacuated to Kaliningrad, near Moscow, where research laboratories had been established to emphasize V-2 development. Here a modification of the V-2 had been tested.

The President asked whether the V-2 had any guidance (DELETION) replied that the V-2 had a (DELETION) type of radio inertial guidance but no terminal guidance.

Resuming his presentation, (DELETION) said that the original range of the V-2 of 200 nautical miles was expanded by the Russians to 350 nautical miles. Then, in addition to exploitation of German scientists and technicians, the Russians undertook to build from the ground up a native Russian missile program which led eventually to the Russian ICBM. Khimki became another site for the development of large rocket engines. In 1947 a test program was started at Khimki where the Russians began firing V-2's first over a range of 260 nautical miles, later, in 1949, over a range of 350 nautical miles. The Soviets also put tremendous effort into developing their electronics program. Starting practically from zero they built up an electronics background in five years so that after 1950 they did not have to depend on any outside electronic assistance. (DELETION)

### **The National Security Council:**

Noted and discussed oral summaries of the reports on the subject by the Secretary of Defense and the Director of Central Intelligence, pursuant to NSC Action No. 2137.

[Back](#)