

APPENDIX C
REPORT TO THE CONGRESS FROM THE
PRESIDENT OF THE UNITED STATES

Appendix C - Report to the
Congress from the President
of the United States

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**REPORT TO THE CONGRESS
FROM THE PRESIDENT OF THE
UNITED STATES**

**UNITED STATES
AERONAUTICS AND
SPACE ACTIVITIES
1961**

January 1962

Chapter II

National Aeronautics and Space Council

The Vice President, as Chairman of the National Aeronautics and Space Council, made a summary report to the President on the Council's accomplishments in 1961. The text of that report follows:

Nineteen sixty one was a year of decision and progress in the space activities of the United States. Important strides were taken along the road of space successes through the combination of Presidential leadership, Space Council coordination and recommendations, and performance by the responsible operating departments and agencies. Private industry's participation and contribution increased accordingly.

While it is too early to make definitive comparisons as between our newly developing competence and the capabilities of the USSR, it is encouraging to note that the U.S. generated a greater rate of progress in 1961 than in any previous year or that of any other country.

The Space Council, authorized in 1958, was activated by the President in 1961. Initial actions to that end took the form of the appointment of an Executive Secretary in March and the amendment of the National Aeronautics and Space Act in April. The latter made the Vice President a member and the Chairman of the Council.

In performing its responsibilities of advising and assisting the President in the aeronautics and space field, the Council, directly and through its staff, engaged in a wide range of policy and coordinating activities. Among those activities were: recommending immediate step-up in the large booster program, which was translated into an FY 1961 supplemental request to the Congress; coordinating and assisting in the preparation of an across-the-board accelerated space program, which was reflected in a Presidential message and an expanded space budget for FY 1962; drafting and recommending a communication satellite policy, which was issued in July; coordinating the development of draft legislation on communications satellites, which is scheduled for submission to the Congress early in the coming session; obtaining greater uniformity in patent language, which is being reflected in defense contracts in the space field; coordinating the decision to include a nuclear power unit in a space satellite, which resulted in a world's first; and assisting in the drafting and coordination of the President's policy statement on the West Ford project.

Also, during the last nine months, a bill amending the National Aeronautics and Space Act was drafted; staff budgets were prepared for FY 1962 and FY 1963; a staff nucleus was employed; assistance was given in the drafting of a U.N. resolution on space; a number of space installations were visited; and testimony on various space problems was given before Congressional committees.

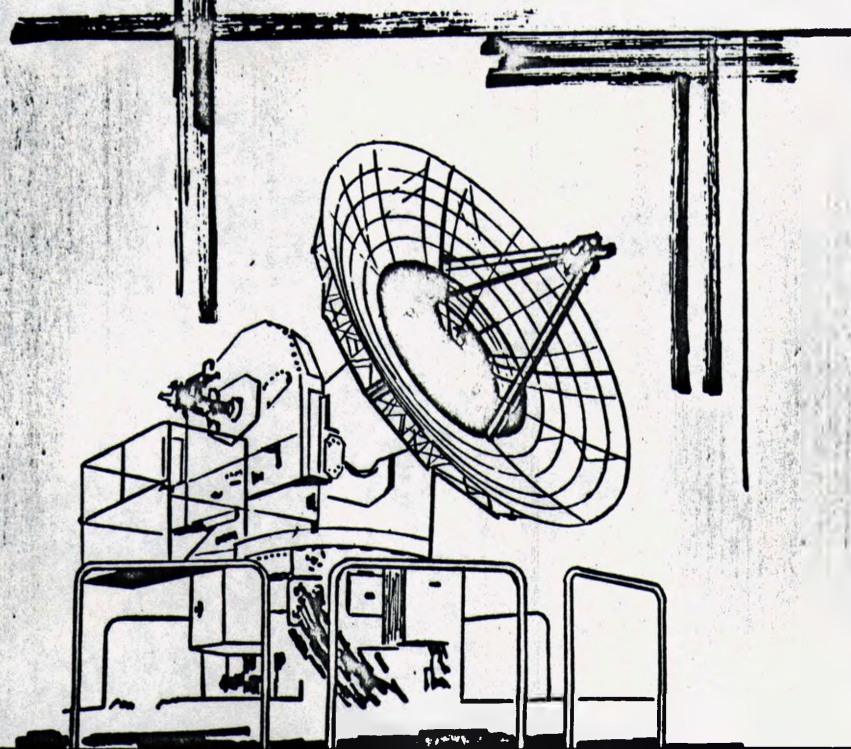
The Space Council held both formal and informal meetings on space budgets, communication satellites, organization of and coordination among agencies with space responsibilities, comparison of U.S. and USSR space accomplishments, and considerations of various recommendations for the President.

In addition, the Council staff maintained daily contacts between the various departments and agencies, received regular reports from and held frequent meetings with representatives of those agencies, initiated studies on the sovereignty limits of air space as well as in the field of aerospace medicine, and engaged in the coordination of the President's Annual Report to the Congress.

The Chairman understands that it is national policy to maintain a viable national space program, not a separate program for NASA and another for Defense and still another for each of several other agencies. Likewise, it is understood that the United States does not have a division between peaceful and non-peaceful objectives for space, but rather has space missions to help keep the peace and space missions to improve our ability to live well in peace.

The direction of the Council has been in accord with those principles.

**REPORT
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**UNITED STATES AERONAUTICS AND
SPACE ACTIVITIES
1962**

Chapter II

National Aeronautics and Space Council

The Vice President, as Chairman of the National Aeronautics and Space Council, made a summary report to the President on the Council's accomplishments in 1962. The text of that report follows:

Nineteen Sixty Two was a year in which the United States showed clearly its ability to translate sound decisions into major space accomplishments. Significant progress was made in manned earth-orbiting flights; in communications, meteorology, geodesy, and navigation; in scientific investigation; in development of more powerful and more effective rocket engines; and in strengthened quality of governmental organization.

The United States generated a greater rate of space progress than did the USSR. However, Soviet accomplishments were also significant. At year's end, they were still ahead in size and total of weights placed into orbit, in the thrust of their operational rocket engines, and in the development of the art of rendezvousing in space. In addition, their progress in the life sciences and in electronic guidance was noteworthy.

The United States was successful in putting more than fifty satellite payloads into earth orbit; the USSR more than fifteen. In addition, both nations extended their space exploration toward the planets, such as Mars and Venus. Based upon available information, it can be concluded that the records of the two countries were closely similar in regard to the ratios of space successes to space failures.

The National Aeronautics and Space Council, acting essentially as a policy and management resource for the President, engaged in a wide range of activities in the aeronautics and space fields. During the year, the Council and its staff, acting upon the basic principle that this country is engaged in a national space program rather than a collection of separate and competing programs, stressed coordination as between government agencies and contributed its influence toward eliminating duplication. It also attempted to dissolve the confusion regarding the peaceful objectives of this country's space program by emphasizing that the non-aggression characteristics of our military space activities cause them to be just as peaceful as are the non-military space activities.

Due to the openness of our program, the world has become increasingly aware of U. S. space achievements and our international prestige has been increased due to the mounting number of our space successes, our positive efforts to cooperate with other nations, and our constructive sharing of information developed from space experiments. It seems particularly important that we strengthen and then maintain both the policy and the practice of making public all information regarding our space program, which will not adversely affect our national security.

In performing its responsibilities, the Council, directly and through its staff, engaged in a wide range of policy and coordinating activities. Among these activities were:

- a. drafted statements of national space objectives and missions;
- b. prepared and recommended legislation to implement the communications satellite policy;
- c. assisted in drawing up the criteria and functions as regards the incorporators for the communications satellite corporation and also reviewed drafts of articles of incorporation and by-laws;
- d. encouraged, through inter-agency meetings, the coordination of NASA and Defense Department plans for communication satellites;
- e. encouraged and assisted in increasing the emphasis upon life sciences activities in NASA and in coordination between Defense and NASA in this field;
- f. participated in the development of plans and policies for increased cooperation between the U.S. and the U.S.S.R. in outer space;
- g. assisted in the preparation of a U.S. resolution, introduced to the United Nations, on the peaceful uses of outer space and participated in the development of U.S. positions on space for the 17th General Assembly;
- h. supervised the preparation and conducted the editing of the President's Annual Report to the Congress on U.S. astronautics and space activities for 1962;
- i. testified on space policies and space activities before Committees of the Congress;
- j. visited space installations, examined facilities, and discussed space developments and problems with managerial and technical specialists;
- k. requested a study of costs and market projections for supersonic transports;
- l. participated in the analysis and development of the Fiscal Year 1964 budgets for space;
- m. increased the public understanding of the national space program through speeches, articles, public appearances, and interviews;
- n. recommended top priority ratings for the APOLLO and CENTAUR projects; and
- o. engaged in numerous inter-agency, as well as government-industry, meetings and briefings on new developments in space technology.

The Space Council held formal meetings on such subjects as the comparison of U.S. and Soviet space programs, review of space budget plans and requests, impact of our space program on foreign relations, examination of the role of nuclear propulsion and nuclear power devices in the space program, assignment of priorities for major space programs, evaluation of defense plans for space activities, aspects of astronaut recruitment and training, examination of schedules and methods for the lunar project, and public information aspects of the national space program.

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**UNITED STATES
AERONAUTICS AND
SPACE ACTIVITIES**

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Chapter II

National Aeronautics and Space Council

Nineteen Hundred and Sixty-Three was a year of accelerated effort and accelerated learning as the national space program of the United States reached higher levels of competence and performance. The year's program included a 34-hour manned orbital flight, the launching of the world's first successful synchronous satellite, the world's first all-nuclear powered satellite, the first high energy hydrogen rocket stage, the first satellite stabilized by the earth's gravity field, the orbiting of a belt of reflective communications dipoles, the orbiting of nuclear test detection spacecraft, and the achievement of critical milestones in the development of large-thrust rocket engines.

During this year, the United States was successful in placing about 60 satellite payloads into earth orbit, raising the Nation's total from the beginning of the space age to approximately 180. The Soviets put about one-third as many payloads into earth orbit during 1963, although they were sufficiently heavier than ours to keep their lead in total weight orbited. The over-all country-to-country orbital payload ratio numerically is more than 3 to 1 in favor of the United States. In the light of available information, it also appeared that the ratio of successes to failures was approximately comparable for both countries as the launching vehicles of each showed a trend toward improved reliability.

By the end of 1963, the United States had under development more powerful rockets than any the Soviet Union had in operation. This country remained well ahead of the U. S. S. R. in putting space competences to direct use in improving man's living on earth by weather, communications, and navigation satellites. Although the U. S. S. R. must be credited with potential ability to do so, it has not developed comparable programs for the benefit of mankind. At the same time, however, the Soviets maintained their lead in large operational rockets, near-rendezvous experiments, and the life sciences aspects of space. They launched more weight into space, their astronauts spent more time flying outside the atmosphere, and their interplanetary effort was significantly greater. Their accumulation of data and experience made plain that they have an orderly, step-by-step program which has impressed the world with their accomplishments.

The National Aeronautics and Space Council has been guided by the premise that the United States will become the world's leading spacefaring nation and that it will dedicate its space competence to improving and maintaining the peace. To this end, our national space program has been designed to increase our knowledge of the space environment and the fundamental facts of nature; to master the technology of manned and unmanned space flight; to explore the solar system; to increase our national security; and to utilize the results of space technology and discovery to achieve a broad range of economic and social benefits. Our goals include increased international cooperation in the use of outer space for peaceful purposes, the development of the regime of law for outer space for peaceful purposes, the development of the regime of law for outer space, and the orderly and open conduct of space-related activities.

More critical and detailed examination of the space program characterized the Congress's approach to budgetary requests for FY 1964, particularly regarding the funds for NASA. Although the net result was less than the amount of appropriations needed, it is significant and encouraging that the Congress favored a substantial increase over the preceding year and hence supported a broad-based accelerated program.

In discharging its responsibilities, the Council directly and through its staff engaged in a wide range of policy and coordinating activities. Among such activities were:

- a. formulated and recommended to the President that the United States initiate a supersonic transport prototype development program at the earliest possible date, with the objective of obtaining a safe, economically sound, and superior aircraft.
- b. supervised the preparation and conducted the editing of the President's Annual Report to the Congress on aeronautics and space activities for 1963.
- c. testified on space and aeronautical activities before committees of the Congress.
- d. increased the public understanding of the national space program through speeches, articles, public appearances, and interviews.
- e. participated in the analysis and development of the FY 1965 budgets for space.
- f. coordinated efforts leading to the launch of an orbiting dipole belt and the release of information to the world scientific community in accordance with the President's policy on Project WEST FORD.
- g. participated in continuing review of the major policy and planning issues confronting the Communications Satellite Corporation.
- h. coordinated procedures for the placing of nuclear auxiliary power devices in spacecraft and made positive recommendations to the President regarding such launches.
- i. initiated coordination on space projects, such as space stations for military and non-military missions.
- j. participated in the development of United States positions with respect to bilateral arrangements with the Soviet Union in the field of weather, communications, and geomagnetic satellites.
- k. visited space installations, examined facilities, and discussed space developments and problems with managerial and technical specialists.
- l. engaged in numerous interagency, as well as Government-industry, meetings and briefings on new developments in space technology and space benefits.

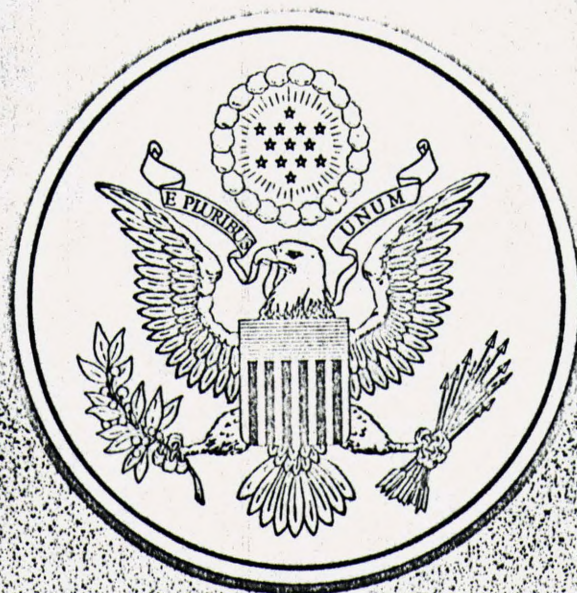
- m. participated in analyses leading to the decision to initiate a Manned Orbiting Laboratory (MOL) project.
- n. developed internal analyses on nuclear rocket propulsion, nuclear auxiliary power, reliability of space launching vehicles, lunar and earth orbital rendezvous, range instrumentation ships, post-lunar missions, high velocity space probes, and space station program decisions, and
- o. maintained a current record of United States and Soviet space launches, developed comparisons between U. S. and U. S. S. R. space activities, and reviewed space accomplishments and potential of other nations.

The Space Council held formal meetings on such subjects as: formulation of supersonic transport program recommendations; review of policy issues relating to the national space program; and coordination of Defense-NASA space projects, such as GEMINI and space stations.

The United States space program is designed to maintain our position of leadership in the Free World. Cooperating with other nations in many areas of space technology, and pressing for ever-widening participation and distribution of space benefits, the United States has led the world effort in this area. It is in the national interest -- economically, technologically, scientifically, militarily, and internationally -- to carry this program forward in an accelerating fashion so that the United States will obtain for mankind every one of its many benefits as soon and as efficiently as possible.

REPORT TO THE CONGRESS

FROM THE PRESIDENT OF THE UNITED STATES



UNITED STATES AERONAUTICS AND SPACE ACTIVITIES

1964





CHAPTER II

Nineteen hundred and sixty-four was a year of steady progress toward this Nation's objective of attaining and maintaining a front-ranking position in the exploration and utilization of space for the benefit of mankind. Among this year's many aerospace accomplishments were: three successful flights of the million and a half pound thrust SATURN I rocket; two launches of APOLLO model spacecraft into orbit; an orbital test of a GEMINI model spacecraft; significant advances in the ROVER nuclear rocket reactor program with five successful tests; the world's first close-up photographs of the moon's surface by RANGER VII; global night-time cloud pictures by NIMBUS I; orbiting of the first geophysical observatory; launching of SYNCOM III into a fixed position over the Pacific and providing space communications links between the Far East and the United States; continued progress in the X-15 experimental flights project; and attaining a major degree of success in improving our national security through the use of orbiting spacecraft.

During the year, the United States was successful in placing about 69 satellite payloads into earth orbit, raising the Nation's total from the beginning of the Space Age to approximately 248. Four payloads were sent to escape, raising the Nation's total to 10. In addition, with the assistance and cooperation of the United States, Italians constructed and launched a satellite from Wallops Island. This was numerically the most successful year for our space activity, and that is a source of encouragement. However, it should be noted that the year was by far the most active one in space for the Soviets, as they more than doubled the number of payloads orbited as compared with 1963. In fact, the relative acceleration of the Soviet space program was one of the most significant space features of the year 1964. Not only did they orbit the first multi-manned spacecraft, but they accelerated their entire space program.

Although only the United States and the Soviet Union were officially committed to carry out ambitious space missions around the earth, to the moon or the planets, it is becoming apparent that these great powers will not be able to maintain for long a monopoly on the techniques of space travel. Comprehensive knowledge of space operations has become more and more widespread, and it can be anticipated that satellite and escape payload launches will be made by other nations. In this march toward space mastery, the U.S. goal is to become the leading spacefaring nation and in so doing rededicate its efforts to improving and maintaining the peace. It is by this premise that the National Aeronautics and Space Council has been consistently guided.

The space effort is the focal point of diverse efforts in many technical areas essential to national excellence. In no small measure it has been a catalyst and a stimulus to education at all levels, especially in science and engineering. Educational goals and standards have already been raised substantially as a result of the challenges of space. While the value of the educational benefits cannot be given a definite price tag, in the long run the realizations from this feature alone may exceed the

total cost of the space effort.

Combining as it does the best talents in management, in engineering, and in science with the most modern facilities, the end result is the production of progress in education, research and development, productivity, employment, and the improvement of international relations.

Budgetary aspects of the space program received detailed critical review both within the Executive Branch and by the Congress. Significantly, both branches of the Government favored funding levels which represented continued support for a progressive space effort, even though the desired budgetary totals varied somewhat.

In the discharge of its responsibilities, the Council directly, and through its staff, engaged in a broad range of policy and coordinating activities. Among these were:

- a. supervised the preparation of the President's Annual Report to the Congress on Aeronautics and Space Activities for 1964.
- b. submitted frequent reports to the President on significant space activities.
- c. increased the public understanding of the national space program through speeches, articles, public appearances, and interviews.
- d. participated in the analysis and development of the FY 1966 budgets for aerospace.
- e. reviewed the coordination of the national geodetic satellite program and of the meteorological satellite systems, the radiation hazards of manned interplanetary flight, and the instrumentation ship support for space operations.
- f. assisted in the formulation of communication satellite policies, including governmental relationships with the Communications Satellite Corporation, and the development of international agreements for a global ComSat system.
- g. coordinated the settling of policy issues regarding the launching of auxiliary nuclear-powered devices aboard spacecraft.
- h. made technical studies of propulsion technology, including high-energy upper stage air augmentation of launch vehicle and gaseous-core nuclear reactors.
- i. visited space installations, examined facilities, and discussed space developments and problems with managerial and technical specialists.
- j. engaged in numerous interagency as well as government-industry meetings and briefings on new developments in space technology and space benefits.
- k. participated in the decision to make facilities available for TV broadcast of the 1964 Olympics by communication satellite.

- l. assisted in technical studies of cooperative arrangements for the location of U.S. overseas space installations.
- m. cooperated with committees of the Congress in matters affecting space plans and programs.
- n. aided in the development of the U.S. positions on space-related matters in meetings of the United Nations.
- o. maintained a current record of U.S. and Soviet space launches, developed comparisons between U.S. and U.S.S.R. space activities, and reviewed space accomplishments and potentials of other nations.

The Space Council activity was not characterized by formal meetings during the year. This was due in large measure to the vacancy in the position of Chairman. Although the President had identified the Executive Secretary as Acting Chairman during this hiatus, the functioning was mostly on the basis of reports to the President, interagency staff contact, exchange of memoranda, informal meetings, and like measures.

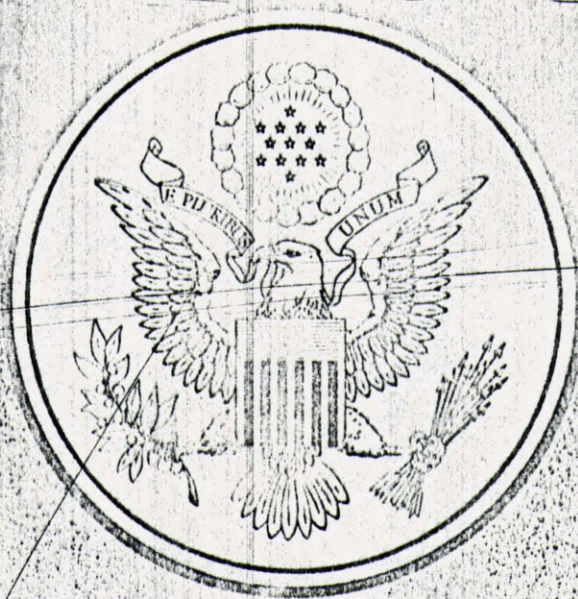
The year 1964 revealed a much improved degree of cooperation and coordinating action as between the major agencies engaged in the national space program. Not only was there improvement in the exchange of information between such agencies, but there also was a useful interagency assignment of experienced personnel. Moreover, the space program stood as a symbol of close and effective government-industry teamwork. It revealed effectively how vital elements of a free society could join together to meet major challenges and to meet them successfully.

The impact of the national space program upon man's standard of living, national rity, education, and accumulation of knowledge is tremendous. Outstanding is the impact of the program upon man's way of living in peace and freedom. In fact, the benefits from the national space program run the gamut from new production processes to new approaches to world peace. Science and technology play a great role, not only in influencing public policy but in making intelligent policy decisions possible. The U.S. space program is now firmly established as a national asset of proven worth and incalculable potential.

Our national space program has reached such a stage of early maturity that the challenge is no longer whether to go into space, but rather is what should we do next and how soon.

REPORT TO THE CONGRESS

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UNITED STATES AERONAUTICS AND SPACE ACTIVITIES

1965





CHAPTER II

Nineteen sixty-five was a year of outstanding progress in both aeronautics and space. The record was particularly impressive in space flight and in space cooperation -- the latter both interagency and international.

This Nation's space achievements during the year were so distinctive in quality and quantity as to cause people, at home and abroad, to conclude the United States had attained the space leadership of the world. In many respects, that conclusion is accurate, but it would be incorrect and unwise to minimize the vitality and size of the space program of the U. S. S. R. During the year, the U. S. successfully placed into earth orbit 94 spacecraft as compared with 66 by the U. S. S. R. This was an increase over last year of 36 percent for the U. S. and 83 percent for the U. S. S. R. In fact, the Soviets almost doubled their earth orbiting activity over the previous year and, with their seven escape mission flights, more than doubled the U. S. activity in lunar and planetary exploration for the year. It is apparent that the U. S. S. R. has determined as a matter of policy that the benefits from space activity are sufficiently great to justify expanded performance.

In carrying out the responsibilities of the National Aeronautics and Space Council, attention was directed toward developing perspective so as to discourage complacency regarding international space competition and to encourage policies which would promote international space cooperation. In the latter respect, the space program can and does contribute importantly to peace and progress by extending cooperative international programs to about 70 nations around the world. Such relationships include but are not limited to the launching of payloads for other nations, the construction and operation of tracking facilities in other countries, the international exchange of scientific and engineering data, and the extension abroad of educational assistance. The mutual benefits of such cooperation prompt an expansion of this type of activity in the coming years.

During 1965, the space program became an even more effective arm of foreign policy when experienced astronauts were sent on educational and good will visits to a number of nations around the world. In one instance, the Vice President, who is also Chairman of the National Aeronautics and Space Council, was accompanied by several astronauts in an effective visit to the Paris Air Show.

Both nationally and internationally, the space program is dynamic and constructive in nature. Whether one looks at the actual construction of facilities, rockets, spacecraft, tracking stations, and other material assets, or whether one examines the output of new materials, the advances in electronics and other major skills, and the creation of new productive processes, the space program has matured into a positive force for economic and technical growth. Through direct applications of

technology in such fields as communications, meteorology, navigation, and biomedical instrumentation, space competence is contributing to the betterment of our life here on earth.

It is a responsibility of those engaged in the space program to explore diligently the ways in which such activity can raise standards of living and advance understanding. In seeking benefits, it is necessary to look not only to the scientific, technical, educational, and military assets which flow directly from space performance itself, but also to the ways and means in which this growing technical competence can be effectively applied to the solution of the many other problems which confront this complex society.

Those who look thoughtfully and carefully at the national space program recognize clearly that it is still in its infancy. It is reasonable to predict that much growth lies ahead. It has been only a little more than eight years since the very first spacecraft was put into orbit. To date, the U.S. has orbited about the earth some 342 payloads. This includes six joint efforts with other countries, i. e. two with Canada, two with the United Kingdom, one with Italy, and one with France. Another 151 payloads have been launched successfully by the U. S. S. R. and one by France. In addition, the United States and U. S. S. R. have put 28 spacecraft (13 by the U. S. and 15 by the U. S. S. R.) on the moon or in orbit about the sun.

In 1965, further advance was made toward greater competence in manned space flight, with the President's announcement of a decision to move forward with the development, testing, and flight of the Manned Orbiting Laboratory. This project is intended to broaden the scope of man's pursuit of greater security through the extension of his peaceful activities in space. The Manned Orbiting Laboratory is not a weapons system; it is not a means by which aggressive actions can be perpetrated; and it is in no way in conflict with the established peaceful policies of the United States.

In the discharge of its responsibilities, the Council, directly and through its staff, engaged in a broad range of policy, coordinating, and informational activities. Among these were:

- a. supervised the preparation of the President's Annual Report to the Congress on Aeronautics and Space Activities for 1965.
- b. submitted regular reports to the President on significant space activities and plans.
- c. increased public understanding of the national space program through speeches, articles, correspondence, and other public contacts.
- d. participated in the analysis of various aspects of the FY 1967 budget for space and aeronautics.
- e. examined the problems and alternative solutions regarding the development of space rescue capabilities.

- f. coordinated on behalf of the President the decision to launch nuclear power satellites into space.
- g. participated in the formulation and development of communications satellite practices and policies.
- h. helped coordinate the necessary actions to make available international high frequency communications channels for GEMINI flights and recovery operations.
- i. reviewed plans and policies affecting the Manned Orbiting Laboratory project.
- j. examined the status and potential of lifting body technology, recoverable and re-useable boosters, maneuverable logistic vehicles, and generally encouraged a closer marriage of aeronautics and astronautics.
- k. contributed to the planning for foreign visits of U.S. astronauts.
- l. reviewed the status of meteorological satellite planning.
- m. examined the impact of the national space program upon our international relations.
- n. gave direct consideration to various proposals for improved cooperation with other nations in various aspects of the space program.
- o. visited space installations, examined facilities, and engaged in interagency as well as Government-industry meetings and briefings on new developments in aeronautics, space technology, and space benefits.
- p. maintained a current record of U.S. and Soviet space launches, developed comparisons between U.S. and U.S.S.R. space activities, and reviewed space accomplishments and potentials of other nations.

A seedbed of advanced technological competence has been created by means of substantial investments, both public and private, in facilities, in experience, in organizations, in processes, in products, and in accumulated data. Taken together, this becomes one of our greatest national assets, which can be used at various rates and adjusted to other national requirements. Variations in funding for the use of such resources may be necessary from time to time, but such fluctuations should not be considered as a measure of uncertainty as to the essentiality of the space program or a deviation from this Nation's drive for preeminence in space.

The year 1965 was characterized by increased space activities at home and abroad, improved reliability in space equipment and space performance, and increased public awareness of the permanence and beneficial nature of the national space program. Coordination between U.S. Government agencies improved, and cooperation with other countries became a more characteristic element of space planning. While the actual and potential benefits of the space program are many, uppermost is the strong force which a viable space program can apply in the direction of world peace, as space activities become constructive substitutes for exploitation of peoples and aggression against peoples.

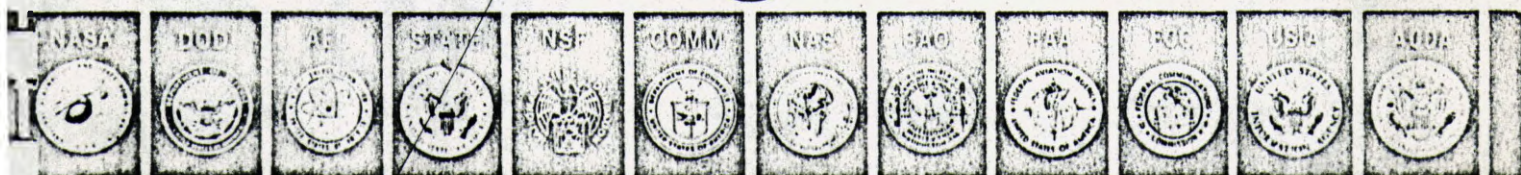
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UNITED STATES AERONAUTICS AND SPACE ACTIVITIES

1966





CHAPTER II

INTRODUCTION

In accordance with established legislation and policy, the National Aeronautics and Space Council is responsible for advising and assisting the President in such matters as surveying and evaluating aeronautical and space activities of all departments and agencies engaging therein and in developing comprehensive programs for such activities, and in providing effective cooperation and coordination between the various agencies with aeronautical and space responsibilities.

During 1966, under the leadership of the Vice President, the Council continued to carry out its responsibilities, with due attention to resolving difficulties and recommending actions for improved efficiency through both formal and informal contacts with policy-level representatives of Government agencies.

BENEFITS

Continuous study and public emphasis have been given to the multiple benefits to be derived from the national space program as well as from advancements in the field of aeronautics. These benefits comprise the returns from the taxpayers' investment in progress, all of which investment helps broaden our economic base and increase the size of our gross national product. In so doing, new and improved methods, techniques, and procedures are developed, which can increase the efficiency of much of the Nation's business.

Benefits from our aerospace endeavors include positive contributions to our national security, inventions and improvements of products and services, enhancement of the quality of education, and progress toward the attainment of world peace. As an aspect of the peace role of the space program, its technological progress and contributions to higher standards of living reflect favorably throughout the world upon the nature and vitality of our economy. The space program contributes positively to the presentation of such an international picture of the United States. Moreover, it furnishes a constructive alternative to aggression and thereby gives a productive outlet for technological skills and the use of modern facilities.

INFORMATION

In addition to its being appropriate for the Federal Government to keep the public well informed regarding the advantages and developments in the aerospace field, it also is a reasonable responsibility for private companies and individuals with knowledge regarding aerospace benefits likewise to engage vigorously in such educational endeavor.

INTERNATIONAL COOPERATION

International cooperation in the field of space is a policy with practical implications, not only for other countries, but also for the United States. Operational space capabilities can advisedly be used to provide coordinated and compatible services to the domestic economy in communications, in weather prediction, in navigation, and in observation. In addition to giving a major amount of attention to the practical aspects of international cooperation, with specific attention to improving cooperation with international organizations and with individual nations, continuing assistance and encouragement was given to the United Nations Space Treaty, from its initiation to its successful conclusion.

FUTURE PLANS

In addition to speeches, visits to space and aeronautical facilities, briefings, and informal coordination sessions, the Council held both formal and informal sessions on a variety of important aerospace issues. For example, meetings were held for the exchange of information and the evaluation of views regarding both the FY 1967 and FY 1968 budgets on present and future space and aeronautical programs. Attention was given to all aspects of such programs, including operational defense satellites, plans for manned orbiting laboratories, nuclear rocket and space nuclear power projects, improved methods of propulsion, post-APOLLO proposals, and research and development in the field of aeronautics.

Considerable attention was focused upon identifying various options that this country might pursue in space after the initial manned landing on the moon and upon how best to utilize the large investment this country already has in space capability -- in trained manpower, in specialized equipment, and in hard-earned irreplaceable experience. Throughout all such evaluation, it was kept clearly in mind that this country is engaged in a technological competition and that only a leadership position can be justified. Leadership, however, can and should include increasing progress in international cooperation.

As for future space programs, consideration was given to the relative merits of large orbiting space stations, extended lunar exploration, manned and unmanned planetary exploration, space science needs for the coming years, and direct practical applications of space competence to communications, observation, navigation, and weather. These various plans and projects were not considered to be alternatives necessarily as various constructive activities can and should be carried on concurrently. Rather, careful thought was given to questions of priorities, emphasis, and timing.

Throughout all of the program evaluations, the Council members were urged to keep in mind the many demands for funds which the President has to consider and therefore to stress those projects and proposals which seemed the most urgent and which promised the greatest returns on the investment. The impact of delays on major projects was also examined and conclusions indicated that postponements or slowdowns may increase total costs and lessen total returns.

AERONAUTICS

Mindful of the aeronautical aspects of its responsibilities, the Council and the Council staff maintained continuing interest in the Supersonic Transport program as well as in what might be done to accelerate solutions to such problems as air safety and traffic control and aircraft noise and sonic boom. During the examination of such issues, it was emphasized that future airline growth, in both passenger traffic and freight cargo, will increase at a very rapid rate during the next decade. Those agencies with aeronautical responsibilities were urged to give special attention to see if enough was being done to solve civilian airline problems and whether current resources were effectively distributed to such end.

SOVIET SPACE PROGRAM

The United States continues to lead the space technology competition in number and variety of successful missions, but the USSR maintains its lead in weight of payloads orbited. Both countries give substantial promise of more complex and challenging projects for the near future. Certainly the hiatus in Soviet manned space activity during 1966 is no basis for complacency on our part as their preparations for future flights appear to be ambitious and the resources being devoted to space competence and performance are absolutely and relatively impressive.

SUMMARY

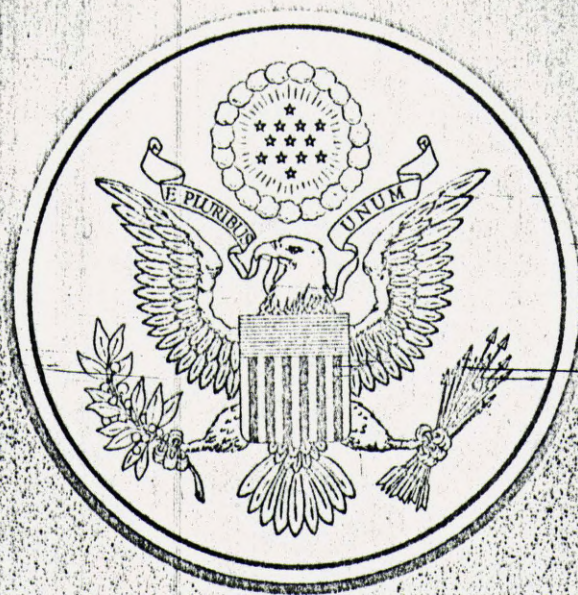
In addition to the various sessions held, the Council directly and through its staff engaged in a broad range of policy, coordinating, and informational activities. Among these were:

- a. Supervised and edited the President's Annual Report to the Congress on Aeronautics and Space Activities for 1966.
- b. Submitted regular reports to the President on significant space activities and plans.
- c. Increased public understanding of the national space program through numerous speeches, articles, correspondence, and other public contacts.
- d. Participated in analysis of and made recommendations concerning the FY 1968 budgets for space and aeronautics.
- e. Examined the problems and alternative solutions regarding the implementation and development of space rescue capabilities.
- f. Continued to coordinate for the President the issues and decisions involved in the launching of nuclear power units in spacecraft.
- g. Participated in the development of policy recommendations relative to the growth of communication satellite systems and the export of related technology.

- h. Examined the status and potential of navigational satellite utilization.**
- i. Surveyed the development of on-board space power supply alternatives.**
- j. Furnished briefing materials, including space photographs, for appropriate use in connection with visits to Washington of high officials of other nations.**
- k. Participated in the planning for aeronautical and space exhibits abroad.**
- l. Examined need for legislative changes affecting space and aeronautics.**
- m. Maintained liaison with the technological and aerospace management communities.**
- n. Contributed to the planning for foreign visits of U. S. astronauts.**
- o. Reviewed the status of meteorological satellite projects.**
- p. Visited space installations, examined facilities, and engaged in inter-agency as well as Government-industry meetings and briefings on new developments in aeronautics, space technology, and space benefits.**
- q. Analyzed the impact of our national space program at home and abroad.**
- r. Maintained a current record of U. S. and Soviet space launches, developed comparisons between U. S. and USSR space activities, and reviewed space accomplishments and potentials of other nations.**

REPORT TO THE CONGRESS

FROM THE PRESIDENT OF THE UNITED STATES



UNITED STATES AERONAUTICS AND SPACE ACTIVITIES

1967



NATIONAL AERONAUTICS AND
SPACE COUNCIL



CHAPTER II

INTRODUCTION

The National Aeronautics and Space Council, established by the National Aeronautics and Space Act of 1958, has a statutory responsibility for advising and assisting the President with respect to the entire field of aeronautics and space policy programming and performance. The Council surveys and evaluates all significant U. S. aeronautical and space activities, develops comprehensive programs for such activities, and provides coordination between the various agencies involved in these programs.

During 1967, the Council carried out its responsibilities in a variety of fields whose scope was national in dimension, and international in extension. Its work encompassed both civilian and military aerospace projects.

THE VICE PRESIDENT

The Vice President, by statute, is the Chairman of the National Aeronautics and Space Council. In addition to presiding over all meetings of the Council held during the year, the Vice President visited numerous aerospace facilities, and acquainted himself at first hand with the complex ramifications of this vital growth in technological and management competence. Special emphasis was placed by the Vice President on the utilization of space technology to increase the well-being of the people in this nation and on the extension of such benefits to the world, to improve our international relations and strengthen world peace.

Continuing interest was expressed by the Vice President in the pace and scope of advances in aeronautics, particularly in new aircraft, air safety, and the reduction of aircraft noise and sonic boom.

BENEFITS

One of the major goals of the national space program is to apply the technology required for space conquest to better living here on Earth. By its stimulus to invention and demand for technological excellence, the space program has provided this nation with a broad range of skills unequalled anywhere else in the world. Such skills are the hallmark of national leadership in this century, which is based more than ever before on managerial, scientific, and engineering excellence. In such development, constructive cooperation between the Federal Government and private enterprise has been and is characteristic and basic.

The United States, in return for its investment in space amounting over the past ten years to less than one percent of our Gross National Product, has received an inflow of positive contributions to the national security, broadened technological skills, new products, markets and services, economies resulting from improved weather prediction, new and more economical modes of worldwide communications, enrichment of the quality of education, and buttressing of world peace through furtherance of international amity and cooperation.

Through our aerospace activities, the people of the world have been presented a positive image of a vigorous, progressive nation, dedicated to and succeeding in the attainment of excellence. Such performance reinforces the thesis that the individual nation which can offer freedom, encourage and reward enterprise, and provide a government responsive to the needs of all the people is the most successful.

SPACE PLANNING OBJECTIVES

In evaluating the national space program in terms of both present accomplishments and future goals, the Council has been guided by certain broad mission objectives. These include:

- a. Applying the results of space research, technology, and discovery to achieve a variety of economic and social benefits.
- b. Actively pursuing research and development to increase our knowledge of the space environment and fundamental facts of nature, and to make practical application of such knowledge.
- c. Mastering the technology of advanced unmanned and manned flight to attain the capacity for ultra-high-speed, safe, and economical flight in outer space.
- d. Conducting unmanned and manned exploration of the solar system, including the Moon and other celestial bodies.
- e. Developing and applying space competence so that exploration and discoveries in space will enhance our capability to keep the peace and deter aggression on Earth.
- f. Accelerating the development and operational use of space systems in meteorology, communications, navigation, geodesy, Earth resources inventory, and other Earth-oriented fields.
- g. Seeking increased international cooperation in, and mutually advantageous agreements for, the use of outer space for peaceful purposes, development of a regime of law for outer space, joint and coordinated space endeavors, and orderly and open conduct of space, space-related, and aeronautical activities.
- h. Striving for elimination of waste, minimization of duplication, and increase of cooperation in carrying out the national space effort.

AERONAUTICS

The research program for aircraft noise abatement has been extended by all competent agencies to embrace airframe and engine design for new airplanes, as well as the retrofitting of current equipment and pilot retraining where that can be productive.

NASA, the Department of Defense, and the Department of Transportation are expediting coordinated research into every aspect of equipment and control to improve air safety, particularly in the vicinity of large centers of concentrated air traffic.

Progress continues in constructing two SST prototypes to be ready for flight tests in 1970. Continuing attention is being given to increasing the safety features and decreasing the noise level and sonic boom.

COMPARISON OF U. S. AND SOVIET SPACE PROGRAMS

The United States put 77 payloads into Earth orbit and 10 payloads on escape missions during 1967. USSR figures for the same period were 66 and 1 respectively. Over the past 10 years, since the first successful launch into space, U. S. total payloads have been 542 and the number for the USSR 284. Although the United States has placed the largest weight into orbit on a single launch with the world's most powerful rocket, the SATURN V, the Soviets are estimated to have orbited greater total weight over the years than the United States. High priority is given to space activity by both nations, with considerable indication that the Soviets give it higher priority than the United States in terms of relative investment of gross national product. The Soviets have begun to show considerable interest in the space application fields in which the United States has had so much success, particularly in meteorology, communications, and navigation. The vigor, competence, and broad approach of the USSR aerospace program demonstrate that the United States has no grounds for complacency regarding its technological or performance leadership.

COUNCIL ACTIVITIES

During Calendar Year 1967 the Council and its staff dealt with a variety of aerospace problems. A number of meetings were held to exchange inter-agency information and evaluate views regarding FY 1968 and FY 1969 budget plans. Special consideration was given to post-APOLLO space goals, the APOLLO capsule fire, foreign-affairs aspects of U. S. space programs and opportunities for expanded international cooperation in outer space, coordination of the U. S. presence in major international scientific and cultural events having an aerospace content, plans and prospects for natural resources satellites, policy aspects of communications satellite development planning and safety aspects of nuclear rocket and space nuclear-power projects, aeronautical research funding, aeronautical safety, and reduction of airport noise.

In brief, the Council directly and through its staff engaged in a broad range of policy coordinating and informational activities. Among these were:

- a. Supervised and edited the President's Annual Report to the Congress on Aeronautics and Space Activities for 1967.
- b. Submitted regular reports to the President and the Council Chairman on significant space activities and plans.

- c. Maintained a mutually informative relationship with members and staff of appropriate committees of the Congress on aeronautics and space developments here and abroad.
- d. Increased public understanding of the national space program through speeches, articles, correspondence, and other public contacts.
- e. Participated in analysis of and made recommendations concerning budgets for space and aeronautics.
- f. Coordinated for the President the decisions involved in launching nuclear power units in spacecraft.
- g. Helped to develop policy recommendations on the growth of communication satellite systems.
- h. Examined the status and potential of Earth resources satellites.
- i. Surveyed the relative capability and state of development of on-board space power supply alternatives.
- j. Furnished briefing materials, including space photographs, for use in connection with visits to Washington of high-ranking officials of other nations.
- k. Participated in the planning for aeronautical and space exhibits abroad.
- l. Examined the need for legislative changes affecting space and aeronautics.
- m. Maintained liaison with the technological and aerospace communities.
- n. Reviewed the status of meteorological, navigation, communication and applications technology satellite projects.
- o. Visited space installations, examined facilities, and engaged in inter-agency as well as Government-industry meetings and briefings on new developments in aeronautics, space technology, and space benefits.
- p. Maintained a current record of U. S. and Soviet space launches, developed comparisons between U. S. and USSR space activities, and reviewed the space accomplishments and potentials of other nations.

For insertion in Appendix C

Inserted 3/31/75
per memo from E.C. Wilks to
Calhoun 1/13/69

National Aeronautics and Space Council Chapter (Chapter II)
of the 1968 Annual Report of the President to the
Congress on U.S. Aeronautics and Space Activities

CHAPTER II

INTRODUCTION

The National Aeronautics and Space Council, established by the National Aeronautics and Space Act of 1958, has a statutory responsibility for advising and assisting the President on policies, plans, and programs of the United States in aeronautical and space activities. During 1968, the Council carried out its responsibilities in a variety of fields whose scope was both national and international. Its work encompassed both civil and military aerospace projects.

THE VICE PRESIDENT

The Vice President, by statute, is the Chairman of the National Aeronautics and Space Council. He exercised forceful leadership in the aeronautics-space field during the year under review. As a matter of policy and practice, he emphasized the importance of bringing the benefits of the space program into early practical realization for the well-being of mankind. In the course of his duties, the Vice President continued to acquaint himself at firsthand with both the problems and the progress of our national space effort. In addition to his continuing attention to the space program, the Vice President maintained particular interest in the pressing problems

of aeronautics, specifically with regards to new aircraft, improved air safety, and lessening the noise and air pollution features of jet engines. He also vigorously supported the principle of continued U.S. participation in international exhibits, such as the Paris Air Show.

INTERNATIONAL COOPERATION

The United States continued to make leading contributions to space technology, space accomplishment, and international peace-building through cooperation in space. In the latter category there are now cooperative programs with some 70 nations in space enterprises. The United States has taken a leading role in the development of international treaties and agreements, and in international arrangements for sharing advances in space communications and other beneficial applications, including weather forecasting and navigation. The United States has made concerted efforts to initiate new cooperative space arrangements in order to utilize space for the advancement of our foreign policy aims.

Moreover, of major importance has been the initiative role and the follow-through participation of the United States in international treaties and agreements affecting national security in space and safety and rescue of astronauts.

AERONAUTICS

Early in the year, the Vice President, in a Council meeting, arranged for coordinated action by the Department of Transportation, the Department of Defense, and NASA to analyze the relationships between the benefits that accrue to the Nation from aviation and the Nation's level of aeronautical research and development. This action was in response to a recommendation by the Senate Committee on Aeronautical and Space Sciences which suggested that the Council undertake such a task. Because of its direct responsibility for the evolution of national transportation policy, the Department of Transportation was assigned leadership in the study. Progress reports were received and consultations undertaken during the year.

COMPARISON OF U. S. AND SOVIET SPACE PROGRAMS

Since the first satellite was launched about ten years ago, the United States has, as of December 31, 1968, placed 605 spacecraft into Earth orbit or on escape missions, while the Soviet Union figure is 360 or 37% of the total effort. The United States has 3,215 man hours in space flight, compared to 631 for the U. S. S. R., or about 83% of the total manned flight hours. Of equal significance perhaps is the fact that the United States has made major technological advances in unmanned

space activity, bringing direct benefits to mankind in meteorology, communications, navigation, and observation. Moreover, the United States leads in the dissemination of scientific information obtained from space investigations, launching of the world's most powerful operational booster (Saturn V), the use of on-board nuclear power units, as well as in the number of spacecraft successfully launched.

In making this comparative analysis, however, it is essential that we derive satisfaction but no complacency from our relative status. The U. S. S. R. effort is vigorous and appears to be on a trend of increasing investment and increasing accomplishment. At existing rates, they could over-take and possibly surpass the U. S.

The years 1958-1968 have been filled with significant accomplishments in the space domain, and the decade ahead will present new challenges and new opportunities, none of which will be successfully dealt with if the Nation is complacent over its achievements of the past. The challenges of initiative have been well met; the determination to maintain the pace is to be tested in the coming years.

Since the greatness of a nation depends to an important degree upon mastering and putting to use technological advances, new goals and new directions must be established in space to maximize the existing

and potential benefits of this new national asset. A sound basis for determining that our Nation benefits from such activity may be seen in the advances which have taken place in communications, meteorology, navigation, and Earth resources observation, as well as the spinoffs from space research in the form of new products, new services, and novel managerial techniques. Beneficial beginnings have also been achieved in the application of space-proven systems analysis to urban problems and other non-space needs.

COUNCIL ACTIVITIES

During 1968 the Council and its staff dealt with a variety of aerospace problems. A number of meetings were held to coordinate the exchange of interagency information and to evaluate FY 1969 and FY 1970 budget plans. Continued consideration was given to post-Apollo space goals, foreign-affairs aspects of U.S. space programs and opportunities for expanded international cooperation in outer space, coordination of the U.S. presence in major international scientific and cultural events having an aerospace content, plans and prospects for natural resources survey satellites, policy aspects of communications satellite development, planning and safety aspects of nuclear rocket and space nuclear-power projects, aeronautical research funding, aeronautical safety, and reduction of airport noise.

In brief, the Council directly and through its staff, engaged in a broad range of policy, coordinating, and informational activities.

Among these were:

- a. Supervised and edited the President's Annual Report to the Congress on Aeronautics and Space Activities for 1968.
- b. Submitted reports to the President and the Council Chairman on significant space and aeronautics activities and plans.
- c. Maintained a mutually informative relationship with both the members and their staff of appropriate committees of the Congress on domestic and foreign aeronautics and space developments.
- d. Increased public understanding of the national space program through speeches, articles, correspondence, and other public contacts.
- e. Participated in analysis of, and made recommendations concerning, our national budgets for space and aeronautics.
- f. Coordinated for the President the policy decisions involved in launching nuclear power units in spacecraft.

- g. Helped to develop recommendations on the evolution of communications policy.
- h. Furnished briefing materials, including space photographs, for use in connection with visits to Washington of high-ranking officials of other nations.
- i. Participated in the planning for aeronautical and space exhibits abroad, including the Paris Air Show which is scheduled for next year.
- j. Examined the need for legislative changes affecting space and aeronautics.
- k. Maintained liaison with the technological and aerospace communities.
- l. Reviewed the status of space booster programs both chemical and nuclear, meteorological, navigation, communication and applications technology satellite projects, including Earth resources survey satellites.
- m. Reviewed and maintained continuous liaison with the national aeronautics and space programs under the cognizance of the Department of Defense and the National Aeronautics and Space Administration.

- n. Visited space installations, examined facilities, and engaged in interagency as well as Government-industry meetings and briefings on new developments in aeronautics, space technology, and space benefits.
- o. Maintained a current record of U.S. and Soviet space launches, developed comparisons between U.S. and U. S. S. R. space activities, and reviewed the space accomplishments and potentials of other nations.

APPENDIX D
STAFF APPOINTMENTS

Appendix D
Staff Appointments

APPENDIX D
STAFF APPOINTMENTS

Executive Secretary

WELSH, Dr. Edward C.

Appointed by the President March 28, 1961

(biographical data on next page)

EDWARD C. WELSH

Data: Born in Long Valley, N. J., 1909; married; residence, Arlington, Va.

Education: AB (Lafayette), MA (Tufts), Ph. D. (Ohio State), Litt. D. (Lafayette), LL. D. (Clark); Magna Cum Laude, Phi Beta Kappa (National Scholastic Honorary), Beta Gamma Sigma (National Business Administration Honorary), Pi Delta Epsilon (National Journalistic Honorary).

University Faculties: Twelve years on University faculties, in Economics departments: Tufts University, Ohio State University, University of Cincinnati, and Capital University (Ohio).

Government Experience: National Resources Committee (1937), Temporary National Economic Committee (1940), Office of Price Administration (1942-1947), Dept. of Army (1947-1950), National Security Resources Board (1950-1951), Reconstruction Finance Corporation (1951-1953), office of U. S. Senator (1953-1961), National Aeronautics and Space Council (1961-present).

Positions and Activities:

- a. Published studies and articles on tariffs, price rigidities, antitrust and monopolies in Japan, private enterprise in Japan, government aid to business expansion in U. S., national space program.
- b. Economist for National Resources Committee; Economist for Temporary National Economic Committee.
- c. Regional Price Executive (OPA) for Ohio, Michigan, West Virginia, Kentucky, and Indiana; Director for Price Operations for the U. S. (OPA).
- d. Deputy Administrator (OPA); Assistant Commissioner (OTC).
- e. Chief, Antitrust and Cartels Division in GHQ, Japan (Dept. of Army); also member of Foreign Investment Board in Japan.
- f. Citation from Gen. Douglas MacArthur, Supreme Commander of Allied Powers for "major contributions to development of private enterprise in Japan."
- g. Executive Assistant to Chairman, National Security Resources Board.
- h. Executive Assistant to Administrator, Reconstruction Finance Corporation.
- i. Legislative Assistant, Senator Symington (Mo.), U. S. Senate; Staff Director, Air Power Subcommittee (U. S. Senate); Staff Director, Committee for Defense Reorganization, appointed by President-elect John F. Kennedy.
- j. Appointed Executive Secretary, National Aeronautics and Space Council by President Kennedy and confirmed by the U. S. Senate.
- k. Recipient, Arnold Air Society annual award for outstanding contributions to national space program in 1962 and in 1968.
- l. Recipient National Space Club Press Award in 1968.
- m. Member, American Ordnance Association; Board of Governors, National Space Club; Member, Air Force Association.
- n. Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Astronautical Society; Honorary Member, Aerospace Medical Association; Corresponding Member, International Academy of Astronautics.

Staff

BERG, Winfred E., Captain USN (Ret.)

Entered on Duty 1/3/66 Aerospace Assistant

Assignment: Communications and other applications satellites; U.S. -USSR comparisons

Prior Employment: U.S. Navy

BUNDY, David R.

EOD 4/10/67 Aerospace Assistant

Assignment: Annual report and special reports; spin-off applications

Prior Employment: Magazine editor

DOLAN, Thomas E.

EOD 5/18/62 Aerospace Assistant

Separated 9/30/64

Assignment: Manned space flight

Prior Employment: Private industry

ECKMAN, Dr. Philip K.

EOD 5/1/67 Aerospace Assistant

Separated 9/6/68

Assignment: Lunar and planetary unmanned systems

Prior Employment: Jet Propulsion Laboratory

EDELSON, Dr. Burton I., Lt. Cdr. USN

Reimbursable detail from Navy effective
6/1/60 Aerospace Assistant

Termination of detail 7/6/65

Assignment: Communications, navigation, and geodetic satellites; advanced
technology satellites; tracking and data acquisition systems; space nuclear
auxiliary power systems

Prior Employment: U.S. Navy

EDLER, Henry G.

EOD 9/6/61 as Consultant W.A.E.; converted to excepted appointment 1/21/62
as Aerospace Assistant

Assignment: Chemical propulsion; management techniques; materials research
and technology; chemical and solar energy conversion

Prior Employment: Private industry

HALE, Russell W.

EOD 4/30/61 Assistant to Executive Secretary

Assignment: Special Assistant responsibilities; scientific satellites; aeronautics

Prior Employment: Department of State

HIRSCH, Richard

Reimbursable detail from NSC 7/17/61; EOD on Space Council rolls 4/3/62
as Aerospace Assistant

Assignment: Meteorological satellites; sounding rockets; arms control; non-Soviet
foreign programs; international cooperation

Prior Employment: National Security Council staff

HUNTER, Maxwell W., Jr.

EOD 1/8/62 Aerospace Assistant

Separated 4/17/64

Assignment: Space nuclear programs; advanced planning

Prior Employment: Private industry

KONECCI, Dr. Eugene B.

EOD 10/25/64 Aerospace Assistant

Separated 12/15/66

Assignment: Manned systems; space stations; lunar bases; interplanetary studies

Prior Employment: National Aeronautics and Space Administration

LACEY, Edward L.

EOD 8/20/61 Administrative Assistant

Assignment: Administrative

Prior Employment: St. Lawrence Seaway Commission

MEANS, C. Paul

EOD 9/24/62 as Consultant; converted to permanent appointment 5/26/63
as Aerospace Assistant

Separated 3/11/67

Assignment: Annual report and special reports; spin-off applications

Prior Employment: Magazine Editor

MOORE, William F.

Reimbursable detail from NASA effective 9/3/68 Aerospace Assistant

Assignment: Manned Space Flight

Prior Employment: National Aeronautics and Space Administration

MROZINSKI, Roman V.

EOD 12/10/62 Aerospace Assistant

Assignment: Congressional liaison; nuclear propulsion; nuclear power

Prior Employment: Private industry

RAND, Frank F., JR

EOD 1/18/67 Aerospace Assistant

Separated 8/10/68

Assignment: Manned systems and missions; observation satellites

Prior Employment: Private industry

RESNICK, Robert H.

EOD 4/16/62 Writer

Separated 2/15/64

Assignment: Preparation of written reports and speech material

Prior Employment: Private industry

SHELDON, Dr. Charles S. II

EOD 9/6/61 Aerospace Assistant

Separated 10/23/66

10/23/66 until present - WOC Consultant

Assignment: Observation satellites; anti-satellite defense and satellite inspection; international comparisons, data, information policy; unmanned lunar and planetary projects

Prior Employment: Committee staff, U.S. House of Representatives

Consultants

FRANK, Harry H.

EOD 9/29/61 Reports

Separated 12/11/61

LARSON, Jack

EOD 9/11/61 Aerospace Patents

Converted to permanent appointment 7/2/62

Separated 8/8/62

MECKLING, William H.

EOD 11/27/61 Communications Satellites

Separated 12/11/61

NELSON, Dr. James R.

EOD 11/13/61 Communications Satellites

Separated 12/11/61

NUNN, Robert G., Jr.

EOD 11/4/61 Communications Satellites

Separated 12/11/61

Material Inserted
3/31/75 according to
a covering letter
E.C. Walsh to Joseph
Califano 1/13/69

APPENDIX E

COMMUNICATIONS POLICY REFERENCES

Appendix E - Commu-
nications Policy Refer-
ences

October 18, 1968

MEMORANDUM FOR

Honorable Eugene V. Rostow
Under Secretary of State for Political Affairs

Subject: Communications Policy

The President's message on communications policy of August 14, 1967, requested the Communications Policy Task Force to examine and make recommendations relative to the effective use of the electro-magnetic frequency spectrum; the nature and economic feasibility of a domestic satellite system; the future posture of international carriers; and any needed legislation.

The Task Force initiated a series of studies regarding those and other communications matters. I would not like to see any public release of those staff reports. If this cannot be avoided, then the minimum protection should be an unequivocal disclaimer as to Government responsibility for the contents of those documents. They have been useful as preparatory material but, released as they are they would be quoted out of context and could otherwise add to the confusion in a very complex business.

1. Frequency Spectrum

The spectrum must be considered and managed as a valuable resource in short supply and such management should be handled in a fashion that would maximize the use-value of the spectrum rather than permit it to be used as a convenient regulatory tool. The need for an overall single manager of the total spectrum is clear and in the national interest. Such central management should be in the Executive Branch of the Government.

As is the case with other natural resources, the value of this resource to the user should be considered in establishing user fees. Transferability of user rights or licenses should be subject to approval by the regulatory agency.

2. Domestic Satellite System

The domestic satellite Pilot Program should be undertaken promptly. There is ample legal basis in the Communications Satellite Act of 1962, for such a system to be initiated and for the Communications Satellite Corporation to manage, own, and control it. I support such an arrangement, both as to the satellites and the ground facilities. Diffuse ownership would handicap efficient management. In managing a domestic satellite system, the owner should be authorized to deal directly with users, including the domestic-switched networks and the U.S. government. It is my belief that all users should be kept at arm's length in both management and ownership from the design and control of the system. Concern that placing the Pilot Program in the hands of the ComSat Corporation would give that corporation an undue advantage regarding a permanent domestic satellite system is unwarranted. Moreover, there should be no arbitrary barrier to the ComSat Corporation's participation in domestic satellite systems which might follow the Pilot Program. It is the most experienced communications satellite corporation in the world and hence, in the public interest, should have a priority chance to own and operate the U.S. domestic satellite system.

An early introduction of satellites into the domestic market will increase the opportunity to gain a substantive foothold by this technology in the communications business and to provide improved services for the general public. It is believed that such a system should be general purpose in nature and that there should be only one system for the domestic market. Experience from the Pilot Program may cause one to revise these conclusions but they seem to be the most practical ones at this time.

3. International Carriers

It is recommended that Intelsat as an international global system continue to be supported by the United States and that the ComSat Corporation continue as its manager. Certainly there is

need for flexibility and understanding of other nation's viewpoints in finalizing the arrangements for Intelsat. In this approach we should be firm that special purpose satellite systems, including domestic and regional ones, should be compatible with the Intelsat system and should be operated in a manner thoroughly cooperative with that system.

It has been suggested that it might be wise to consider merging the international communications carriers. It seems to me that this is less a solution to existing problems than it is evidence of weakness in our regulatory process. In fact, even if the international carriers were merged, the basic problems would probably continue to exist but possibly with less visibility. Perhaps, even more serious problems might be created. If the ComSat Corporation became both a satellite owner and a cable owner it might not only have a conflict of interest as to technologies but also as to the best interests of Intelsat. Moreover, if there were to be a merger of all U.S. international carriers, both satellite and cable, this would seem to preclude ComSat Corporation's participation in the domestic satellite system, a function it is best equipped to handle. From a practical point of view, international communications by satellite do not stop at the water's edge, as do cables, and hence it would be difficult to divide communications into separate domestic and international arenas.

I do not find a merger of international communications systems to be economically or politically wise. However, I do believe that a merger should not be optional on the part of the carriers, if there is to be a merger. Probably the best merger arrangement for the public interest would be to make a separate company for all international cables and then have the ComSat Corporation be the competition in the form of the company handling satellite systems. Even if the international carriers are merged into a single entity, this should in no way prevent or even hinder the ComSat Corporation from carrying out the domestic satellite program.

4. Legislation Needs

Clearly, if a compulsory merger of international carriers is decided upon, legislation would be required. Whether or not such merger action is proposed, there is need for strengthening the FCC so that it can better carry out its regulatory responsibilities. In particular, there is need to establish a strong agency in the Executive Branch of the Government for overall policy communications responsibilities. Such an agency would, among other things, have responsibilities for frequency spectrum management. Another legislative action which should be considered is an amendment to the Communications Satellite Act of 1962, to prevent carriers from owning stock in the ComSat Corporation.

5. Other Observations

Studies were made by the Task Force staff on the domestic common carrier industry, on broadcasting, and on telecommunications for less developed countries. These studies were both informative and provocative but since they were not specifically called for by the President's message, I will not include comments in this memorandum.

E. C. Welsh

November 4, 1968

MEMORANDUM FOR

Honorable Eugene V. Rostow
Under Secretary of State for Political Affairs

I received the latest edition of the draft report, sans the Broadcasting Chapter, on November 1 and proceeded to read the material over the weekend.

With a relatively few suggested changes, I believe that most of the chapters can be made satisfactory from my point of view. The most notable exception is the International Chapter, which I believe still calls for relative major surgery.

So far as I am concerned, the Intelsat, Less Developed Countries, and Frequency Spectrum chapters do not need further change. I have left my notes with Novak on the Domestic Carrier chapter and believe that he and Berg will be able to iron that one out. With a few major exceptions, the enclosed pages supply my changes in the Introduction, Domestic Satellite, International Industry, and Federal Roles chapters.

E. C. Welsh

Enclosures

INTRODUCTION

Page 15, line 14, delete the language "particularly one-way wideband services" as being unnecessary and possibly over-emphasizing this particular service.

Pages 16-17, insert the word "and" after the word "development" on third line from the bottom of page 16. Then put a period after the word "program" on the last line of page 16, and delete beginning with "detailed" through the end of that paragraph on the top of page 17.

Page 20, delete second sentence in second paragraph beginning on that page and rephrase the sentence which begins at the bottom of page 20 and continues over to page 21 to read as follows: "Under these circumstances, we recommend consideration be given to two possible approaches to the international picture: (a) consolidation of existing international transmission facilities into a single entity or (b) merge the international cables into one company and have the Comsat Corporation furnish the competition as the company handling all communications satellite systems. The latter alternative would lessen the chances of conflict of interest on the part of the Comsat Corporation as manager of the Intelsat and would reflect clearly the fact that satellite communications do not stop at the water's edge as does cable transmission."

Page 22, insert after second line at top a new sentence as follows: "If an established carrier lowers his prices in response to a competitive entry, neither may in turn raise their prices without specific approval by the FCC."

Page 23, the first sentence beginning on that page should be omitted, as the fact is that it does and should challenge the existing system.

THE ROLES OF THE FEDERAL GOVERNMENT IN TELECOMMUNICATIONS

Page 18, 4 lines from the bottom, substitute word "guidance" for the word "assistance".

Page 19, at the bottom, omit the words "in support of the regulatory function".

Page 20, after the first sentence, insert a new sentence: "Moreover, it should not be held responsible for the establishment of over-all communications policy".

Page 27, the first sentence in Paragraph C should be omitted.

Page 31, in the 6th line from the top, omit the word "supplementary".

Page 32, omit the last two sentences on that page.

Page 34, omit the first paragraph beginning on that page.

DOMESTIC APPLICATIONS OF COMMUNICATION SATELLITE TECHNOLOGY

Page 4, in the last sentence place a period after the word "needs" and eliminate the rest of that sentence, as it over-emphasizes certain functions and minimizes others.

Page 6, line 11, item (b) should have inserted "telephone message networking as well as"

Page 10, line 11, omit beginning with the word "We" through the word "Therefore." The last sentence on page 10 would read: "We have concluded that the prudent course would be to begin with a modest operational demonstration pilot domestic satellite system, owned and operated by the Comsat Corporation."

✓ Page 12, first sentence, omit word "seriously."

✓ Page 14, first paragraph, add a sub-item (e) - "easier introduction of new services." Also on page 14, omit the last sentence.

Page 17, in middle of page, omit the language "the role of domestic satellite systems is not clear under the present Intelsat arrangements and, of course." The sentence then would begin with "We."

✓ Page 20, last sentence in second paragraph, replace the language "allowing broad participation" with the language "encouraging broad use."

X Page 27, in the first sentence, place a period after the word "carefully" and omit the rest of that sentence. Change the heading of the last paragraph on page 27 to read: "Broad Use of the Pilot Program is Desirable." Then omit the language immediately following through middle of page 28. The language would pick up as follows: "It does not seem desirable or sensible to create a new private corporation to own and operate the pilot program." Also on page 28, in the last line replace the word "participant" with the word "owner."

✓ Page 29, the first paragraph beginning on that page would best be omitted.

X Page 30, in the first line, substitute the words "owner of" for the words "participants in." Also in the last sentence, replace the word "participants" with the word "it." Omit the third sentence on that page. Also on page 30, delete the middle paragraph. Then have the total of the final paragraph on that page read as follows: "We recognize that the simplest and best solution would be to authorize Comsat to establish all the facilities used in a pilot program. Systematic integrity would be enhanced thereby, and undue delay avoided."

Domestic Applications of Communication Satellite Technology (continued)

Page 31, paragraph 1, in its entirety should read: "The space segment should be owned by Comsat. Divided control of the space segment and the ground stations would be administratively cumbersome and could affect operational efficiency. Comsat is well qualified to establish and maintain both."

Beginning of page 32 to the top of page 35 should be omitted.

Page 39, the first sentence at top of page should read: "We recommend, therefore, that the pilot program be established with an understanding reached with Intelsat." Also on page 39, six lines from the bottom, eliminate "joint contracting for launch facilities."

Page 40, in lettered paragraph G, suggest the words "Read Together" be eliminated in the caption and that in the first paragraph after that the words "owner or" be inserted before "trustee."

Page 41, after the sixth line on that page, introduce the following language from Section 401 of Public Law 87-624: "Whenever the application of the provisions of this Act shall be inconsistent with the application of the provisions of the Communications Act, the provisions of this Act shall govern."

Page 46, the word "fiscal" may be eliminated in the second sentence of the paragraph beginning on that page, and the last sentence of that paragraph omitted.

ORGANIZATION OF THE UNITED STATES INTERNATIONAL COM-
MUNICATIONS INDUSTRY

Page 2. Since I do not believe that fundamental problems arise from the separations by technologies but rather have arisen primarily from inept and inadequate regulation, I would omit the last paragraph on that page.

Page 3, in the first sentence, reference to AT&T should be omitted and that portion of the sentence reads "which provided." At the bottom of that page and continuing on to page 4, ^{omit} the sentence beginning on the 5th line from the bottom and continuing over to the end of the paragraph on the top of page 4. This partial listing of some of the features of the ComSatCorp is confusing and not very informative. This would also call for omitting the footnote on page 4.

Page 5. The predictions and comments about the state of the economy of the international industry should be omitted, and I doubt that "serious perturbations" have been created. ✓

Page 6. Insert the words "United States" between the word "present" and the word "industry" in the first sentence beginning on that page. ✓ Then, in that first paragraph, omit the portion in parens after "ComSat".

Pages 7 and 8. Omit the paragraph beginning at the bottom of page 7 and the rest of that paragraph at the top of page 8 as being unnecessary and possibly confusing. Also, on page 8, omit the first paragraph beginning on that page. It is not true that the goals of public policy are not now being served. It is all right to suggest alternative ways of improving the situation, but not to indict the existing one.

Page 9, at the bottom, a new sentence should be added as follows: The Executive Branch must perform this function".

Page 10. Omit the sentence beginning 13 lines from the top and omit the paragraph beginning at the bottom of page 10 through its conclusion on page 11.

Page 11, in the sentence beginning 8 lines from the bottom, have it read "Some of these differences have been created and perpetuated by the FCC..." In the last paragraph beginning on that page, it should be stated that the "authorized user" decisions have been in conflict with the specific language of the ComSat Act.

Organization of the United States International Communications Industry (Continued)

Page 12. Reference to the so-called unbalanced capital structure of ComSat is inappropriate and that paragraph should be omitted. Many companies would love to be in that condition. Also on page 12 reference is made to ComSat's "monopoly position" as if that should preclude it from entering the domestic satellite picture. Yet, in this same chapter, argument is made for a monopoly of international companies of all technologies. Also, many fine things are said elsewhere in the report regarding the AT&T monopoly.

Page 13, at the top of the page, it is correct that ComSat's role is "not merely of private concern". It might be worth mentioning at that point that so is the role of AT&T. Also on page 13 the impracticality of the 30 circuits case was not due to the organization of the industry but was due to misjudgment on the part of FCC.

Page 14. The chapter beginning on that page, which talks about the impairment of policy by the plurality of firms is indeed a very thin one and could be omitted without loss.

Page 15. It is suggested that instead of stating that "only one comprehensive solution is both effective and feasible" that suggestion should be made of two alternative solutions, one which would be a merger of all international transmission systems, concerning which supporting arguments have already been made. The other alternative would be the establishment that one U.S. company is on international cables and then have the ComSatCorp be the competition in the form of a company which would handle all communications satellite systems. This would lessen greatly the possibility of conflict of interest in ComSatCorp's role as manager of Intelsat and also would meet the otherwise unrealistic situation of trying to consider satellite communications as stopping at the water's edge. Also, on page 15, I do not agree that anyone has talked about "unfettered competition". This would seem to be a "straw man".

Page 16. It would seem to be constructive to recommend that the authorized-user rulings be overturned. Also, it is not correct that the different technologies provide almost exactly the same services, as stated at the bottom of page 16.

Page 18. Section B, beginning on that page and concluding at the top of page 20, should be omitted.

Organization of the United States International Communications
Industry (Continued)

Page 20. Paragraph C should read "A single entity for international transmission would provide one solution to the industry's problems". Then, at a later portion in the report, an alternative solution, which I have suggested, could also be mentioned.

not done
Page 22. The first sentence in the paragraph beginning on page 22 is questionable and could be omitted without loss. Also, on page 23, the last sentence on that page is argumentative at best and I believe difficult to support.

✓ Page 24. While I do not disagree with the first sentence in the second paragraph beginning on that page, it would also be fair to state that the single entity would develop conflicts of interest in Intelsat.

Page 31. I would eliminate this portion regarding manufacturing affiliations. The argument presented applies equally as well to the AT&T, for example. There is no reason why manufacturing affiliation is fair for one entity and not for another.

Page 33. While the theme of that page is logical on the premise of the single entity as proposed in the chapter, it is not consistent with the alternative I have suggested. Hence, it should be made clear that in the one case the division would be as between international and domestic and in the other case the division would be as between technologies.

Page 38. In view of my previous recommendations, I would eliminate the reference to manufacturing affiliations on that page and insert the alternatives for international organization which I had previously proposed.

November 16, 1968

MEMORANDUM FOR

Honorable Eugene Restow
Under Secretary of State for Political Affairs

Subject: Communications Policy.

I have just finished going over the November 13 edition of the Introduction Chapter. As I said to you over the telephone, I am impressed with the difficulty of your job as Chairman of this Task Force and with the effort to obtain agreement among a variety of points of view.

In going over this Introduction, I am disappointed. I find that my suggestions for change in the October 30 edition of this Chapter have been in large measure ignored. For example, my first suggestion was that the language "particularly one-way wideband services" be eliminated. It appears in line 3 of page 13 of the most recent draft just as it was in the previous draft.

A more serious problem arises on page 14 of the more recent draft where in line 15, instead of a period after "mandate", there is added language having to do with ComSat as interim owners and raising the question as to prior commitment regarding more permanent ownership. That and the language immediately following it had been suggested to be deleted in my previous examination of the prior draft.

While it is possible that such would actually develop, I still object to the content of lines 7 through 10 on page 15 which referred to participation of carriers, broadcasters, and other users in the ownership of satellite ground stations. We have had completely unsatisfactory experience with this so far and I see no reason to perpetuate a serious error by the FCC.

On page 18, line 12, is reference to the potentiality of excess capacity. This is the first time I have ever heard the potential of overbuilding as being an excuse for monopoly. In any event, I must disagree with your thought that this should have any bearing on the international organization picture.

On page 19 of the most recent draft, beginning at the top of the page, one recommendation regarding international transmission facilities is made. You may recall that I specifically recommended alternative recommendations and gave suggested language in my memorandum to you. I do not believe that such suggestion was woven into your language, nor do I believe that it was intended to be. Also, in view of my recommendation on this matter, I would delete the first sentence in the footnote which occurs on page 24A.

As soon as I have had an opportunity to go over the International Chapter, I will send you a memorandum regarding it. In the interim, I reaffirm my lack of objection to the content of the Domestic Carrier paper, the Broadcasting paper, the Spectrum paper, and the Less Developed Countries paper.

E. C. Welsh

Capt. Berg

November 18, 1968

MEMORANDUM FOR

Honorable Eugene Rostow
Under Secretary of State for Political Affairs

Subject: Communications Policy.

I have now examined the paper on the Organization of the United States International Communications Industry. In so doing, I have placed before me the draft of October 29, my recommended changes in that draft as submitted to you on November 4, and the most recent draft of November 8 (which we never received but which Berg of my staff went over a few days ago and had a Xerox copy made).

I can state in brief that I find the most recent draft has almost completely ignored all of my suggested changes and hence is little more satisfactory than its predecessor.

I will give a few examples. On Page 5, which was Page 2 in the initial draft, I suggested omission of the reference to perturbations in the industry which in all truth have arisen primarily from inept and inadequate regulation and not from the structure of the industry's international organization.

I suggested the omission of confusing language which now appears at the bottom of Page 7 and the top of Page 8. I also objected to the language on Page 8 which concludes that a "single entity" would be the best and most efficient organization.

In the paragraph at the top of Page 10 of the most recent draft, I suggested the insertion of a new sentence "The Executive Branch must perform this function." This recommendation was ignored.

I asked that the language in the last sentence on the new Page 10A be eliminated. It was left intact. So was the rest of the paragraph at the top of Page 11 left as it was although I had suggested that it be eliminated.

On Page 12 and the top of Page 13 of the new draft, it is suggested that ComSat's activities are of public and not merely private concern. This seems to be obvious, and applies equally well to the AT&T.

At the bottom of Page 13, reference is made to the fact that having ComSat deal directly with ultimate users such as the Defense Department would have put international record carriers in a precarious economic position. The report hastily adds that FCC has come to the rescue and preserved this inefficient, ineffective, and completely undesirable situation. Also, it might have been pointed out that this was in direct conflict with the Communications Satellite Act of 1962.

I sincerely believe that character would have been added to this report if it had faced up boldly to the inadequacies of regulation rather than attempted to build up a series of arguments to excuse such ineptness.

On Page 16, I had suggested that the incorrect sentence about international communications industries employing different technologies to provide basically the same services be eliminated. This was not done, although it should be obvious that a satellite can give service from Chicago to Bonn which a cable finds it difficult to do.

I have marked up the rest of the most recent draft on this subject, identifying the places where my recommendations were ignored or at least not accepted, indicating the points which are unacceptable to me, and suggesting omissions. In addition, I do not believe that my suggested alternative, for which language was supplied, appears anywhere in this paper. A series of arguments have been presented for a single entity and anyone is entitled to accept them as a relatively one-sided view on a debatable subject. I do not say that my suggestion in favor of a monopoly for domestic and international satellites on the one hand and a monopoly of international cables on the other is an ideal arrangement. I do believe, however, that a balanced report showing the advantages and disadvantages of both would be more useful to the President.

If the additional points which I question in this particular Chapter would like to be examined in detail, Berg of my staff can certainly take them up with Novak at their mutual convenience.

E. C. Walsh

November 22, 1963

MEMORANDUM FOR

Honorable Eugene V. Rostow
Under Secretary of State for Political Affairs

Subject: Communications Task Force Report.

You have made available nine chapters of the report for final examination and comment by the respective members of the Task Force. Prior to making any comments, I want to express appreciation of the difficult job you have had as a vigorous and working Chairman of the group. Moreover, while you have not accepted all of my suggested changes, some of which I consider basic, I do want to thank you for having made such strenuous efforts to accommodate your positions with mine. The fact that such efforts have not always been successful does not detract one bit from the intentions of both of us.

As for the Introduction (Chapter I), I have just a few comments. Since I would prefer that the ComSat Corporation own and operate the pilot system, I do not favor the language on Page 11 which says, "ComSat and other potential investors." I would leave that sentence out. Also, at the bottom of that same page, I would recommend the elimination of "to allow possible participation by carriers, broadcasters, and other users in the ownership of satellite communications ground stations."

On Page 15, since I don't agree with the prospects or the expression of difficulty, I recommend omission of the sentence beginning in the middle of that page "In the near future, it is clear. communications."

On Page 16 of the Introduction, at the top of the page, is a statement of a recommendation. I do not agree with it. I had asked that the following language be inserted, and I repeat that suggestion: "Under these circumstances, we recommend consideration be given to two possible approaches to the international picture: (a) consolidation of existing international transmission facilities into a single entity or (b) merge the international cables

into one company and have the ComSat Corporation furnish the competition as the company handling all communications satellite systems. The latter alternative would lessen the chances of conflict of interest on the part of the ComSat Corporation as manager of the Intelsat and would reflect clearly the fact that satellite communications do not stop at the water's edge as does cable transmission."

Now I turn to the chapter on the Organization of the International Industry (Chapter II). I have gone down through this chapter and note the number of instances where relatively minor proposals of mine were adopted or language which troubled me was omitted. However, several things should be clear by this time and they add up to a conclusion that I could not concur in the International Chapter as it is, and I do not believe that the chapter, at this stage of its development, could be changed sufficiently to meet my views.

I notice that the capacity question continues to be dealt with as if it were an issue against which the carriers should be protected, i.e.: the carriers should be protected through the establishment of a single entity and the users protected through some kind of injection into the regulatory body. It seems to me, however, that a regulatory agency with authority should be able to minimize the amount of wasted expenditure in new facilities. Moreover, certainly any more over-investment in facilities and the resultant increase in capacity should, if there is such a thing as reasonableness in regulation and/or effective competition, result in benefits to the user.

Beginning on Page 18 of the International Chapter, the assertion is made that a single entity for international transmission is the most effective way to deal with the industry's problems. As you know, I do not agree with this. I think most of the problems have to do with ineffectual regulation and inadequate policy determination on the part of the Executive Branch of the Government. In addition, as I have pointed out previously, satellite communications do not stop at the water's edge and it is not reasonable to divide that industry into a domestic and an international phase or company. Hence, I urge that, as a footnote to Part III, Page 18, there be an insertion stating that I do not concur with that Section or the following Sections which contrive to support it. Moreover, such an

insertion should state clearly my views as previously stated in my comments regarding the Introduction Chapter. In other words, such an insertion should state that I do not concur in the over-all monopoly, that I do believe that some competition between technologies will benefit consumers, that I do not think satellite communication stops at the water's edge, and that I do favor a consolidation of international cables into one company and ownership and management of satellite communications, both domestic and international, in the ComSat Corporation. The resultant competition should be healthy and should make it easier for an efficient regulatory agency to get the facts and to keep down the rates.

The major objections I had with the domestic applications of the Communications Satellite Technology chapter (Chapter V) still exist, although again I appreciate those adjustments which were made. Beginning with Page 21 and thereafter throughout much of the chapter is a recommendation that consideration be given to participation in the sense of ownership by carriers and other users in the ground facilities and possibly even in the space segment of domestic satellites. I have no objection to referring to broad use (Page 21), but I do have objection to reference to participation or ownership by carriers or other users in the sense of ownership. Since this theme runs throughout, I doubt that my views can be accommodated. Consequently, I ask that a footnote be placed at the first reference to such a principle stating my objection based on the unfortunate experience already had with the ground stations in the international satellite field.

Also, I recommend that, regardless of my non-concurrence on certain basic elements in this chapter, that the Task Force take a positive position (Page 30) on the incorrectness and adverse effect of the "user decision" by the FCC. It is not enough for the report to just say that this should be looked at again.

I again repeat my recommendation that the portion beginning on Page 32 through the top of Page 35 be omitted, except for the initial sentence plus all except the last five words of the second sentence.

I have commented on three chapters in this memorandum (Introduction, International, and Domestic Satellite). I believe that the remaining six

chapters had in their present form met all of my major objections and even some of my minor suggestions, and hence I register no dissension with their contents. I would repeat what I have said to you before and which I have recorded that I have no basis for judgment as to whether the Broadcasting chapter and the Domestic Industry chapter should or should not be included in the report. I make that comment in this way so that it would not be thought that I am now raising additional objections to their inclusion or have any dissent with their content.

Mr. Chairman, I feel that we have come a long way in getting together in as much of this report as this memorandum indicates. I have, as you can note, objections to just the Introduction, the International chapter, and the Domestic Satellite chapter. In the first instance, I believe changes can be made without registering absolute dissent on my part, but if it is not thought desirable to make such change, then the appropriate footnote should be inserted. I do not believe that the International chapter or the Domestic Satellite chapter can be sufficiently changed at this late date to conform with what I think is best. Hence, I most respectfully propose that my brief language of dissent be recorded in the appropriate places in those two chapters.

Your attitude, your intelligence, and your industry are all to be commended as they were applied to this difficult task. Not as an amendment to the above but as an addition, I want to record my appreciation of the cooperative and thoughtful way in which Al Novak has dealt with me and with Win Berg.

E. C. Welsh

File

December 6, 1968

MEMORANDUM FOR

Honorable Eugene V. Rostow
Under Secretary of State for Political Affairs

Subject: Communications Task Force Report

I have received and examined quickly what you identify as the "final final revision" of the report. Because of your adjustments to some of my previous suggestions and due to the very short deadlines you assign, my comments on this latest revision will be brief.

First I make a suggestion regarding format. Immediately after your transmittal letter you list the names of the members of the President's Task Force. I suggest that the Chairman's name appear first on this list and identified as Chairman and that the second name on the list be that of General O'Connell, as the Vice Chairman.

Now we turn to the Introduction. I would prefer a footnote on page 14 at the bottom of the page which indicates that I do not concur in joint ownership of ground stations but believe it is more efficient based on our previous experience to have the ComSat Corporation be the sole owner of such facilities. Also in the introductory chapter, I suggest there be a footnote on page 20, with the asterisks appearing at the end of the first paragraph, stating that I do not concur with this recommendation regarding a single entity and make reference to the excellent footnote which does appear on page 20 of Chapter II.

In the International Chapter (Chapter II), I would like reference in the form of a footnote made to the footnote on page 20 to appear on page 3 (reference to paragraph 2); on page 13 at the bottom of the page; on page 15 reference the next to the last paragraph; and on page 42 at the end of the paragraph beginning on that page.

As for Chapter V on the Domestic Satellite Industry, I suggest that the second sentence on page 21 be eliminated. Also in Chapter V, I suggest that the footnote on page 28 state that I do not concur in this conclusion as regards the pilot program or a permanent program to follow it. That all can be put in the same footnote.

I have but one suggestion regarding Chapter VI on the Domestic Carrier Industry and that refers to page 40. At the bottom of that page, it is stated that it is outside the competency of the Task Force to express an opinion on whether the AT&T should or should not have a manufacturing affiliate. This is quite inconsistent with the statement on pages 47-48 of Chapter II where the Task Force firmly takes the position that the "single entity" should not engage in manufacturing. If it is considered that the Task Force should not take a position in the one instance, I urge that it avoid the inconsistency in the other.

As you can see from the above, I have reduced my number of suggestions and recommendations. I hope that there is no barrier to following these suggestions in the report, in as much as my major recommendations are suggested for a footnote status.

E. C. Welsh

Material inserted 3/31/75 according
to a letter from E.C. Welch to Joseph
Califa 10/15/69

APPENDIX F

UNITED STATES SPACE AND AERONAUTICS HIGHLIGHTS, 1964-1968

Appendix F - U. S. Space
& Aeronautics High-
lights, 1964-1968

December 31, 1964

MEMORANDUM FOR THE PRESIDENT

Subject: Space Activities for 1964

1. Highlights of space program during 1964. Among 1964's many aerospace accomplishments were: three successful flights of the million and a half pound thrust Saturn I rocket; two launches of Apollo model spacecraft into orbit; an orbital test of a Gemini model spacecraft; significant advances in the Rover nuclear rocket reactor program with five successful tests; the world's first close-up photograph of the moon's surface by Ranger VII; global night-time cloud pictures by Nimbus II; orbiting of the first geophysical observatory; launching of Syncom III into a fixed position over the Pacific and providing space communications links between the Far East and the United States; continued progress in the X-15 experimental flights project; and attaining a major degree of success in improving our national security through the use of orbiting spacecraft.

2. Rocket propulsion has shown real progress. For example: (a) Big liquid engines for the Apollo program, such as the F-1 1.5 million pound and the J-2 200,000 pound thrust engines have qualified for flight with fully powered runs. (b) Solid propellant engines in the 120-inch and 156-inch diameter sizes have met with repeated successes on the test stands. (c) Nuclear rocket engines have succeeded, with multiple long-duration runs, in changing a lagging effort into one which promises a valued resource in the space program. (d) Reliability of boosters in actual launch experience showed an 89% record for the year. This is compared with 27% just six years ago.

3. Launch record. During the year, the U. S. successfully launched 74 spacecraft as compared with 36 by the USSR. The U. S. record showed a success ratio of 90%.

4. Soviet acceleration. Outstanding in the world space picture was the great acceleration of Soviet activity, in increasing numbers of payloads, in their still widening lead in total weight of payloads, and in their launching of a three-man spacecraft.

The Free World successfully launched into earth orbit 17% more payloads in 1964 than in 1963, while the Soviets launched 112% more during the same period.

In 1963, the Soviet total payload number was 30% of the Free World figure, while in 1964 the Soviet total was 51% of the Free World figure.

5. Payload Success Box Score
(December 31)

	USA*			USSR		
	1963	1964	1957-64	1963	1964	1957-64
Earth Orbit	60	70	249	17	36	85
Escape	0	4	10	1	2	8

*The U. S. figures include payloads put up for Canada and the United Kingdom and one Italian launch made from a U. S. launch point with a U. S. launch vehicle.

E. C. Welsh

cc: Senator Humphrey
Mr. Moyers
Mr. Reedy
Mr. Kilduff

December 30, 1965

MEMORANDUM FOR THE PRESIDENT

Subject: U. S. Space Highlights for 1965

1. Manned Space Flight

After an unmanned suborbital flight test with a Gemini spacecraft in January, there followed 5 manned flights of Gemini, all of them highly successful. Highlights of these flights were the extra-vehicular activity ("space walk"), a rendezvous of 2 Gemini vehicles in space, and 2 long duration flights, with the longer being 14 days.

Also, in 1965, further progress was made toward new competence in manned space flight, with the President's announcement of a decision to go ahead with the development, testing, and flight of the Manned Orbiting Laboratory. This vehicle is intended to broaden the scope of man's activities in space, but is not a weapons system, is not a means by which aggressive actions can be perpetrated, and is in no way in conflict with the established peaceful policies of the United States.

2. Scientific Spacecraft

The record for the year shows important progress with a variety of unmanned scientific spacecraft flights. Ranger spacecraft televised to earth some 13,000 photographs which, when added to the pictures taken in 1964, gave us more than 17,000 photographs of the moon's surface. Mariner completed a 325 million mile trip during a 228 day journey to Mars and returned the first close-up pictures of that planet's surface. Three Pegasus satellites, each with 96 feet long panels, were launched during the year and have returned valuable data regarding meteoroid impacts. The second orbiting solar observatory (OSO) was orbited with six experiments operating successfully.

3. International Activities

NASA continued its practice of assisting other nations in their efforts to contribute to space progress. During the year, the Alouette was orbited for Canada and the FR-1 for the French. These were part of a continuing program of international cooperation in space which includes more than 65 countries.

The space program became an even more effective arm of foreign policy when experienced astronauts were sent on educational and goodwill visits to a number of nations around the world.

4. Applications Satellites

The first commercial satellite, Early Bird, was put into synchronous orbit for the Communications Satellite Corporation. Also, effective application of space knowledge was continued with an expansion of our weather satellite system (TIROS), our navigational satellite system, and our nuclear explosion detection satellite system (VELA).

5. Developments in Propulsion and Spacecraft Power

The Saturn I (1-1/2 million pounds of thrust) program was completed with 10 successful launches in 10 attempts. Ground tests progressed for the more powerful Saturn IB and the Saturn V. A major development took place on schedule with the successful launch of the 2.4 million pound thrust Titan IIC rocket. Also, encouraging tests of the NERVA nuclear reactors continued and initial testing was successful for the more advanced Phoebus reactor. Another propulsion milestone was reached with the firing of the world's largest solid propellant rocket motor when 3.5 million pounds of thrust was attained from the 260-inch engine. The first nuclear space reactor (SNAP 10A) was orbited and produced practical evidence of the potential of atomic power as an energy source in space.

6. Aeronautics

The Supersonic Transport project entered the design and wind-tunnel test phase in 1965, and the decision was made to produce a huge new military transport aircraft, the C-5A, able to carry loads of 220,000 pounds over distances of 3200 miles. The F-111 fighter was delivered on schedule, and the F-111 bomber version was approved. The second XB-70 made its first flight, and in subsequent flights flew at Mach 3. Work continued on the counterinsurgency (COIN) aircraft and on the improvement of helicopters.

7. Launch Record

During the year, the U. S. successfully placed into earth orbit 94 spacecraft as compared with 66 by the USSR. This was an increase over last year of 36% for the U. S. and 83% for the USSR. With their seven escape mission attempts the USSR more than doubled the U. S. activity in lunar and planetary exploration for the year. Also, the French put one satellite into orbit.

Within the U. S. national space program the number of payloads put into orbit by the Defense Department continued to exceed those of NASA by a margin of more than two to one.

8.

Payload Success Box Score
(December 30)

	USA			USSR		
	<u>1964</u>	<u>1965</u>	<u>1957-65</u>	<u>1964</u>	<u>1965</u>	<u>1957-65</u>
Earth Orbit	69	94	342	36	66	151
Escape	4	3	13	2	7	15

E. C. Welsh

Thursday, December 30

Time: 4:00 p. m.

December 30, 1966

MEMORANDUM FOR THE PRESIDENT

Subject: U. S. Space Highlights for 1966

1. Manned Space Flight

The U. S. manned space flight program achieved its most significant successes during 1966, including the final five manned Gemini missions and the first three Apollo unmanned missions. Additionally, broad based and proficient development and production activities provided the groundwork for the upcoming Apollo manned flights, pointing toward the Lunar mission planned for the 1968-69 time period. Over a twenty-month period, 10 Gemini two-man missions were successfully carried out, in which 1940 man-hours of flight experience were gained. Also of significance were the 12 hours of space exposure and activity outside the spacecraft. The five missions during 1966 demonstrated that rendezvous and docking by separately launched spacecraft can be accomplished with ease, that man can perform useful work in space -- both inside and outside his spacecraft. A new manned altitude record of 851 miles was set, and it was demonstrated that two spacecraft could be tethered together in a station-keeping arrangement. The unmanned Apollo flights tested the operation of the three-man lunar spacecraft and the efficacy of its heat shield under reentry conditions. Progress was also made in the development of the Defense Department's Manned Orbiting Laboratory.

2. Scientific Spacecraft

Important progress was made with a variety of unmanned scientific spacecraft. Surveyor I landed gently on the moon and then returned over 11,000 pictures of its surroundings. Lunar Orbiters I and II obtained hundreds of useful pictures of potential landing areas for the Apollo Lunar Excursion Module. Pioneer 7 made a successful flight to measure radiation and particles in the interplanetary medium between the orbit of earth and an orbit 12 million miles further out. The nation's first Biosatellite was launched on a three-day flight to investigate the effects of weightlessness, radiation and other stresses of the space environment on various forms of life, and an Orbiting Geophysical Laboratory was launched into earth orbit.

3. International Activities

Stimulated by the initiative of the President of the United States, the United Nations reached agreement on a "Treaty on Principles Governing the Activities of States in the Exploration and the Use of Outer Space, including the Moon and Other Celestial Bodies." The treaty forbids the placing of weapons of mass destruction in outer space or on celestial bodies, and bars claims of sovereignty and national appropriation. The U. S. continued the practice of assistance to other nations in their efforts to contribute to space progress. Through the end of the year 71 countries had participated cooperatively with the United States in space research. This included the launch of six satellites for four countries, and nine other satellites under agreement for future launch. Also, nineteen countries had entered into agreements for cooperative sounding rocket programs, and 31 countries had automatic picture transmission (APT) facilities to obtain cloud cover pictures directly from satellites overhead.

4. Applications Satellites

More communications satellites were orbited in conjunction with the Communications Satellite Corporation and the international consortium INTELSAT, joining together more distant parts of the world for live transmission of television and other forms of communication. Four new weather satellites joined the U. S. weather satellite system, which warns the world of impending weather dangers. A Pageos satellite was orbited to give mapmakers more precise measurements of distances. The U. S. nuclear explosion detection satellite system (VELA) was expanded.

5. Developments in Propulsion and Spacecraft Power

The United States made significant progress in its program to develop large boosters. Development flights of the Titan IIIC were continued with the use for the first time of new and improved upper stages. The advanced Saturn I was used with complete success, and the giant 7,500,000 pound thrust Saturn V is being readied for its first test early next year. The Atlas-Centaur test program was successfully completed, and tests of the nation's first nuclear-rocket "breadboard" engine (one which contains flight-type components but in a non-flight arrangement) demonstrated high performance and stability over a wide range of operating conditions. A single ion engine was endurance tested for over 3,000 hours, leading to the decision to prepare a second flight.

in the Space Electric Rocket Test (SERT) program. The nation continued to improve its spacecraft power sources, and more durable and powerful batteries, solar cells, and fuel cells were developed. Preparations were made for the Phoebus 1-B nuclear power reactor tests, and a space thermoelectric generator fueled with curium 242 was successfully tested for 90 days under simulated lunar conditions.

6. Aeronautics

Research and development of improved V/STOL aircraft, helicopters, and large commercial transports continued. Of major importance was the completion of the principal studies and decisions needed to develop the United States commercial supersonic transport by the early 1970's.

7. Launch Record

The U.S. successfully placed into earth orbit 95 spacecraft as compared with 46 by the USSR. These current totals compared with 94 last year for the U.S. and 66 for the USSR -- a slight statistical increase for us and a substantial statistical decrease for the Soviets. However, the USSR did put more weight into orbit. In addition, each country had five successful escape missions for lunar and planetary exploration during the year.

Of the total of 100 spacecraft successfully launched into space during 1966, 70 were Defense payloads and 30 were NASA payloads.

Payload Success Box Score (December 30)

	USA			USSR		
	<u>1965</u>	<u>1966</u>	<u>1957-66</u>	<u>1965</u>	<u>1966</u>	<u>1957-66</u>
Earth Orbit	94	95	437	66	46	197
Escape	<u>3</u>	<u>5</u>	<u>18</u>	<u>7</u>	<u>5</u>	<u>20</u>
Totals	97	100	455	73	51	217

Friday, December 30
Time: 2:15 P.M.

E. C. Welsh

December 29, 1967

MEMORANDUM FOR THE PRESIDENT

Subject: U. S. Space and Aeronautics Highlights for 1967

1. Manned Space Activity

No U. S. manned flights took place during the year, although developmental progress occurred in both the Apollo and MOL programs. Tragedy, during a ground test of an Apollo capsule, occurred early in the year and a major success of the Saturn V-Apollo gave encouragement toward the year's end.

In its first flight test, the Saturn V, the world's largest operational rocket with 7,500,000 pounds of thrust put a world record weight of 280,000 pounds into orbit. This is preparatory to the manned trip to the Moon expected in late 1969.

The Apollo accident stimulated improvements in the spacecraft, in safety procedures, and in organization.

2. Lunar and Planetary Exploration

This was an active and productive year of unmanned lunar exploration. Mechanical properties of the lunar soil were measured, and chemical analyses of the soil were performed at two sites. A photographic survey of both the near and far side of the Moon was made and possible Apollo landing sites selected.

2.600

On October 19, Mariner V flew within 2,410 miles of Venus and measured atmospheric composition, density and temperature, as well as the planet's magnetic field and ionosphere.

3. International Activities

Culminating an effort initiated by the President of the United States, the U. N. Outer Space Treaty entered into force. The treaty forbids the placing of weapons of mass destruction in outer space or on celestial bodies and bars claims of sovereignty and national appropriation. Subsequently, an agreement providing for rescue and return of astronauts in

distress, and return of objects launched into outer space, was devised under United Nations auspices and unanimously approved by the General Assembly.

Outstanding examples of U. S. space assistance to other nations were: (a) the successful launching aboard a Scout vehicle of Italy's San Marco II satellite, the first spacecraft to be orbited from a platform at sea; and (b) Australia's entry into the "Space Club" when it orbited its first satellite, a scientific payload, using a modified U. S. Redstone booster.

4. Applications Satellites

a. Communications. The impact of satellites on communications intensified in 1967. Three Intelsat II series satellites, one over the Atlantic and two over the Pacific, were launched. Satellites were used on June 25 to tie together 26 nations for a two-hour live TV program including contributions from 14 countries. In July, the Department of Defense declared operational the trans-Pacific link to Vietnam provided by the Initial Defense Communication Satellite Project (IDCSP).

b. Weather. Three ESSA satellites were launched to augment our daily cloud-cover photography, and the total of Automatic Picture Transmission (APT) receivers in the U. S. and abroad grew to more than 300. The ATS-3 transmitted impressive cloud-cover color photographs of the Earth.

c. Navigation. The Transit navigation satellite system, which has played a significant defense role since 1961, was made available to non-military users on July 29. Commercial production of shipboard receivers is being encouraged, and the system offers benefits to fisheries, petroleum companies, oceanographers, and many others.

5. Aeronautics

During the year the Supersonic Transport program proceeded into the construction phase. Two prototype aircraft are scheduled for test flights commencing in 1970. The giant C5A transport is expected to make its first flight test next June. The X-15 rocket aircraft set a new speed record of 4,534 miles an hour, and continues to investigate hypersonic flight. The F-111 became operational in October.

5. Propulsion and Spacecraft Power

The 260-inch-diameter solid rocket motor, largest single motor ever tested, was successfully static fired, generating 5.4 million pounds of thrust.

A nuclear rocket reactor was tested for 60 minutes, generating about 1,500 megawatts of power.

6. Launch Record

The U. S. during the year successfully placed into Earth orbit or escape missions ~~88~~¹⁵ spacecraft, as compared with 100 for last year. This represents a drop of ~~12~~ percent.

Space Payloads Successfully Launched (December 29, 1967)

	U. S.			USSR		
	<u>1966</u>	<u>1967</u>	<u>1957-67</u>	<u>1966</u>	<u>1967</u>	<u>1957-67</u>
Earth Orbit	95	77 73	514 515	46	66	263
Escape	5	10	23	5	1	21

E. C. Welsh

Friday, December 29

Time: 11:45 a.m.



EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON 20502

EXECUTIVE SECRETARY

December 27, 1968
12:15 P. M.

MEMORANDUM FOR THE PRESIDENT

Subject: U.S. Space and Aeronautics Highlights for 1968

1. Manned Space Activity.

Nineteen-sixty-eight was an outstanding year for manned flight as the United States made its greatest stride toward the national goal of landing men on the Moon in this decade. A new dimension in manned space exploration was achieved. Astronauts Borman, Lovell, and Anders flew the Apollo 8 spacecraft in 10 orbits of the Moon and returned safely to Earth. The outstanding success of this mission attracted world acclaim and greatly enhanced the prestige of the United States as the leading space-faring nation. The capability of the astronauts and the integrity of their space equipment justified our highest hopes.

This flight was preceded by the very successful 11-day orbit of the Earth in Apollo 7 -- the first manned flight test of the Apollo spacecraft.

2. Unmanned Lunar Activity. The seventh and last Surveyor landed on the Moon at its planned site near Tycho Crater on January 9, 1968. It tested surface bearing strength and returned more than 20,000 photographs.

3. International Activities.

For the second consecutive year, a major international space accord involving initiative of the President went into effect. On December 3, the President announced the entry into force of an agreement providing for the rescue and return of astronauts and the return of space objects. More than 75 nations are signatories to this agreement. The United States also participated in a conference on the exploration and peaceful uses of outer space, sponsored by the United Nations and held in Vienna. All told, 21 countries took part in cooperative mutually-funded space activities with the United States in 1968. In addition, scientists from eight countries were engaged in cooperative sounding rocket programs, and 52 countries had facilities to receive cloud cover pictures directly from U.S. weather satellites.

The U.S. successfully launched three scientific satellites for ESRO to measure cosmic radiation, solar winds, and polar ionospheric activity.

4. Applications Satellites. Although the most dramatic aspects of space activity were focused on the field of manned flight, there was also solid progress in

benefiting mankind through improvement in communications, weather prediction, navigation, and scientific investigations. Applications Technology Satellites demonstrated significant new devices and techniques.

a. Communications. A new series of communications spacecraft was initiated for the Communications Satellite Corporation, adding to the service provided for the international consortium -- INTELSAT. ComSat spacecraft furnished live TV coverage of the Mexico City Olympics as well as the November elections. Also, eight communications satellites were successfully orbited and put into operation by the Defense Department.

The Communications Policy Task Force, appointed by the President to make recommendations for improving the communications situation, furnished him with a detailed report containing many recommendations.

b. Weather. ESSA 7 and 8 satellites were launched to maintain the operational weather satellite system established in 1966. Applications Technology Satellites were used to take color motion pictures from synchronous orbit, allowing continuous viewing of the cloud cover and storm development process. This capability promises significant advancement in our understanding of the behavior of the weather system. Dissemination of satellite weather photographs was greatly expanded during the year both within the United States and abroad.

c. Navigation. The satellite navigational system, made available for civilian use in 1967, continued to serve the operational needs of the military services. Fisheries, petroleum companies, oceanographers and commercial vessels are increasing their use of the system.

5. Space Science. A major step in science occurred when the Orbiting Astronomical Observatory was successfully put into space by NASA. It carried 11 telescopes and returned pictures of stars that were previously impossible to study by optical means.

6. MOL. Military space activity continued to progress with the Manned Orbiting Laboratory nearing a peak of activity as construction of its launch complex approached completion. The MOL, designed to enhance the Nation's security, has no mission as a weapons system.

7. Aeronautics. Highlights of the year's aeronautics activity include the first test flights of the world's largest cargo aircraft (C-5A), the roll-out of the 500-passenger 747 commercial jet, and the redesign of the supersonic transport SST from a variable-sweep to a fixed-wing configuration.

8. Propulsion and Spacecraft Power. Nuclear rocket and space power programs progressed with the successful test firing of two types of nuclear reactors and

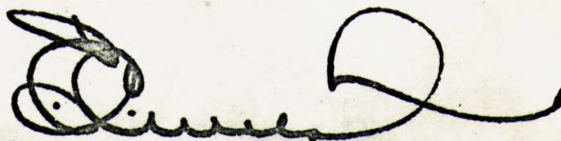
a cold-flow test engine approaching a flight configuration. The Phoebus nuclear rocket test of June 8 at a 5,000-megawatt power level, tripled that of any previously tested reactor. As for chemical propulsion, the huge Saturn V vehicle was man rated.

9. Launch Record. Sixty-four U.S. space payloads were launched successfully in 1968. This was 74% of the total for 1967. The USSR total was 73 as compared with 67 for last year.

Space Payloads Successfully Launched
(December 27, 1968)

	<u>U. S.</u>			<u>USSR</u>		
	<u>1967</u>	<u>1968</u>	<u>1957-68</u>	<u>1967</u>	<u>1968</u>	<u>1957-68</u>
Earth Orbit	77	61	575	66	70	333
Escape	<u>10</u>	<u>3</u>	<u>31</u>	<u>1</u>	<u>3</u>	<u>24</u>
	87	64	606	67	73	357*

*If the Soviet orbiting platforms from which spacecraft were launched are not counted, the total would be 334 instead of the 357 indicated and more comparable to the tabulation of the U.S. number.



E. C. Welsh