Submitted by NSC 5814/1

President

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NSC 5814
June 20, 1958

NATIONAL SECURITY COUNCIL

U. S. POLICY ON OUTER SPACE

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NOTE BY THE EXECUTIVE SECRETARY
to the
NATIONAL SECURITY COUNCIL
on
U. S. POLICY ON OUTER SPACE

The enclosed draft statement of U. S. Policy on Outer Space, prepared by the NSC Planning Board, is transmitted herewith for consideration by the National Security Council at its meeting on Thursday, July 3, 1958. The enclosed statement of policy has been prepared on the basis of studies by an Ad Hoc Subcommittee on Outer Space, consisting of representatives of the Office of the Special Assistant to the President for Science and Technology (Chairman), the Departments of State and Defense, the Joint Chiefs of Staff, the Central Intelligence Agency, the U. S. Information Agency, the National Science Foundation, and the National Advisory Committee for Aeronautics.

Also enclosed, for the information of the Council, are Annex A ("The Soviet Space Program") and Annex B ("Tentative Schedule of U. S. Vehicle Launchings").

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, and designate the Operations Coordinating Board as the coordinating agency.

JAMES S. LAY, JR.
Executive Secretary

cc: The Secretary of the Treasury
The Attorney General
The Director, Bureau of the Budget
The Chairman, Atomic Energy Commission
The Chairman, Joint Chiefs of Staff
The Director of Central Intelligence
The Special Assistant to the President
for Science and Technology
The Director, U. S. Information Agency
The Director, National Science Foundation
The Director, National Advisory Committee
for Aeronautics

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U. S. POLICY ON OUTER SPACE

Table of Contents

~~SECRET~~

D R A F T

PRELIMINARY STATEMENT OF

U. S. POLICY ON OUTER SPACE

INTRODUCTORY NOTE

This Statement of U. S. Policy on Outer Space is designated Preliminary because man's understanding of the full implications of outer space is only in its preliminary stages. As man develops a fuller understanding of the new dimension of outer space, it is probable that the long-term results of exploration and exploitation will basically affect international and national political and social institutions.

Perhaps the starkest facts which confront the United States in the immediate and foreseeable future are (1) the USSR has surpassed the United States and the Free World in scientific and technological accomplishments in outer space, which have captured the imagination and admiration of the world; (2) the USSR, if it maintains its present superiority in the exploitation of outer space, will be able to use that superiority as a means of undermining the prestige and leadership of the United States; and (3) the USSR, if it should be the first to achieve a significantly superior military capability in outer space, could create an imbalance of power in favor of the Sino-Soviet Bloc and pose a direct military threat to U. S. security.

The security of the United States requires that we meet these challenges with resourcefulness and vigor.

National Security Council Planning Board. NSC 5814/1. "Draft Preliminary Statement of U.S. Policy on Outer Space." *Dwight D. Eisenhower Presidential Library and Museum.* 20 Jun. 1958.

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GENERAL CONSIDERATIONS

INTRODUCTION

Significance of Outer Space to U. S. Security

1. More than by any other imaginative concept, the mind of man is aroused by the thought of exploring the mysteries of outer space.

2. Through such exploration, man hopes to broaden his horizons, add to his knowledge, and improve his way of living on earth. Already, man is sure that through further exploration he can obtain certain scientific and military values. It is reasonable for man to believe that there must be, beyond these areas, different and great values still to be discovered.

3. The technical ability to explore outer space has deep psychological implications over and above the stimulation provided by the opportunity to explore the unknown. With its hint of the possibility of the discovery of fundamental truths concerning man, the earth, the solar system, and the universe, space exploration has an appeal to deep insights within man which transcend his earthbound concerns. The manner in which outer space is explored and the uses to which it is put thus take on an unusual and peculiar significance.

4. The beginning stages of man's conquest of space have been focused on technology and have been characterized by national competition. The result has been a tendency to equate achievement in outer space with leadership in science, military capability, industrial technology, and with leadership in general

5. The initial and subsequent successes by the USSR in launching large earth satellites have profoundly affected the belief of peoples, both in the United States and abroad, in the superiority of U. S. leadership in science and military capability. This psychological reaction of sophisticated and unsophisticated peoples everywhere affects U. S. relations with its allies, with the Communist Bloc, and with neutral and uncommitted nations.

6. In this situation of national competition and initial successes by the USSR, further demonstrations by the USSR of continuing leadership in outer space capabilities might, in the absence of comparable U. S. achievements in this field,* dangerously impair the confidence of these peoples in U. S. over-all leadership. To be strong and bold in space technology will enhance the prestige of the United States among the peoples of the world and create added confidence in U. S. scientific, technological, industrial and military strength.

7. The novel nature of space exploitation offers opportunities for international cooperation in its peaceful aspects. It is likely that certain nations may be willing to enter into cooperative arrangements with the United States. The willingness of the Soviets to cooperate remains to be determined. The fact that the results of cooperation in certain fields, even though entered into for peaceful purposes, could have military application, may condition the extent of such cooperation in those fields.

Problem of Defining Space

8. Many names for the various regions of the earth's atmosphere and the divisions of space have developed over the years. The boundaries of these regions and divisions cannot be precisely defined in physical terms, and authorities differ widely on terminology and meaning.

9. The term "air space" has been used to denote the layer of atmosphere surrounding the earth in which military and civilian air vehicles operate. Although national policies and international agreements have dealt extensively with air space and expressly assert the sovereignty of each nation over its air space, the upper limit of air space has not been defined.

* Communist China has announced, furthermore, an intention of proceeding to launch its own earth satellite in the near future. Such a development, which could only result from USSR assistance, would tend to enhance the prestige of the Chinese Communist regime throughout Asia and among the less-developed countries, and could further undermine the reputation of the West for technological leadership unless the accomplishment were matched by a Free World ally.

10. The term "outer space" has no generally accepted precise definition.

a. If it becomes desirable to define the lower limit of outer space in terms of distance from the earth's surface, three considerations, among others, are pertinent:

(1) Aerodynamic Lift. The theoretical upper limit of the continuous flight of winged aircraft based upon aerodynamic force is approximately 55 miles above the earth's surface.

(2) Satellite Orbits. Aerodynamic drag affects the orbiting characteristics of earth satellites appreciably when they descend to altitudes of about 100 miles and causes actual burning up at altitudes from 90 down to 70 miles. Accordingly, something over 70 miles may be considered the lower limit at which a satellite can exist in orbit, even for a short time.

(3) Air Defense Capability. Today the United States has air defense systems which can operate against aircraft up to about 10 to 12 miles, which will be extended to 15 to 20 miles in the relatively near future. Anti-missile missile systems now under development could potentially increase this altitude to approximately 90 to 95 miles in the foreseeable future. Accordingly, the upper limit of the air space which a nation is capable of defending might now be arbitrarily set as lying between 90 to 95 miles above the earth's surface.

b. Because it may not be desirable to define outer space in terms of distance from the earth's surface, outer space could be defined on a functional basis, such as in terms of the traversing or operating of man-made objects (at present principally satellites and missiles) in what is generally regarded as "space".

11. Although the successful orbiting of earth satellites has raised a question of national sovereignty ad coelum and as to the doctrine of "freedom of space", the United States has not recognized any upper limit to sovereignty. In order to maintain (a) flexibility in international negotiations with respect to all uses of "space", and pending a safeguarded international control agreement, (b) freedom of action with respect to the military uses of "space", the United States has taken no public position on the definition of outer space.

12. Because the question of rights in "outer space" will undoubtedly arise at the UN General Assembly in September 1958, perhaps in international discussions on post-IGY activities, and perhaps in other international negotiations, it would appear desirable for the United States to develop a common understanding of the term "outer space" as related to particular objects and activities therein.

13. For the purposes of this policy statement, space is divided into two regions: "air space" and "outer space". "Outer space" is considered as contiguous to "air space", with the lower limit of "outer space" being the upper limit of "air space"

USE OF OUTER SPACE

General

14. Outer space can be used:

a. By vehicles or other objects that achieve their primary purpose in outer space; such as

(1) Vehicles or objects that remain in an area directly over a nation's own territory, such as sounding rockets;

(2) Vehicles or objects that orbit the earth;

(3) Vehicles that traverse outer space enroute to the moon, other planets or the sun;

b. For the transmission of electromagnetic energy for such purposes as communications, radar measurement and electronic countermeasures;

c. By weapons, such as ballistic missiles, and other vehicles which traverse outer space, but which achieve their primary purpose upon their return to air space or earth.

15. There are many uses of outer space for peaceful purposes, such as exploration, pure adventure, increase of scientific knowledge, and development and applications of technology. Any use of outer space, however, whatever the purpose it is intended to serve, may have some degree of military or other non-peaceful application. Therefore, U. S. policies relating to international arrangements on uses of outer space for peaceful purposes will have to take into account possible non-peaceful applications in determining the net advantage to U. S. security.

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Science and Technology

16. Outer space technology affords new and unique opportunities for scientific observations and experiments which will add greatly to our knowledge and understanding of the earth, the solar system and the universe. These opportunities exist in many fields, including among others:

a. Geophysics: Three-dimensional mapping of the earth's gravity and magnetic field.

b. Physics: Cosmic ray measurements above the earth's dense atmosphere and experiments in the theory of relativity.

c. Meteorology: World-wide cloud-cover mapping for improved forecasting of weather and measurements of incoming and outgoing heat energy which will allow a better understanding of weather.

d. Biology: Possible living organisms in space and the effects on man of prolonged exposure to radiation and weightlessness.

e. Psychological response of man to a space environment.

f. Astronomy: The universe as seen from beyond the earth's atmosphere and measurement of stellar radiation.

g. Lunar investigations including the moon's gravity, mass, magnetic field, atmosphere, surface, core, and original state.

h. Nature of the Planets.

The foregoing studies would be conducted by means of sounding rockets, earth satellites, lunar vehicles, and interplanetary vehicles.

17. Outer space activity and scientific research would have both military and non-military applications. Examples are satellites as navigational aids; and satellites as relay stations to receive and relay television or radio signals and improve world-wide communications.

18. It is not possible to foresee all applications of outer space activity which may be developed, but our ability to achieve and maintain leadership in such applications will largely depend on the breadth of the scientific research which is undertaken and supported.

Military

19. The effective use of outer space by the United States and the Free World will enhance their military capability. Military uses of outer space (some of which may have peaceful applications) may be divided into the following three general categories:

a. Now Planned or in Immediate Prospect

(1) Ballistic Missiles. A family of IRBM's and ICBM's is now in the latter stages of development. Components of these missiles can be used to develop other space vehicles, for both military and scientific use.

(2) Anti-ICBM's which are now being developed.

(3) Military Reconnaissance. (see "Reconnaissance Satellites" section, paragraphs 20-23)

b. Feasible in the Near Future

(1) Satellites for Weather Observation.

(2) Military Communications Satellites.

(3) Satellites for Electronic Countermeasures (Jamming).

(4) Satellites as Aids for Navigation, tracked from the earth's surface visually or by radio.

c. Future Possibilities.

(1) Manned Maintenance and Resupply Outer Space Vehicles.

(2) Manned Defensive Outer Space Vehicles, which might capture, destroy or neutralize an enemy outer space vehicle.

(3) Bombardment Satellites (Manned or Unmanned). It is conceivable that, in the future, satellites carrying weapons ready for firing on signal might be used for attacking targets on the earth.

(4) Manned Lunar Stations, such as military communications relay sites or reconnaissance stations. Conceivably, launching of missiles to the earth from lunar sites would be possible.

Reconnaissance Satellites

20. Reconnaissance satellites are of critical importance to U. S. national security. Those now planned are designed: (a) to gather military intelligence data, weather data, and information on the economic potential of the Sino-Soviet Bloc; and (b) to detect the launching of a missile or air attack upon the United States or its allies. Reconnaissance satellites would also have a high potential use as a means of implementing the "open skies" proposal or policing a system of international armaments control.

21. As envisaged in U. S. plans, the instrumentation of reconnaissance satellites would consist primarily of three types:

a. Optical. Such instrumentation will provide for earth photography and/or TV scanning. Either system might transmit by recoverable capsule techniques, or electronically, either immediately or after temporary storage. Optical instrumentation currently available for use in satellites could give resolution down to 100 feet, permitting identification of naval movements, concentrations of shipping, and possibly the general purpose of industrial complexes. Further improvement of the instrumentation would, through resolution much below 100 feet, make possible surveillance of airfields and concentrations of military equipment, and identification of the specific purposes of industrial complexes.

b. Infra-red. A satellite, equipped with an infra-red sensor and operating at low satellite altitudes, could detect and track jet bombers operating above 30,000 feet and a ballistic missile from about one minute after launch to burnout. With sufficient satellites orbiting, equipped with suitable communication links, it is possible that aircraft or missile attacks launched against the United States could be detected so as to provide improved warning time to U. S. active and passive defenses (for long-range missiles, up to 30 minutes).

c. Electromagnetic. Electromagnetic instrumentation could pick up a wide variety of electronic emanations of interest to intelligence, including location and identification of Soviet radars, frequencies, codes and jamming patterns. Data collection by satellites further offers possibilities for acquiring some line-of-sight radio and TV communications signals.

22. At some later time, when manned outer space flight is a reality, it is probable that man, in a reconnaissance satellite, could add significantly to the effectiveness of reconnaissance operations. The degree of this added effectiveness can be predicted only after more is known of unmanned reconnaissance satellite operations and of man's ability to function in an outer space environment.

23. Some political implications of the use of reconnaissance satellites may be adverse. Therefore, studies must be urgently undertaken in order to determine the most favorable political framework in which such satellites would operate.

Manned Exploration of Outer Space

24. In addition to satisfying man's urge to explore new regions, manned exploration of outer space is of importance to our national security because:

a. Although present studies in outer space can be carried on satisfactorily by using only unmanned vehicles, the time will undoubtedly come when man's judgment and resourcefulness will be required fully to exploit the potentialities of outer space.

b. To the layman, manned exploration will represent the true conquest of outer space. No unmanned experiment can substitute for manned exploration in its psychological effect on the peoples of the world.

c. Discovery and exploration may be required to establish a foundation for the rejection of USSR claims to exclusive sovereignty of other planets which may be visited by nationals of the USSR.

25. The first step in manned outer space travel could be undertaken using rockets and components now under study and development. Travel by man to the moon and beyond will probably require the development of new basic vehicles and equipment.

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OTHER IMPLICATIONS OF OUTER SPACE ACTIVITIES

International Cooperation and Control

General

26. International cooperation in certain outer space activities appears highly desirable from a scientific, political and psychological standpoint and may appear desirable in selected instances with U. S. allies from the military standpoint. International cooperation agreements in which the United States participates could have the effect of (a) enhancing the position of the United States as a leader in advocating the uses of outer space for peaceful purposes and international cooperation in science, (b) conserving U. S. resources, (c) speeding up outer space achievements by the pooling of talents, (d) "opening up" the Soviet Bloc, and (e) introducing a degree of order and authority in the necessary international regulations governing certain outer space activities.

27. Various types of international cooperation may be possible through existing international scientific organizations, the United Nations, multilateral and bilateral arrangements with Free World nations and NATO, and U. S.-Soviet bilateral arrangements. International cooperation by the United States in outer space activities might, as consistent with U. S. security interests, include (a) the collection and exchange of information on outer space; (b) the exchange of scientific instrumentation; (c) contacts among scientists; (d) participation of foreign scientists in U. S. space projects; (e) planning and coordination of certain programs or specific projects to be carried out on a fully international basis (some of which might be: a large instrumented scientific satellite, communication satellites, and meteorological satellites); (f) establishment of regulations governing certain outer space activities; (g) provision and launching of scientific satellites in support of international planning of a program of satellite observations.

28. Under present conditions, the extent of international cooperation, particularly in fields having important military applications such as propulsion and guidance mechanisms, will have to take into account security considerations (see paragraphs 7 and 15).

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U. S. Position

29. In January 1957 the United States initiated international discussion of the control of outer space by proposing in the UN General Assembly that the testing of outer space vehicles should be carried out and inspected under international auspices. This proposal was based on a policy decision* to seek to assure that the sending of objects into outer space should be exclusively for peaceful and scientific purposes and that, under effective control, the production of such objects designed for military purposes should be prohibited as a part of an armaments control system. It was thought, at the then state of the art, that a control of testing would have precluded development until more comprehensive controls could be agreed upon. The U. S. proposal was altered with the passage of time and, as presented on August 29, 1957 as the Four Power Proposal in London, calls for technical studies of the "design of an inspection system which would make it possible to assure that the sending of objects through outer space will be exclusively for peaceful and scientific purposes." In his letter of January 13, 1958 to Bulganin, the President proposed, as part of a five-point program relating to control of armaments and armed forces, that "we agree that outer space be used only for peaceful purposes" and inquired "can we not stop the production of such weapons which would use or more accurately misuse, outer space...?" In his later letter to Bulganin, dated February 15, 1958, the President proposed "wholly eliminating the newest types of weapons which use outer space for human destruction."

* With reference to the relation of the use of outer space to an armaments control system, the Annex to NSC Action No. 1553 (November 21, 1956), which remains in effect, provides:

"5. It is the purpose of the United States, as part of an armaments control system, to seek to assure that the sending of objects into outer space shall be exclusively for peaceful and scientific purposes and that under effective control the production of objects designed for travel in or projection through outer space for military purposes shall be prohibited.

"Therefore, the United States to propose that, contingent upon the establishment of effective inspection to verify the fulfillment of the commitment, all states agree to provide for international inspection of and participation in tests of outer space objects."

SECRET

30. a. The most recent statement of basic policy relating to the regulation and reduction of armed forces and armaments appears in paragraph 40 of NSC 5810/1 (May 5, 1958).

b. Further consideration of U. S. policy concerning the scope of control and inspection required to assure that outer space could be used only for peaceful purposes, as well as the relationship of any such control arrangement to other aspects of an arms agreement, is deferred pending the recommendation of the Special NSC Committee established to make preparations for a possible Summit Meeting (NSC Action No. 1893). It is understood that the Special NSC Committee will also consider possible interim and more limited arrangements, and take into account the technical feasibility of assuring that outer space can be used only for peaceful purposes.

USSR Position

31. The USSR has proposed an agenda item for the next UN General Assembly meeting calling for the banning of the use of "cosmic space" for military purposes, the elimination of foreign bases on the territories of other countries, and international cooperation in the study of "cosmic space". The Soviets envisage an international agency with the following functions: development and supervision of an international program for launching intercontinental and space rockets to study "cosmic space"; continuation on a permanent basis of the IGY "cosmic space" research; world-wide collection, exchange and dissemination of "cosmic" research information; and coordination of and assistance to national research programs.

United Nations Role

32. The Soviet position makes certain that outer space questions, probably including peaceful uses, control, and organization, will be discussed in the UN General Assembly in September, 1958. The rapid pace of outer space achievements in past months has aroused great interest among all UN members concerning the role of the United Nations in the various aspects of outer space. The maintenance of our posture as the leading exponent of the use of outer space for peaceful purposes requires that the United States take in the General Assembly an imaginative and positive position.

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Legal Problems of Air Space and Outer Space

33. Numerous legal problems will be posed by the development of activities in space. Many of these cannot be settled until we gain more experience and basic information, because the only foundation for a sound rule of law is a body of ascertained fact. It is altogether likely that some issues in the field of space law which will be practical questions in the future are not even identified today. This is not to say that there is an entire lack of international law applicable to activities in space at the present time. For example, Article 51 of the Charter of the United Nations recognizes the inherent right of individual or collective self-defense against armed attack. Clearly this right is available against any space activities employed in such an attack.

34. International Geophysical Year. From the arrangements and announcements made in connection with the International Geophysical Year, there may be a general implied consent that scientific satellites be launched and orbited during the IGY. Such implied consent does not necessarily mean, however, that assent has been given to the launching and orbiting of other types of satellites or missiles, or that the assent with respect to scientific satellites extends beyond the IGY. It remains to be determined what rules will apply to subsequent satellites; what limitations will govern the types and purposes of satellites in the future. The United States, as well as other countries, has not yet taken positions on these questions and, here again, the answer will depend not only upon what others are likely to do but also upon what activities the United States wishes to be free to engage in.

35. A problem of jurisdiction in space on which the United States reserves its position at present is whether celestial bodies in space beyond the earth are susceptible to appropriation by national control or sovereignty.

36. The problem of legal definitions is unsolved. As indicated above, there is as yet insufficient basis for legally deciding that air space extends so far and no farther; that outer space begins at a given point above the earth. Because, for some time to come, at least, activities in outer space will be closely connected with activities on the earth and in the air space, many legal problems with respect to space activities may well be resolved without the necessity of determining or agreeing upon a line of demarcation between air space and outer space. If, by analogy to the Antarctic proposal of the United States, international agreement can be reached upon permissible activities in space and the rules and regulations to be followed with respect thereto, problems of sovereignty may be avoided or at least deferred.

SECRET

37. Problems of liability for injury or damage caused by activities in space or by re-entry will also arise. No nation has as yet taken a position as to whether due care against negligence should be the standard or whether liability should be absolute. Here again future experience, and the development of agreement among the nations, will be necessary. Absolute liability as respects objects landing on the United States will have to be weighed against absolute liability for U. S. objects landing on other nations.

38. Problems of national and international regulation over activities in space will also arise. There is already the need to assign telecommunication wavelengths to communications with satellites and space objects. Other types of regulations having serious security implications will have to be worked out for the identification of space objects and for some type of traffic control to prevent congestion and interference.

39. Generally speaking, rules will have to be evolved gradually and pragmatically from experience. While the nations engaging in space activities will play an important role in this field, it will have to be recognized from the nature of the subject that all nations have a legitimate interest in it. The field is not suitable for abstract a priori codification.

SECRET

COMPARISON OF USSR AND U. S. CAPABILITIES IN OUTER SPACE ACTIVITIES

40. Conclusive evidence shows that the Soviets are conducting a well-planned outer space program at high priority. The table below attempts to estimate the U. S. and USSR timetables for accomplishment of specific outer space flight activities.

a. Soviet space flight capabilities estimated in the table reflect the earliest possible time periods in which each specific event could be successfully accomplished.

(1) The space flight program is in competition with many other programs, particularly the missile program. The USSR probably cannot successfully accomplish all of the estimated space flight activities within the time periods specified. The USSR will not permit its space flight program to interfere with achieving an early operational capability for ICBM's (which enjoy the highest priority).

(2) The USSR is believed to have the intention to pursue both an active space flight program designed to put man into outer space for military and/or scientific purposes, and further scientific research utilizing earth satellites, lunar rockets, and probes of Mars and Venus; but it cannot be determined, at this time, whether the basic scientific program or the "man in space" program enjoys the higher priority and will, therefore, be pursued first.

b. U. S. space flight capabilities indicated in the table reflect the earliest possible time periods in which each specific event could be successfully accomplished. Not all of the indicated activities could be successfully accomplished within the time period specified. It must also be recognized that the accomplishment of some of the activities listed would impinge upon space activities already programmed, or upon other military programs.

41. If the USSR high-priority outer space program continues, the USSR will maintain its lead at least for the next few years, as shown in the following table.

[redacted]

EARLIEST POSSIBLE TIME PERIODS OF VARIOUS SOVIET AND U. S. ACCOMPLISHMENTS IN OUTER SPACE

(NOTE: Generally, Soviet vehicles will be of substantially greater orbital payloads than U. S. vehicles. It should be noted, however, that the comparative capabilities of the United States and the USSR should not be measured by orbital payloads alone. The United States is estimated to be considerably ahead of the USSR in miniaturization of missile and satellite components, and therefore the effectiveness of U. S. satellites on a "per pound in orbit" basis is estimated to be greater than that of the USSR.)

		SOVIET[a]	U. S.[b]
1.	Scientific Earth Satellites (IGY Commitment)	1957-58	1958
2.	Reconnaissance Satellites[c]	1958-59	1959-61
3.	Recoverable Aeromedical Satellites	1958-59	1959
4.	Exploratory Lunar Probes or Lunar Satellites	1958-59	1958-59
5.	"Soft" Lunar Landing	1959-60	Early 1960
6.	Communications Satellites	---	1959-60
7.	Manned Recoverable Satellites		
	a. Capsule-type Satellites	1959-60[d]	(1960-63
	b. Glide-type Vehicles	1960-61	(
8.	Mars Probe	Aug. 1958[e]	Oct. 1960
9.	Venus Probe	June 1959[e]	Jan. 1961
10.	25,000-pound Satellite -- manned	1961-62	After 1965
11.	Manned Circumlunar Flight	1961-62	1962-64
12.	Manned Lunar Landing	After 1965	1968

a/ Estimate by the Guided Missile Intelligence Committee (GMIC) of the IAC as of June 3, 1958.

b/ Source: Department of Defense, June 4, 1958.

c/ Defense Comment: (See Annex B for test reconnaissance satellites.) The United States plans to launch a reconnaissance satellite of approximately 3,000 pounds in late 1959. During the same time period the USSR is estimated to be capable of launching a 4-5,000 pound reconnaissance satellite.

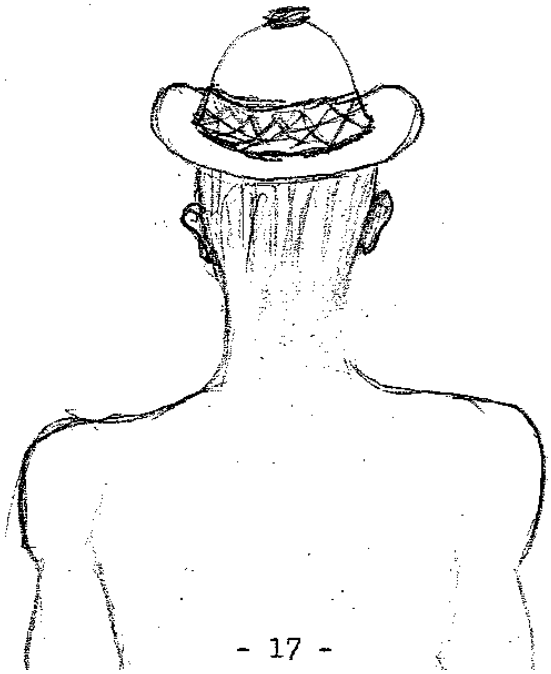
d/ The Joint Staff member of GMIC reserves his position on the date 1959.

e/ The Soviets most likely would attempt probes when Venus and Mars are in their most favorable conjunction with the earth for such an undertaking.

LEVEL OF EFFORT

42. a. Because of the highly speculative nature of future activities in outer space, decisions as to the priority and extent of U. S. outer space programs will obviously be a judgment based on limited knowledge. Some activities in outer space would be expedited by the allocation of additional financial resources; others would not, being dependent on research progress. The potentially great importance to U. S. national interests of outer space activities, however, requires taking risks in allocating resources to research and development activities, the success or ultimate utility of which cannot be definitely foreseen.

b. The level of material and scientific effort to be expended on outer space activities must nevertheless be related to other national security programs to ensure that a proper balance is maintained between anticipated scientific, military and psychological gains from outer space programs and the possible loss resulting from reductions in resources allocated to other programs.



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OBJECTIVES*

43. The fullest** development and exploitation of U. S. outer space capabilities as needed to achieve U. S. scientific, military and political purposes** as follows:

a. A technological capability to meet the requirements of b, c and d below.

b. A degree of competence and a level of achievement in outer space basic and applied research and exploration which is at least on a par with that of any other nation.

c. Applications of outer space technology, research and exploration to achieve a military capability in outer space sufficient to assure the over-all superiority of U. S. /outer space/*** offensive and defensive systems relative to those of the USSR.

d. Applications of outer space technology, research, and exploration for non-military purposes, which are at least on a par with any other nation.

e. World recognition of the United States as, at least, the equal of any other nation in over-all outer space activity and as the leading advocate of the peaceful exploitation of outer space.

/43. The establishment of the United States as the recognized leader in the over-all development and exploitation of outer space for scientific, military and political purposes./****

44. As consistent with U. S. security, achievement of international cooperation in the uses of and activities related to outer space: for peaceful purposes, and with selected allies for military purposes.

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* See paragraphs 29 and 30 for statement of the status of policy on the regulation and reduction of armed forces and armaments in relation to outer space.

** Budget proposes to delete "the fullest" and all of the paragraph after "purposes".

*** Defense-JCS proposal.

**** ODM-NACA-USIA alternative paragraph 43.

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45. As consistent with U. S. security, the achievement of suitable international agreements relating to the uses of outer space for peaceful purposes that will assure orderly development and regulation of national and international outer space programs.

46. Utilization of the potentials of outer space to assist in "opening up" the Soviet Bloc through improved intelligence and programs of scientific cooperation.

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POLICY GUIDANCE*

Priority and Scope of Outer Space Effort

47. With a priority and scope sufficient to enable the United States at the earliest practicable time to achieve its scientific, military and political objetives as stated in paragraph 43, develop and expand selected U. S. activities related to outer space in:

a. Research and technology required to exploit the military and non-military potentials of outer space.

b. Outer space exploration required to determine such military and non-military potentials.

c. Applications of outer space research, technology, and exploration to develop outer space capabilities (in addition to those capabilities which now have the highest national priority**) required to achieve such objectives.

48. In addition to undertaking necessary immediate and short-range activities related to outer space, develop plans for outer space activities for the longer range (through at least a ten-year period).

49. Study on a continuing basis the implications which U. S. and foreign exploitation of outer space may hold for international and national political and social institutions. Critically examine such exploitation for possible consequences on activities and on life on earth (e.g., outer space activities which affect weather, health, or other factors relating to activities and life on earth).

/50. In the absence of a safeguarded international agreement for the control of armaments and armed forces, place primary emphasis on activities related to outer space necessary to maintain the over-all deterrent capability of the United States and the Free World./***

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* See paragraphs 29 and 30 for statement of the status of policy on the regulation and reduction of armed forces and armaments in relation to outer space.

** See NSC Action No. 1846.

*** State-Defense-Treasury-JCS proposal. Other Planning Board representatives believe the subject is adequately covered in paragraphs 43 and 47, and would therefore delete paragraph 50.

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Psychological Exploitation

51. In the near future, while the USSR has a superior capability in space technology, judiciously select (without prejudicing activities under paragraph 47) projects for implementation which, while having scientific or military value, are designed to achieve a favorable world-wide psychological impact.

52. Identify, to the greatest extent possible, the interests and aspirations of other Free World nations in outer space with U. S.-sponsored activities and accomplishments.

53. Develop information and other programs that will exploit fully U. S. outer space activities on a continuing basis; especially, during the period while the USSR has superior over-all outer space capabilities, those designed to counter the psychological impact of Soviet outer space activities and to present U. S. outer space progress in the most favorable comparative light.

Reconnaissance Satellites*

54. In anticipation of the availability of reconnaissance satellites, seek urgently a political framework which will place the uses of U. S. reconnaissance satellites in a political and psychological context most favorable to the United States.

55. At the earliest technologically practicable date, use reconnaissance satellites to enhance to the maximum extent the U. S. intelligence effort.

International Cooperation in Outer Space Activities

56. Consistent with the objectives in paragraphs 43 and 44, and as a means of maintaining the U. S. position as the leading advocate of the use of outer space for peaceful purposes, be prepared to propose that the United States join with other nations, including the USSR, in cooperative efforts relating to outer space. Specifically:

a. Encourage a continuation and expansion of the type of cooperation which exists in the IGY programs, through non-governmental international scientific

* The priority and scope of operational capabilities of reconnaissance satellites are established in NSC Action No. 1846, January 22, 1958.

organizations such as the International Council of Scientific Unions; including cooperation in the design of experiments and instrumentation, exchange of information on instrumentation, scientific data and telemetry, exchange of instruments, and in the use of scientific satellites and other scientific vehicles in support of international planning for exploration of outer space.

b. Recognize UN interests in outer space cooperation, but do not encourage precipitous UN action to establish permanent organizational arrangements. To this end consider: (1) establishment of an ad hoc UN planning committee to formulate recommendations to facilitate international cooperation and appropriate UN organizational arrangements; and (2) in the interim, participation in those joint projects for cooperation and exchange of information for which UN auspices are desirable.

c. Invite scientists of foreign countries, including the Soviet Bloc in general on a reciprocal basis, to participate in selected U. S. programs for the scientific exploration of space.

d. Propose specific bilateral arrangements with other nations (including the USSR) for cooperative ventures related to outer space, provided that the combined existing competence might achieve meaningful scientific and technical advance.

e. Propose to groups of nations and international organizations independent outer space projects which would be appropriate for multilateral participation.

f. Assist selected Free World nations willing and able to undertake useful activities related to outer space [, as necessary to assure that the over-all Free World position in outer space developments is at least on a par with that of the Sino-Soviet Bloc].*

Limited International Arrangements to Regulate Outer Space Activities

57. Propose international agreements concerning appropriate means for maintaining a full and current public record of satellite orbits and emission frequencies.

* Budget proposes deletion.

International Outer Space Law

58. Consider as a possible U. S. position, the right of passage through outer space of any orbiting object that is so designed that it cannot physically interfere with the legitimate activities of other nations.

59. Reserve the U. S. position on legal issues of outer space, but undertake on an urgent basis a study of the legal issues that will arise from national and international outer space activities in the near future.

Interim Position in International Negotiations

60. In negotiations with other nations or organizations dealing with outer space (pending the results of the study referred to in paragraph 58), seek to achieve common agreement to relate such negotiations to the traversing or operating of man-made objects in outer space, rather than to defined regions of outer space.

Security Classification

61. In considering whether U. S. outer space information and material requires classification under Executive Order No. 10501,* take special account of the lead achieved by the USSR in outer space activities and the advantages, including more rapid progress, which could accrue to the United States through liberalizing the general availability and use of such information and material.

Administration of Outer Space Programs

62. Provide through appropriate legislation for the conduct of U. S. outer space activities under the direction of a civilian agency, except in so far as such activities may be peculiar to or primarily associated with weapons systems or military operations, in the case of which activities the Department of Defense shall be responsible.

* Executive Order No. 10501 ("Safeguarding Official Information in the Interests of the Defense of the United States"), Section 3 provides in part that: "Unnecessary classification and over-classification /of information or material/ shall be scrupulously avoided."

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ANNEX A

THE SOVIET SPACE PROGRAM

1. Objectives and Scope of Program. Conclusive evidence shows that the Soviets are conducting a well-planned space flight program at high priority. This program is apparently aimed at placing both instrumented and manned vehicles into space. Certain successes have been exhibited already in the instrumented vehicles category (including the orbiting of three earth satellites, one containing a dog) and we believe they are fully capable of achieving manned space flight within the next few years.

2. General. Evidence of Soviet interest in space flight dates back to a publication in 1903 of a paper, "Investigation of Universal Space by Means of Rocket Flight", by the eminent Russian scientist Tsiolkovsky. This highly scientific treatise for the first time mathematically established the fundamentals of rocket dynamics and included a proposal for an artificial earth satellite. Reactive motion (rockets) was seriously engaged again in the latter '20s and in the '30s. In April 1955, the Interagency Commission for Interplanetary Communications was formed under the Academy of Sciences to establish an automatic laboratory for scientific research in cosmic space as a first step in solving the problems of interplanetary travel. Since early 1955 several hundred articles on space research, earth satellites and space flight have been published in the USSR. Many of the articles have been written by high-caliber Soviet scientists and most deal with the theoretical principles of space flight.

3. Capabilities. The Soviet Union dramatically demonstrated its interest and current capability in space flight with the launching of two earth satellites in October and November 1957, and a third in mid-May, 1958. The complex facilities and skills needed to operate the large rocket vehicles required for the launching of a satellite or space vehicle are apparently available within the Soviet military. Thus, although the first space flights were doubtless undertaken for the furtherance of scientific knowledge and for whatever psychological and political advantage would accrue, the Soviet military department, by intimate participation of its hardware and personnel, is in a position to utilize immediately such knowledge for the enhancement of the Soviet military position and objectives. The realization of even more advanced space projects, particularly those involving manned flight, must be preceded by a vast amount of systematic

and well-coordinated scientific and technological work directed toward the development of practical space vehicles, the determination of basic operational requirements and limitations, and the creation of an environment and equipment capable of sustaining human life in outer space. Such a program embraces virtually all fields of science and engineering and the following fields were particularly examined for evidence of Soviet technical capability: guided missiles, re-entry vehicles, propulsion, electronics, space medicine, astrobiology, internal power supplies, and celestial mechanics. While firm association of these areas with a space program varied considerably, it is noted that the state of Soviet art in all sciences required in a space program was such that no scientific barriers of magnitude were detected. Four areas critical to a space program have apparently received considerable attention by the USSR, e.g., development of large rocket-engine propulsion systems, space medicine, cosmic biology and celestial mechanics. We believe the depth and advancement of their research and development makes them world leaders in these areas. In particular their work in space medicine and cosmic biology are strong indicators of their serious intent to put man into space at an early date.

4. Time Scales.

a. The following milestones are considered at least partially affiliated with a space program and indicate historically the long-term interest of the Soviet Union in this endeavor:

1903	Initial treatise on space flight
1923	Soviet Institute on Theoretical Astronomy founded
1929	First significant rocket studies conducted, "Group for the Investigation of Reactive Motion" founded
1934	Government-sponsored rocket research program established
1940	Flight of first Soviet rocket-powered aircraft
1946-47	Rocket-propelled intercontinental bomber program organized
1953-55	Systematic investigation of moon flight problems undertaken
1955 (Apr.)	Interagency Commission for Interplanetary Communications established
1955-58	Over 500 Soviet articles published dealing with space research, earth satellites and manned space flight.
1957 (Oct.-Nov.)	First artificial earth satellites orbited.

b. Future Capabilities. Soviet space flight capabilities estimated in this section are the earliest possible time periods in which each specific event could be successfully accomplished. It is recognized that the space flight program is in competition with many other programs, particularly the missile program, and that the USSR probably cannot successfully accomplish all of the estimated space flight activities within the time periods specified. We believe the USSR has the intention to pursue an active flight program designed to put man into space for military and/or scientific purposes. We also believe they have a definite intention to pursue further scientific research utilizing earth satellites, lunar rockets, and probes of Mars and Venus. We cannot, at this time, determine whether the basic scientific program or the "man in space" program enjoys the higher priority and will, therefore, be pursued first. Whichever approach is adopted will probably result in some slippage in the capability dates indicated for the other program. We believe the Soviet ICBM program still enjoys the highest priority and that the USSR will not permit its space flight program to interfere with achieving an early operational ICBM capability.

(1) Unmanned Earth Satellites.

(a) Based on current estimates of Soviet ICBM capabilities, it is estimated that the USSR could orbit scientific satellites weighing on the order of 5,000 pounds within the next several months. The USSR could probably continue to place into orbit more and perhaps larger satellites throughout the period of this estimate. As additional scientific data is obtained, the USSR could refine or develop new scientific instrumentation to be placed into satellites.

(b) It is believed that the USSR could place into orbit and recover aeromedical specimens from satellites early in the period of this estimate. Early recovery of a biological specimen from orbiting satellites is essential and could advance Soviet knowledge of recovery techniques and provide indications of adverse effects of a space environment for man.

(c) The USSR could probably orbit surveillance satellites capable of low resolution (approximately 100-200 feet) at any time within the next year to obtain weather data and perhaps

some additional data of military intelligence value such as fleet movements. More sophisticated surveillance satellites, involving improved photographic or TV reconnaissance, infrared photography and/or ELINT, could be developed within a year or two following an initial success. These latter satellites containing this more advanced instrumentation could be capable of providing more diverse scientific and military information. Should they elect to do so, the USSR could also develop a communications relay satellite within the period of this estimate.

(2) Lunar Rockets. The USSR has had the capability of launching a lunar probe toward the vicinity of the moon since the fall of 1957 as far as propulsion and guidance requirements are concerned. A Soviet program of lunar probes could commence with experimental rockets followed by rocket landings on the moon with increasingly heavy loads containing scientific and telemetering equipment. Placing a satellite into orbit around the moon requires the use of a retro-rocket and more accurate guidance. It is believed that the USSR could achieve a lunar satellite in late 1958-1959 and have a lunar soft landing about six months thereafter.

(3) Manned Earth Satellites. Sufficient scientific data could probably have been attained and recovery techniques perfected to permit the USSR to launch a manned satellite into orbital flight and recovery by about 1959-1960.* A manned capsule-type satellite as well as a manned glide-type vehicle appear to be feasible techniques and within Soviet capabilities. However, it is believed that the first Soviet orbital recovery attempt will probably be with the manned capsule.

(4) Planetary Probes. Planetary probe vehicles could utilize existing Soviet ICBM propulsion units for the first stage and presently available guidance components. It is believed that the USSR could launch probes towards Mars and Venus with a good chance of success. The first launchings toward Mars could occur in August 1958, when Mars will be in the most favorable

* The Joint Staff member reserves his position on the date 1959.

position relative to the earth. More sophisticated probes could occur in October 1960, when Mars will again be in a favorable position relative to the earth. Probes toward Venus could probably occur in June 1959, and more sophisticated probe vehicles could be launched in January 1961.

(5) Manned Curcumlunar Flights. Contingent upon their success with manned earth satellites and the development of a new, large booster engine, and concurrent advances in scientific experimentations with lunar rockets, the USSR could achieve a capability for manned circumlunar flight with reasonable chance for success in about 1961-1962.

(6) Manned Lunar Landings. It is not believed that the USSR will have a capability for manned lunar landings until some time after 1965.

(7) Space Platforms. There is insufficient information on the problems as well as the utility of constructing a platform in space to determine the Soviet capability. It is believed, however, that they are capable of placing a very large satellite (about 25,000 pounds) into orbit in 1961-1962 and that this vehicle could serve some of the scientific functions of a large space platform without the difficulties of joining and constructing such a platform in space.

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ANNEX B

TENTATIVE SCHEDULE OF U. S. VEHICLE LAUNCHINGS*
(as of June 30, 1958)

1. IGY (Five Vanguard vehicles)

Firing rate about one per month ending late in 1958 (or early 1959).
Payload 22 lbs.

2. Lunar Probes (Three Thor-Vanguard vehicles)

First launching - September 1958 - Payload 25 lbs. plus retro-rockets.
Second launching - October 1958 - Payload 26 lbs. plus retro-rockets.
Third launching - November 1958 - Payload 26 lbs. plus retro-rockets.

3. Satellites and Lunar Probes (Three Juno II, One Juno I)

(Inflatable Sphere) - Fall 1958 - Payload 12-foot reflecting sphere.
(Lunar Probe) - November 1958 - Payload 15 lbs.
(Lunar Probe) - January 1959 - Payload 15 lbs.
(Cosmic ray satellite) - February 1959 - Payload 60 lbs.

4. a. ARGUS Project (Two Juno I)

Both units to be launched as earth satellites in August 1958 - Payload 26 lbs.

b. ARGUS Project (Six NOTS fly-up satellites)

Satellites are air-launched, have approximately 3-pound payload of instruments designed to detect Argus effect. Satellites are to be launched into polar orbits. Three flights in July 1958 are planned for purpose of testing system. If these first three are successful, three more will be launched in August as part of Argus Project.

* Launchings shown are those needed to implement presently-planned programs. These programs are under review and are not to be regarded as final.

5. Advanced Reconnaissance Satellite Development Program, W/S 117L

a. Tests

(1) Thor-boosted program - Up to nineteen vehicles - Test firings for second stage and instrumentation capability.

First launching about November 1958 - Firing rate nearly one per month until completion. Payload 400 lbs. to 135-mile orbit.

(2) Atlas-boosted program - Five vehicles - Visual Reconnaissance Components Test.

First launching about July 1959, with firing rate of about one every other month to completion of program. Payload 2600 lbs. to 300-mile orbit. Launchings from Cape Canaveral. Satellites would not pass over the USSR.

** (3) Atlas-boosted program - One vehicle - Visual Reconnaissance Components Test.

Launching about March 1960 (the earliest date an Atlas 117L launching stand would be available at Cooke). Payload 2600 lbs. to 300-mile orbit.

** (4) Atlas-boosted program - Four vehicles - Visual Reconnaissance Test.

First launching about May 1960, with firing rate of one every other month to completion November 1960. Payload 2600 lbs. to 300-mile orbit. Launchings from Cooke.

** (5) Atlas-boosted program - Three vehicles - Ferret Reconnaissance Test.

First launching about August 1960, with firing rate of one every other month to completion December 1960. Payload 2600 lbs. to 300-mile orbit. Launchings from Cooke.

8

** These ~~light~~ satellites would be the first with reconnaissance equipment in orbit over the USSR, and may require Presidential approval for "scope" in accordance with NSC Action No. 1846.

6. X-15 Manned Research Aircraft - Three aircraft - (USAF, NACA, USN). First flight scheduled in first half of CY 1959. Maximum altitude capability, 100-125 miles. Maximum speed about 4500 miles per hour.***

*** This aircraft was not planned as an orbital vehicle and approved programs do not include modification of system to allow orbiting. Various problems related to re-entry of orbiting or space vehicles can be effectively studied with this aircraft.