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U. S. POLICY ON OUTER SPACE

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National Aeronautics and Space Council

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GENERAL CONSIDERATIONS

SCOPE OF POLICY

1. This policy is concerned with U. S. interests in scientific, civil, military, and political activities related to outer space. It deals with sounding rockets, earth satellites, and other space vehicles, their relationship to the exploration and use of outer space, and their political and psychological significance. Although the relation between outer space technology and ballistic missile technology is recognized, U. S. policy on ballistic missiles is not covered in this policy. Anti-missile defense systems also are not covered except to the extent that space vehicles may be used in connection with such systems.

SIGNIFICANCE OF OUTER SPACE TO U. S. SECURITY

2. Outer space presents a new and imposing challenge. Although the full potentialities and significance of outer space remain largely to be explored, it is already clear that there are important scientific, civil, military, and political implications for the national security, including the psychological impact of outer space activities which is of broad significance to national prestige.

3. Outer space generally has been viewed as an area of intense competition which has been characterized to date by comparison of Soviet and U. S. activities. The successes of the Soviet Union in placing the first earth satellite in orbit, in launching the first space probe to reach escape velocity, in achieving the first "hard" landing on the moon and in obtaining the first pictures of the back side of the moon have resulted in substantial and enduring gains in Soviet prestige. The U. S. has launched a greater number of earth satellites and has also launched a space probe which has achieved escape velocity. These U. S. activities have resulted in a number of scientifically significant "firsts." However, the space vehicles launched by the Soviet Union have been substantially heavier than those of the U. S., and weight has been a major point of comparison internationally. In addition, the Soviets have benefited from their ability to conceal any failures from public scrutiny.

4. From the political and psychological standpoint the most significant factor of Soviet space accomplishments is that they have produced new credibility for Soviet statements and claims. Where once the Soviet Union was not generally believed, even its baldest propaganda claims are now apt to be accepted at face value, not only abroad but in the United States. The Soviets have used this credibility for the following purposes:

- a. To claim general superiority for the Soviet system on the grounds that the Sputniks and Luniks demonstrate the ability

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of the system to produce great results in an extremely short period of time.

b. To claim that the world balance has shifted in favor of Communism.

c. To claim that Communism is the wave of the future.

d. To create a new image of the Soviet Union as a technologically powerful, scientifically sophisticated nation that is equal to the U. S. in most respects, superior in others, and with a far more brilliant future.

e. To create a new military image, of the vast manpower of the Communist nations now backed by weaponry that is as scientifically advanced as that of the West, superior in the missile field, and superior in quantity in all fields.

5. Soviet efforts already have achieved a considerable degree of success, and may be expected to show further gains with each notable space accomplishment, and particularly each major "first."

6. Significant advances have been made in restoring U. S. prestige overseas, and in increasing awareness of the scope and magnitude of the U. S. outer space effort. Although most opinion still considers the U. S. as probably leading in general scientific and technical accomplishments, the USSR is viewed in most quarters as leading in space science and technology. There is evidence that a considerable portion of world leadership and the world public expects the United States to "catch up" with the Soviet Union, and further expects this to be demonstrated by U. S. ability to equal Soviet space payloads and to match or surpass Soviet accomplishments. Failure to satisfy such expectations may give rise to the belief that the United States is "second best," thus transferring to the Soviets additional increments of prestige and credibility now enjoyed by the United States.

7. To the layman, manned space flight and exploration will represent the true conquest of outer space and hence the ultimate goal of space activities. No unmanned experiment can substitute for manned space exploration in its psychological effect on the peoples of the world. There is reason to believe that the Soviets, after getting an earlier start, are placing as much emphasis on their manned space flight program as is the U. S.

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8. The scientific value of space exploration and the prestige accruing therefrom have been demonstrated. The scientific uses of space are a potent factor in the derivation of fundamental information of use in most fields of knowledge. Further, the greater the breadth and precision the knowledge of the space environment, the greater the ability to exploit its potentials.

9. Among several foreseeable civil applications of earth satellites, two at present offer unique capabilities which are promising in fields of significance to the national economy: communications and meteorology. Other civil potentials are also likely to be identified.

10. The great importance of certain military utilization of outer space already has been recognized; however, the full military potential of outer space remains to be determined by further experience, studies, technical developments and strategic considerations. Space technology constitutes a foreseeable means of obtaining increasingly essential information regarding a potential enemy whose area and security preclude the effective and timely acquisition of these data by foreseeable non-space techniques. Space technology is being further utilized with the intention of more effectively accomplishing other military functions by complementing or extending non-space capabilities. In addition, as space technology and resulting uses of outer space expand, new military requirements and opportunities for development of new military capabilities are likely to materialize.

11. Space vehicles may also have important application and may play a key role in the implementation of international agreements which may be concluded respecting the reduction and control of armaments, cessation of atomic tests, and safeguards against surprise attack.



12. Outer space activities present new opportunities and problems in the conduct of the relations of the U. S. with its allies, neutral states, and the Soviet bloc; and the establishment of sound international relationships in this new field is of fundamental significance to the national security. Of importance in seeking such relationships is the fact that all nations have an interest in the purposes for which outer space is explored and used and in the achievement of an orderly basis for the conduct of space activities. Moreover, many nations are capable of participating directly in various aspects of outer space activities, and international participation in such applications of space vehicles as those involved in scientific research, weather forecasting, and communications may

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be essential to full realization of the potentialities of such activities. In addition, an improvement of the international position of the U. S. may be effected through U. S. leadership in extending internationally the benefits of the peaceful uses of outer space. The fact that the results of arrangements in certain fields, even though entered into for peaceful purposes, could have military implications, may condition the extent of such arrangements in those fields.

USE OF OUTER SPACE

General

13. As further knowledge of outer space is obtained, the advantages to be accrued will become more apparent. At the present time, space activities are directed toward technological development and scientific exploration; however, it is anticipated that systems will be put into operation, beginning in the near future, that will more directly contribute to national security and well-being and be of international benefit.

14. Present and planned outer space activities will require the use of the following classes of vehicles:

- a. Sounding Rockets* - Vehicles that are launched vertically or in a ballistic trajectory to heights well outside the earth's atmosphere and return to earth.
- b. Earth Satellites - Manned and unmanned vehicles that orbit the earth.
- c. Space Probes and Interplanetary Space Vehicles - Manned and unmanned vehicles that escape the earth environment to traverse interplanetary space.

15. It is not possible to foresee all the uses of outer space, but the ability to identify and develop such uses will be significantly influenced by the breadth of the exploratory scientific research which is undertaken.

Scientific Research and Exploration

16. Space technology affords new and unique opportunities for immediate and long-range scientific observation, experimentation, and

*Sounding rockets have also been defined as those vertically launched rockets that do not penetrate outer space beyond one earth radius, approximately 4000 statute miles.

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exploration which will add to our knowledge and understanding of the earth, the solar system, and the universe. Immediate opportunities exist in many areas, including among others:

- a. Atmosphere - Study of the structure and composition of the earth's outer atmosphere.
- b. Ionosphere - Measurement of the electron density of the earth's outer ionosphere and its temporal and spacial variations.
- c. Energetic Particles - Measurement of cosmic ray intensity, radiation belts, and auroral particles and their variations with time and space in the vicinity of the earth and moon.
- d. Electric and Magnetic Fields - Measurement of the magnitude and variations of the earth's magnetic field and the associated ionospheric electric currents.
- e. Gravitational Fields - Study of the detailed motion of existing and special satellites with the object of determining a more detailed picture of the earth's and moon's gravitational field.
- f. Astronomy - Preliminary investigation of the moon; and measurement of spectra, especially in the ultraviolet and X-ray regions, including the brightness and positions of interesting regions of the sky.
- g. Bio Sciences - Investigation of the effects of outer space on living organisms, especially those which have most application to the manned exploration of outer space.
- h. Geodesy - Measurement of the size and shape of the earth, and location of land masses and water.



17. Future possibilities for scientific research and exploration include: continuation on a more sophisticated basis of the measurements of atmospheres, ionospheres, electric and magnetic fields, and expansion of such measurements to Mars and Venus and ultimately throughout the solar system; astronomical observations from points beyond the earth's atmosphere; manned and unmanned exploration of the moon and the planets; advanced experiments designed to test certain predictions of the theory of relativity and other theories relating to the fundamental nature of the universe; investigation of the occurrence of biological phenomena in outer space.

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Operational Applications of Space Technology

18. All applications of the technology of outer space that now show promise of early operational utility for military or civilian purposes are based on the earth satellite. These applications ultimately will have to meet one of several criteria if they are to survive in either the defense program or the civilian economy. They will either have to make possible the more efficient operation of an existing activity, the effective extension of an existing activity, or the creation of a new and desirable activity. It is expected that benefits will be gained from these applications, but the full extent of their military, economic, political and social implications has yet to be determined. Military applications are designed to enhance military capabilities by fulfilling stated requirements of the Military Services and are currently being developed for use as operational systems. The applications that are expected to be available earliest are as follows:*

a. Meteorology - Satellite systems to provide weather data on a global scale, making use of such techniques as television, optics, infrared detectors and radar. Information on cloud cover, storm locations, precipitation, wind direction, heat balance and water vapor would permit improved weather forecasting, including storm warnings, useful in a variety of civil activities such as agricultural, industrial and transportation activities, and would provide weather information to meet military operational needs.

b. Communications - Satellite systems to improve and extend existing world-wide communications. For the Military Services, such systems would provide more effective global military communications for purposes of command, control, and support of military forces. Civil applications will benefit through more prompt service, increased message capacity, and greater reliability. Direct world-wide transmission of voice and video signals is envisaged.

c. Navigation - Satellite systems to provide global all-weather capability, for land, sea and air vehicles, which will permit accurate determination of position; in the case of the military, secure operations would be possible.

d. Mapping and Geodetic Control - Satellite systems to produce accurate, world-wide mapping data of economic, military and political importance and to provide geodetic control data such as those required for missile operations.

*Order of listing does not indicate anticipated order of availability.

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e. Reconnaissance* - Satellite systems to provide optical, infrared and electronic intelligence and surveillance on a world-wide or preselected area basis.

f. Early Warning - Satellite systems to provide, through the use of infrared techniques, early warning that a missile attack has been launched.

g. Inspection and Control - Satellite systems to enforce possible international agreements respecting the control of armaments, cessation of atomic tests and safeguards against surprise attack.

19. In addition to continued improvement of the foregoing systems, future military possibilities under study include: passive and active defense systems to detect and to destroy enemy missiles or space vehicles; space to earth weapons systems to diversify further our strategic deterrent posture; electronic countermeasures satellites to disrupt enemy electronics systems; and space systems, perhaps utilizing lunar bases, for logistics and other support of military activities on the earth and in space.

Manned Space Flight and Exploration

20. It is expected that manned space flight will add significantly to the effectiveness of many of the scientific, military and civil applications indicated in the foregoing paragraphs. There are a number of important reasons why manned space activities, including the initial step of placing a man in orbit, are being carried out. Primary among these are:

a. To the layman, manned space flight and 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.

b. Man's judgment, decision-making capability, and resourcefulness will ultimately be needed in many instances to ensure the full exploitation of space technology.

Moreover, manned space flight is required for scientific studies in which man himself is the principal subject of the experiment, because there is no substitute for the conduct in outer space of essential psychological and biological studies of man.

*The reconnaissance satellite program is the only one of these systems applications that has been assigned the highest national priority. This priority is for the necessary research and development and for the achievement of operational capability; scope of the operational capability is to be approved by the President.



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INTERNATIONAL PRINCIPLES, PROCEDURES AND ARRANGEMENTS

21. National policies and international agreements have dealt extensively with "air space" and expressly assert national sovereignty over this region; however, the upper limit of air space has not been defined. The term "outer space" also has no accepted definition, and the consequences of adopting a definition cannot now be fully anticipated. Although an avowedly arbitrary definition might prove useful for specific purposes, most of the currently foreseeable legal problems of outer space may be resolved without a precise line of demarcation between air space and outer space.

22. The U. S. has advanced and a number of states have accepted the view that outer space is not wholly without law inasmuch as the United Nations Charter and the Statute of the International Court of Justice are not spatially limited. Furthermore, the principles and procedures developed in the past to govern the use of air space and also the sea may provide useful analogies. However, many problems of outer space will be unique in character.

23. An initial problem, in which all states have an interest, involves the permissibility of various activities in outer space. With respect to this problem, the report of the United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space expresses the following view which the U. S. has supported:

"During the International Geophysical Year 1957-1958 and subsequently, countries through the world proceeded on the premise of the permissibility of the launching and flight of the space vehicles which were launched, regardless of what territory they passed over during the course of their flight through outer space. The Committee, bearing in mind that its terms of reference refer exclusively to the peaceful uses of outer space, believes that, with this practice, there may have been initiated the recognition or establishment of a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law or agreements."

In this connection, it should be noted that definitions of "peaceful" or "non-interfering" uses of outer space have not been advanced by the United States or other states.

24. Although the U. S. has not to date recognized any upper limit to its sovereignty, a principle of freedom of outer space, such as that expressed by the United Nations Ad Hoc Committee, suggests

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that at least in so far as peaceful exploration and use of outer space are concerned, the right of states to exclude persons and objects may not obtain. However, the full implications of a principle of freedom of outer space, in contrast with a principle of national sovereignty over outer space, remain to be fully assessed.

25. It is possible that certain military applications of space vehicles may be accepted as peaceful or acquiesced in as non-interfering. On the other hand, it may be anticipated that states will not willingly acquiesce in unrestricted use of outer space for activities which may jeopardize or interfere with their national interests.

26. There is frequent and sharpening concern on the part of world opinion over the military implications of unchecked competition in outer space between the U. S. and the Soviet Union, and there is an accompanying interest in international agreements, controls or restrictions to limit the dangers felt to stem from such competition. With regard to the armaments control aspects of outer space, the United States first proposed in 1957, in connection with international consideration of an armaments control system, that a multilateral technical committee be set up to attempt to design an inspection system to ensure that the sending of objects through outer space will be exclusively for peaceful purposes. Furthermore, the United States has offered, if there is general agreement to proceed with this study on a multilateral basis, to join in this study without awaiting the conclusion of negotiations on other substantive disarmament proposals. There has not, to date, been multilateral agreement to proceed with such a study, and U. S. policy has not been determined concerning either the scope of control and inspection required to ensure that outer space could be used only for peaceful purposes or the relationship of any such control arrangement to other aspects of an arms agreement.*

27. Exploration and use of celestial bodies require separate consideration. Neither the U. S. nor any other state has yet taken a position regarding the questions of whether a celestial body is capable of appropriation to national sovereignty and if so what acts would suffice to found a claim thereto. It is clear that serious problems would arise if a state claimed, on one ground or another, exclusive rights over all or part of a celestial body. At an appropriate time some form of international arrangement may prove useful.

28. Other problems in which all states have an interest arise from the operation of space vehicles. The following problems appear

*Basic national security policy with respect to disarmament is stated in paragraph 52 of NSC 5906/1.



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amenable to early treatment with a view to seeking internationally a basis for orderly accomplishment of space vehicle operations: (a) identification and registration of space vehicles; (b) liability for injury or damage caused by space vehicles; (c) reservation of radio frequencies for space vehicles and the related problem of termination of transmission; (d) avoidance of interference between space vehicles and aircraft; and (e) the re-entry and landing of space vehicles, through accident or design, on the territory of other states.

29. Although only a few states may be capable of mounting comprehensive outer space efforts, many states are capable of participating in the conduct of outer space activities, and active international cooperation in selected activities offers scientific, economic, and political opportunities. Continuation and extension of such cooperation in the peaceful uses of outer space through a variety of governmental and non-governmental arrangements should further enhance the position of the United States as the leading advocate of the exploration and use of outer space for the benefit of all. Where space vehicles are employed for military applications, some degree of international cooperation may also prove useful. Any international arrangements for cooperation in outer space activities may require determination of the net advantage to U. S. security.

30. The role most appropriately undertaken by the United Nations with respect to the foregoing matters appears to lie in performing two principal functions: (a) facilitating international cooperation in the exploration and use of outer space, and (b) providing a forum for consultation and agreement respecting international problems arising from outer space activities. Future developments may make it desirable for additional functions to be performed by or under the auspices of the United Nations.

OBJECTIVES

31. Carry out energetically a program for the exploration and use of outer space by the U. S., based upon sound scientific and technological progress, designed: (a) to achieve that enhancement of scientific knowledge, military strength, economic capabilities, and political position which may be derived through the advantageous application of space technology and through appropriate international cooperation in related matters, and (b) to obtain the advantages which come from successful achievements in space.

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NSC 5814/1

August 18, 1958

NATIONAL SECURITY COUNCIL

PRELIMINARY U. S. POLICY ON OUTER SPACE



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STATEMENT
of
PRELIMINARY U. S. POLICY ON OUTER SPACE

INTRODUCTORY NOTE

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. 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 of threatening U. S. security.

This statement is concerned with U. S. interests in outer space activities, including their international aspects. The policy deals with artificial earth satellites (including reconnaissance satellites), lunar and interplanetary vehicles, and other vehicles and objects whose activities relate to the utilization and exploration of outer space and the psychological impact thereof. Although the technological relation between such space vehicles and ballistic missiles is recognized, U. S. policy on ballistic missiles is not covered in this policy statement and anti-missile missile defense weapons systems are also not so covered.

This statement 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 dimensions 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.

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.

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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.