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May 20 1955

NATIONAL SECURITY COUNCIL

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NSC 5520 AND Actions 1656-b, 1713-b and 1799-b rescinded by the President's approval of NASC paper, "US Policy on Outer Space" circulated by NSC Memo dtd 1/29/60. NSC Action 2171.

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May 20, 1955

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NOTE BY THE EXECUTIVE SECRETARY
to the
NATIONAL SECURITY COUNCIL

PRESIDENT
APPROVED
5/6 7/55.

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on
U. S. SCIENTIFIC SATELLITE PROGRAM

The enclosed draft statement of policy on the subject, prepared by the NSC Planning Board at the request of the Department of Defense, is transmitted herewith for consideration by the National Security Council at its meeting on May 26, 1955.

A Financial Appendix, a Technical Annex (Annex A), and a letter containing the views of Mr. Nelson A. Rockefeller, Special Assistant to the President (Annex B), are also enclosed herewith for the information of the Council.

It is recommended that, if the Council adopts the enclosed statement of policy, it be submitted to the President with the recommendation that he approve it, direct its implementation by all appropriate executive departments and agencies of the U. S. Government, under the coordination of the Secretary of Defense in consultation with the Secretary of State.

It is requested that special security precautions be observed in the handling of the enclosure, which is being given a limited distribution.

JAMES S. LAY, JR.
Executive Secretary

cc: The Secretary of the Treasury
The Director, Bureau of the Budget
The Chairman, Joint Chiefs of Staff
The Director of Central Intelligence

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U. S. SCIENTIFIC SATELLITE PROGRAM

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STATEMENT OF POLICY
ON
U. S. SCIENTIFIC SATELLITE PROGRAM
GENERAL CONSIDERATIONS

1. The U. S. is believed to have the technical capability to establish successfully a small scientific satellite of the earth in the fairly near future. Recent studies by the Department of Defense have indicated that a small scientific satellite weighing 5 to 10 pounds can be launched into an orbit about the earth using adaptations of existing rocket components. If a decision to embark on such a program is made promptly, the U. S. will probably be able to establish and track such a satellite within the period 1957-58.
2. The report of the Technological Capabilities Panel of the President's Science Advisory Committee recommended that intelligence applications warrant an immediate program leading to a very small satellite in orbit around the earth, and that re-examination should be made of the principles or practices of international law with regard to "Freedom of Space" from the standpoint of recent advances in weapon technology.
3. On April 16, 1955, the Soviet Government announced that a permanent high-level, interdepartmental commission for interplanetary communications has been created in the

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Astronomic Council of the USSR Academy of Sciences. A group of Russia's top scientists is now believed to be working on a satellite program. In September 1954 the Soviet Academy of Sciences announced the establishment of the Tsoilkousky Gold Medal which would be awarded every three years for outstanding work in the field of interplanetary communications.

4. Some substantial benefits may be derived from establishing small scientific satellites. By careful observation and the analysis of actual orbital decay patterns, much information will be gained about air drag at extreme altitudes and about the fine details of the shape of and the gravitational field of the earth. Such satellites promise to provide direct and continuous determination of the total ion content of the ionosphere. These significant findings will find ready application in defense communication and missile research. When large instrumented satellites are established, a number of other kinds of scientific data may be acquired. The attached Technical Annex (Annex A) contains a further enumeration of scientific benefits.

5. From a military standpoint, the Joint Chiefs of Staff have stated their belief that intelligence applications strongly warrant the construction of a large surveillance satellite. While a small scientific satellite cannot carry surveillance equipment and therefore will have no direct

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intelligence potential, it does represent a technological step toward the achievement of the large surveillance satellite, and will be helpful to this end so long as the small scientific satellite program does not impede development of the large surveillance satellite.

6. Considerable prestige and psychological benefits will accrue to the nation which first is successful in launching a satellite. The inference of such a demonstration of advanced technology and its unmistakable relationship to intercontinental ballistic missile technology might have important repercussions on the political determination of free world countries to resist Communist threats, especially if the USSR were to be the first to establish a satellite. Furthermore, a small scientific satellite will provide a test of the principle of "Freedom of Space". The implications of this principle are being studied within the Executive Branch. However, preliminary studies indicate that there is no obstacle under international law to the launching of such a satellite.

7. It should be emphasized that a satellite would constitute no active military offensive threat to any country over which it might pass. Although a large satellite might conceivably serve to launch a guided missile at a ground target, it will always be a poor choice for the purpose. A bomb could not be dropped from a satellite on a target below, because anything dropped from a satellite would simply continue alongside in the orbit.

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8. The U. S. is actively collaborating in many scientific programs for the International Geophysical Year (IGY), July 1957 through December 1958. The U. S. National Committee of the IGY has requested U. S. Government support for the establishment of a scientific satellite during the Geophysical Year. The IGY affords an excellent opportunity to mesh a scientific satellite program with the cooperative world-wide geophysical observational program. The U. S. can simultaneously exploit its probable technological capability for launching a small scientific satellite to multiply and enhance the over-all benefits of the International Geophysical Year, to gain scientific prestige, and to benefit research and development in the fields of military weapons systems and intelligence. The U. S. should emphasize the peaceful purposes of the launching of such a satellite, although care must be taken as the project advances not to prejudice U. S. freedom of action (1) to proceed outside the IGY should difficulties arise in the IGY procedure, or (2) to continue with its military satellite programs directed toward the launching of a large surveillance-type satellite when feasible and desirable.

9. The Department of Defense believes that, if preliminary design studies and initial critical component development are initiated promptly, sufficient assurance of success in establishing a small scientific satellite during

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the IGY will be obtained before the end of this calendar year to warrant a response, perhaps qualified, to an IGY request. The satellite itself and much information as to its orbit would be public information. The means of launching would be classified.

10. A program for a small scientific satellite could be developed from existing missile programs already underway within the Department of Defense. Funds of the order of \$20 million are estimated to be required to give reasonable assurance that a small scientific satellite can be established during 1957-58 (See Financial Appendix).

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COURSES OF ACTION

11. Initiate a program in the Department of Defense to develop the capability of launching a small scientific satellite by 1958, with the understanding that this program will not prejudice continued research directed toward large instrumented satellites for additional research and intelligence purposes, or materially delay other major Defense programs.

12. Endeavor to launch a small scientific satellite under international auspices, such as the International Geophysical Year, in order to emphasize its peaceful purposes, provided such international auspices are arranged in a manner which:

a. Preserves U.S. freedom of action in the field of satellites and related programs.

b. Does not delay or otherwise impede the U.S. satellite program and related research and development programs.

c. Protects the security of U.S. classified information regarding such matters as the means of launching a scientific satellite.

d. Does not involve actions which imply a requirement for prior consent by any nation over which the satellite might pass in its orbit, and thereby does not jeopardize the concept of "Freedom of Space".

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FINANCIAL APPENDIX

1. Funds of the order of \$20 million are estimated to be required to assure a small scientific satellite during the period of the IGY. This figure allows for design and production of adequate vehicles and for scientific instrumentation and observation costs. It also includes preliminary back-up studies of an alternate system without vehicle procurement. The ultimate cost of a scientific satellite program will be conditioned by (1) size and complexity of the satellite, (2) longevity of each satellite, and (3) duration of the scientific observation program. Experience has shown that preliminary budget estimates on new major experimental and design programs may not anticipate many important developmental difficulties, and may therefore be considerably less than final costs.

2. The estimate of funds required is based on:

satellite vehicle	\$10-\$15 million
instrumentation for tracking	\$2.5 million
logistics for launching and tracking	\$2.5 million
TOTAL	<u>\$15-\$20 million</u>

3. These estimates do not include funding for military research and development already part of other missile programs. They include costs for observations that might properly be undertaken by Department of Defense agencies as part of the Department of Defense mission. They do not include costs of other observations that may be proposed by other agencies. They will provide a minimum satellite for which two vehicle systems now under study offer good promise, "Orbiter" and "Viking". They also include exploratory studies for a back-up program based upon the "Atlas" missile and "Aerobee" research rocket development.