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(FOR RELEASE THURSDAY, NOVEMBER 4, 1965, 1 P.M., EST.)

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS LUNCHEON

WASHINGTON, D. C.

Dr. Charles S. Sheldon II

ROLE OF THE PRESIDENT'S SPACE COUNCIL

INTRODUCTION

Mr. Chairman, honored guests, distinguished ladies and gentlemen: For a speaker on matters related to space, this is one of the most demanding and accurately informed audiences in the country. Brought together in this gathering are men long experienced in the intricacies of Government, those who have carried responsibilities for space hardware in the aerospace industry and our laboratories, some of the best informed reporters of the country, and other professional and amateur students of national and world affairs.

With my immediate leader, Dr. Edward C. Welsh, several states away on official business, and hence not wholly able to control today's events, it is my rewarding task to give an assessment of the National Aeronautics and Space Council, which the AIAA has been kind enough to spotlight by this meeting. I am going to try to give you some insights into how we who are close to it view the Council, its organization, its work, and finally, to discuss a practical example of our efforts in support of the making of national policy.

COUNCIL SIZE

The Space Council, as we tend to label it in brief, is really two closely related organizations. On the one hand, it is a group of five men at the highest level of Government whose private deliberations on space and aeronautics are strictly to serve the President at his request. On the other hand, it is also a small, full-time staff with an authorized level of 28 persons (about nine top professionals and their supporting staff) having the status of an independent agency within the Executive Office of the President. The staff both services the formal Council, and also has been assigned a variety of other tasks by the President and the Vice President. In a real sense, it is an operating and advising agency or organization, headed by an Executive Secretary, who in turn has a very high level Board of Directors in the form of the Council members.

LEGISLATIVE HISTORY

The Space Act

Back in 1958, a wholly bipartisan team in Congress working with President Eisenhower's Administration created the National Aeronautics and Space Act. Under that Act, a single national space program dedicated to peaceful ends was launched. Although room was made for many agencies to share in this work, two agencies were given primary, separate, but related responsibilities. A new civilian organization replacing the old NACA became NASA, the National Aeronautics and Space Administration with a big part of the job to do. Another big part of the job was given to the existing Department of Defense.

Recognizing that there might be difficulties of interpretation of the intent of the Act as to division of responsibility, and a continuing coordination task, this same law created another new and separate entity more recently placed in the Executive Office of the President by amendment to the Act, namely, the National Aeronautics and Space Council. Its title describes its all-encompassing function for aerospace, but frequently there is public confusion that it is part of NASA or is concerned only with oversight of NASA activities. Of course this is not true, for it is equally concerned with Defense or any other agency with aerospace development responsibilities.

Membership of the Council

The Space Council as a formal entity is exclusively advisory in character, working privately for the President on any space and aviation matters he chooses to assign to it. The only "Space Czar" in the United States, in the sense of the agitation in the late 1950's, is the President. But as advisory groups go, we could not do much better in Council membership, for the law assigns five of the most able and powerful men in the Administration. The Chairman is the Vice President of the United States. The other four members are the Secretary of State, the Secretary of Defense, the Administrator of NASA, and the Chairman of the Atomic Energy Commission.

Change in Council Chairman

The Space Act, originally drafted by President Eisenhower's Office, after refinement in the Congress is also referred to as the McCormack-Johnson Act. Today's President and Speaker of the House gave inspired leadership to make the space age a working reality for America. It was almost unheard of for the Majority Leaders of the two Houses of Congress to head personally the hearings, studies and legislative drafting involved. In the case of the blue-ribbon House

Committee, the Minority Leader was also a member, and the corresponding Senate Committee also had distinguished minority party members. Then-Senator Johnson took the initiative for addition to the draft bill of the provision creating the Space Council with the President as its Chairman. This was the situation from 1958 to 1961.

It was in recognition of Johnson's interest in and promotion of aerospace progress that when Mr. Kennedy became President he requested that the law be amended to make the new Vice President, Mr. Johnson, Chairman of the Council. Today, President Johnson, in turn, has given strong support to Vice President Humphrey to play a firm and positive role as Chairman.

Addition of a Council Staff

While the 1958 legislation was under consideration, I was privileged to serve on the staff of the House Select Committee chaired by then-Majority Leader McCormack. The first specific proposal for a Space Council was hand carried to us by a prominent member of President Eisenhower's staff. It was my good fortune to be the one to urge that the Council needed a full-time staff, and I drafted for the consideration of the House Committee the provision for an Executive Secretary who is himself of sub-cabinet rank, confirmed in his post with the advice and consent of the Senate, which gives him the official designator of Honorable in front of his name. Except for part-time, acting people, this post was not filled by Presidential nomination until the Kennedy-Johnson Administration when Dr. Ed Welsh was formally commissioned. He has been there since early 1961, proving by deed the Honorable in front of his name. This provision which I drafted also authorized a small supporting staff including a very few top-level positions outside Civil Service. I little realized by a quirk of fate which only the cynics will doubt that some years later, I would occupy one of these.

Formal Council Duties

The Space Act sets forth the general categories of duties for which the President is most likely to call upon the Council to advise him as Chief Executive: Namely, (1) To survey all aeronautical and space activities including policies, plans, and accomplishments both within and outside the Government, and including also foreign activities; (2) To develop a comprehensive program of such activities to be conducted by departments and agencies of the United States; (3) To assign responsibilities under the Act to NASA, the Department of Defense, and other appropriate agencies; (4) To provide for effective cooperation among agencies in this regard, and finally, (5) To resolve differences arising among departments and agencies with respect to activities under this law.

THE COUNCIL AT WORK

Formal Meetings

The Council meets when the President directs it to consider a problem. It may also meet on the call of its Chairman on his own initiative. Sometimes the purpose is to consider whether to ratify an action taken by the professional staff under the Executive Secretary. Sometimes it is concerned with the discussion of a major issue, or it meets to exchange information at this very high level. Quite properly, the members joined together as a Council rarely concern themselves with the day-to-day intricacies of particular programs. But when they do meet to resolve some issue of policy, they act decisively, and any of you having first hand experience with the dynamic personalities of Lyndon B. Johnson, Hubert H. Humphrey, and the other four high level Council members will understand the aura of power and authority which permeates the meeting room. I have had the same feelings when I walk through a huge power plant or a high voltage transformer station.

Other Mechanisms for Coordination

All the other days of the year when the Council is not in formal session, the Council staff is still on the job. The Council members meanwhile have their own agencies to administer; they carry some problems related to their agency alone direct to the President; and where only two agencies have more detailed arrangements to be made with each other, they have other ways of accomplishing this, such as the Aeronautics and Astronautics Coordinating Board between Defense and NASA, which we also monitor. It is not at all uncommon to conserve the time of the Council members for the Vice President to direct, or for the Executive Secretary to initiate, ad hoc meetings chaired by the Executive Secretary, and with representatives from the agencies involved. This may either prepare the way to a formal Council meeting, or solve a problem without resort to the formal Council. One of the objectives of the staff is to achieve the latter.

Dr. Welsh has on his staff seven men called aerospace assistants. The time is not remote when we, including secretarial and clerical staff, represented the smallest independent agency in the Federal Register. We have chosen not to grow much larger in numbers since that time. This gives all of us a sense of personal participation in most of the Council's activities. I look back on these last four years with the Council as some of the most rewarding of my life, matched only by the privilege of serving the legislators of Capitol Hill for whom I hold such high respect and affection.

Staff Purposes

You might wonder what our small nucleus does throughout the year. Because we are spread thin over an enormous variety of programs, our professionals must be generalists as well as having specific areas for which each has individual responsibilities. We are in daily contact with offices many places in Government, keeping in touch with what is going on, talking with people, reading their reports, and sometimes traveling to see first hand. We try to keep sufficiently informed to be able to respond intelligently to any request for information directed our way by the President or by our Chairman, the Vice President. We are also prepared to alert these busy men to those matters of which they would want to know at their high level, and which might not come to their attention through other channels.

We have learned that if our information is to be good, we need the help and the confidence of the whole aerospace community in industry, the universities, the Government agencies and their field centers. This means that we must be both highly circumspect in the use of confidences which come our way, and able to gauge accurately when to pass information through direct channels if there are overriding reasons for it to reach key places very fast. We try to be the middle link to many interests who should work together, but do not seem otherwise to know how to do so.

Briefings

I suppose during the course of a year, more than fifty different aerospace or other related companies an average of two or three times each take advantage of our relatively open door policy to get a sympathetic hearing on their advanced planning ideas and formal proposals to Government. This educates us, and in turn we can often give them a quick reading as to the reception they are likely to get with a particular briefing format, or where they should go with their ideas.

Agency Contacts

With the encouragement of agency heads, we enjoy close and cordial relations with many program managers and intermediate level engineers and scientists of NASA, DOD, AEC, and other Federal agencies. I think most of our contacts realise that as individuals we favor an active, progressive space program. We work especially to serve as a bridge between the more highly technical communities and those concerned with broader aspects of aerospace policy in the Department of State, the U. S. Information Agency, and Congressional Committees. Whenever we have briefings in our offices and it would be both appropriate and of interest, we include staff members from the Congressional Committees, the Bureau of the Budget, the Office of Science and Technology, State, USIA, the Weather Bureau, NASA, or Defense, etc.

Public Affairs

Another activity of the staff reaches beyond just the technical community. Dr. Welsh in particular has become a spokesman for views on aerospace policy which his careful studies and staff support show accord both with Presidential policy and with our obvious national interests. He has built a reputation for courageous stands on important issues where others may agree with him, but are less prepared to say so in public. He has interpreted policy and outlined the benefits which flow from the aerospace work we are undertaking. He has led the way with recommendations on new programs the country should do in space. It is not uncommon when there has been some internationally important space event to see Dr. Welsh on television or hear him on the radio networks and Voice of America giving incisive interpretations and putting these events in appropriate long term context. Some of the rest of his staff also speak in public to appropriate audiences.

Reports

The Council staff makes certain regular and frequent written reports to the President and Vice President, usually under the normal protection of executive privilege, so as not to commit these top officials as to how the information would best be used. There may also be verbal reports to these leaders as required. Our major public written effort is to support the President with his Annual Report on Aeroanautical and Space Activities to the Congress. Often this report is followed by some of us appearing in executive session before the appropriate Congressional Committees.

I realise that members of the press are concerned with both over-use of executive privilege, and closed meetings on the Hill. But I do not see any very good way to avoid this for a staff so closely associated with the President and Vice President. However, the effect of this restriction is moderated by the continuing efforts which the Executive Secretary has made to explain policy and events in many public media. The whole staff shares a strong feeling that space business is public business, and within the rules will do its best to live by this belief.

Along with our other activities, we seem to have become a point in Government looked to by others for certain comprehensive statistics on space flight, as few others are in as good a position to combine data from as many agencies and sources.

Accomplishments

Only in a longer view of history, when archives can be opened to scholars, will it be possible to assess accurately all the specific accomplishments of the Council and its staff. Even so, each year, the President in his report has listed a number of Council activities. As individuals, depending upon our participation in staff support, we remember many of these activities very vividly. I am sure Dr. Welsh well recalls his share in President Kennedy's 1961 move first to step up large launch vehicle development and then how Dr. Welsh working with Vice President Johnson took a strong initiative which led to President Kennedy's recommending the tremendous jump in space work of which Project Apollo to land on the Moon was its capstone.

Another 1961 task was the drafting of the President's guidelines and policy on communications satellites. Following the President's issuance of that document, the Council staff was assigned by the President the role of leadership and coordination in preparations for implementing that policy. This resulted in the drafting of the Administration bill on communications satellites and the ComSat Corporation. As our work finally brought Presidential transmission of the bill to Congress, I remember keenly in Dr. Welsh's absence that now-Attorney General Katzenbach and I served as the anonymous spokesmen at the White House to brief the press on the purposes and implications of that intended legislation.

The Council or its staff were pivotal in obtaining policy approval to send SNAP nuclear power devices to orbit, and also got West Ford, the communications dipole belt, approved. The staff has spent considerable time working on the formulation of the major policy goals of the national space program, and though no specific document has been made public, its study products have become frequent ingredients in high level policy statements. There have been other tasks, such as recommending and obtaining DX priority for both Apollo and Centaur.

The President requested the Chairman of the Council to make the necessary studies and hold the essential meetings to prepare a recommendation on the SST (supersonic transport). This was done, and the President followed the recommendation to go forward on this important aeronautical project, later leading to assignment by the President of further planning to a committee chaired by the Secretary of Defense, and to the heavy funding which is being used to define the program.

The Council staff started interagency meetings on a nationally coordinated consideration of space stations many months before the MOL manned orbiting laboratory came into being as a related development. President Johnson noted in his August 1965 release on MOL that he had received the recommendations of the Council before announcing his decision to proceed.

The staff has also had a share in continuing reviews of communications satellite policy implementation, working closely with Director of Telecommunications Management O'Connell and the State Department. It has shared in preparations for international bilateral and United Nations negotiations on space. It has played a role in coordination of geodetic satellite programs, and in winning approval for use of Syncom to transmit the Japanese World Olympics across the Pacific.

The staff has also produced a series of studies related to high energy chemical and nuclear probes, alternatives for lunar logistics, alternatives for space stations, the use of air augmentation in rockets, and studies of U. S. -Soviet space comparisons.

Limitations

I am not a disinterested reporter on the work of the Council, so that perhaps I find it harder to report on our shortcomings. The Council is available as often as the President wants to call upon it. Each of our Vice Presidents who has chaired the Council is fortunately a man of great ability, broad background, persuasive of others, and truly interested in aerospace progress. Senator Lyndon Johnson had already built a reputation for knowledge and leadership in the space area before becoming Vice President, and it was natural for President Kennedy to give him special powers of initiative in running the Council. President Johnson remembering his own experiences, and fully aware of Hubert Humphrey's great talent, has given a similar charter to the new Vice President to be an active Chairman; and this Mr. Humphrey has been, showing a quick grasp of essentials, and an ability to put space matters into a sound perspective. We are delighted as a staff to serve him, and appreciate the direct, friendly, and personal discussions he holds with us.

If we as a staff were to change anything, and were permitted to dream, we would probably like to have the Vice Presidents who have led the Council give their exclusive attention to space matters. But this is not really needed and the Constitution and our Presidents decree otherwise. The President's duties are so arduous, that modern Vice Presidents have been assigned many chores, in addition to presiding over the Senate.

Looking to the staff side of the Council, we have some problems, too. We are torn between the necessity to keep our numbers small if we are to be the kind of organization intended, and the recognition that there is so little time to do all the work we wish we could do. Though we are well-placed in the Government, we face the same problems every agency has: Some of our ideas are accepted by the rest of Government, others are not. Because the Government is very large, it takes longer to do things than we would like. We are not unique in finding that even though we are in the coordinating and information business as well as being

advisory, it is a constant struggle to keep all the pertinent offices aware of total national needs, dangers of duplication, areas of neglect, in agreement on priorities, and so forth. Management studies show this kind of struggle is universal in human organization whether in Government or in business.

THE COUNCIL AS PART OF THE EXECUTIVE OFFICE

Coordination

It might be useful to describe how as a part of the Executive Office we are only one internal element which serves the President on aerospace matters. Of necessity there are related actions taken by the Bureau of the Budget and the Office of Science and Technology. Other partially related matters are within the purview of the National Security Council and the Director of Telecommunications Management. These related interests naturally raise the question as to the differences of function in aerospace affairs among these agencies, and whether there is overlapping.

It should be noted that in my remarks to follow, I am discussing the permanent institutions attached to the Presidency, largely under Civil Service, the White House Office, per se, is a personal staff serving at the pleasure of the President, organized as he sees fit. He has his own distinguished high level assistants who reflect his views and extend his actions.

The members of the Space Council including its Chairman, the Vice President, report directly to the President, and are accountable to no one else. As a staff we both support the Council, and also function as an integral part of the total Executive Office. Within the Executive Office, each of the several staffs is relatively small compared with the task of adequately supporting the President, so there is enough for everyone to do. Information is shared, and certain draft papers may be circulated from one staff to another for review and concurrence if appropriate.

Parallels with Congressional Committees

I can best describe how these staffs differ in function by drawing a parallel with the committee structure on Capitol Hill. The Council staff corresponds in general to a Congressional Space Committee. The House or Senate Space Committee and staff work full time on their subject field and know more about aerospace in detail than anyone else on Capitol Hill. Such a committee uses its knowledge to judge which space programs make the most sense, and to establish the order of priority for their accomplishment if hard choices must be made among otherwise worthy projects.

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In similar fashion, the Space Council staff includes experienced engineers, military research specialist officers, and other appropriate analysts; and as equivalent of Hill hearings, it has tapped the aerospace community for information through briefings, travel and reports. The Council staff recommends on the basis of a highly informed judgment the kind of aerospace program which it sincerely believes the country needs, without immediately trying to compromise its position in advance because of guessed-at fiscal limitations, political winds, or public moods. These judgments even so cut across many disciplines besides science and engineering. This need to view things broadly was recognized also by the framers of the Space Act when they deliberately included the Department of State and the Atomic Energy Commission within the structure of the Council.

Although it would be our last wish to second guess the President in his conduct of Congressional relations, we do take a special interest in being a bridge of communication and understanding between the Executive Branch and Congress in our own area of expertise. Undoubtedly because some of us have had past service on the Hill, we have a sympathetic understanding of the vital role of Congress. This is not always true of many technical people elsewhere in the Executive Branch who do a first rate job in their own areas, but have never had experience in working with Congress.

The judgments from the Council staff do not supply all the information the President needs for his final decisions, and likewise in Congress the authorizing Space Committees have not finished the Congressional task when they make their reports on space projects which deserve support. Inevitably the Appropriations Committees of the Congress must fit these recommendations within the larger framework of competing needs for the total structure of Government. Thus a similar process occurs within the Executive Office.

Office of Science and Technology

Parallel to us is the Office of Science and Technology. So far as aeronautics and astronautics are concerned it has a more narrow outlook than we do, since its major concern is science and technology, and not the totality of aerospace policy. Using as a major tool the President's Scientific Advisory Committee, called PSAC, it is concerned with science as a whole, which, by contrast, is a wider view than we share. For example, it must not neglect oceanography, cures for water pollution, biological research, and a host of other needs. We enjoy close relations with that staff, but differences of orientation and mission inevitably mean that occasionally they do not share to the same degree our enthusiasms for aerospace work.

The closest Congressional equivalent in jurisdictional interest to the Office of Science and Technology is the House Committee of Science and Astronautics when it is wearing its science hat, and it has its PSAC equivalents in its Panel on Science and Technology and in the Science Policy Research Division of the Legislative Reference Service, Library of Congress.

Bureau of the Budget

Also in parallel to the Space Council is the Bureau of the Budget, and they have the vital job of reconciling in hard dollar and cents terms the totality of all fiscal demands of Government. The Bureau has a job somewhat similar to that of the Appropriations Committees. They must look beyond space and beyond science to all other elements of the President's program. And these include the normal operations of Government, capital expenditures for public works, national defense, education, the poverty program, foreign aid, the obligatory costs to service the public debt, and other automatic costs which are associated with laws passed by Congress.

Often the Bureau of the Budget becomes the whipping boy in the eyes of the rest of Government because favorite projects are not given as much financial support as hoped. Really the Bureau is just doing its job and thereby implementing the policies of the President. Our staff has high confidence in the technical staff of the Bureau and we take pride in our association with these men. They often come to our briefings, may travel with us to inspect facilities, and listen to us at budget reviews just as they listen to the views of the Office of Science and Technology. This does not mean that we are happy with every ultimate decision which comes out in the big budget book sent to Congress, for we have a special dedication to particular branches of technical progress. But we do have a profound sympathy for those who must conduct the complex process of putting together a total national budget.

Similar hard choices among projects have to be faced in every office of NASA, the Air Force, and other places space work is pursued. There never can be support for all the things engineers and scientists would like to see done. I just hope we can continue to convince non-technical generalist administrators that we should do even more in these fields than we have up to now.

Council of Economic Advisors

Just as Congress looks to the Joint Economic Committee for guidance on the total economy, so the Bureau of the Budget consults with the Council of Economic Advisors within the Executive Office, for those men see Government expenditures and receipts as but a part of the still larger total economic machine of the Nation.

National Security Council

All of us likewise look to the National Security Council staff for additional inputs, for they see space as but one of many elements with consequences for our military defense, foreign relations, and general security posture.

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Executive Office Effectiveness

No large agency such as NASA or Defense is monolithic in its views or in the particular interests of its subdivisions. Yet they do work toward common goals in support of national policy, and respond to their political leadership. I am sure the same can be said of the Executive Office. We are all human with pet interests. We rub together roughly at some points, and we mesh in frictionless style at other points. But the end result is to distill the best possible advice, in spite of human frailties, which we can provide to develop full support for the President in his carrying the enormous burdens present in this age of awesome power and danger. One thing I have never questioned is the patriotism, the dedication, and the sacrifice which officials of these organizations put into making the United States prevail as a power for peace and for progress.

State Department

And while I am defending the accomplishments of other parts of the Executive Office, I would like to disabuse you of related ideas I have heard in some quarters that somehow the shortcomings, if any, we have in military space efforts, are the fault of the State Department. In our years of dealing with State on aerospace matters, I never found anything but the strongest support for the total U. S. space program, including a well-developed awareness of military needs. State has been no bottleneck to space decision-making or progress. From the Secretary on down a stronger and more imaginative space program has been urged.

COUNCIL STAFF INFLUENCE

Making Recommendations

I have described the functioning of the Council and the relation of our staff to the rest of the Executive Office. Let me describe more specifically how we function. Since our staff has no legal power to order agencies represented on the Council to follow our suggestions on programs, our influence in this regard must be indirect and informal. We do have, however, the power of persuasion and recommendation. We find on appropriate occasions that our views prevail with our very able, mentally quick, dynamic, and dedicated Chairman, the Vice President of the United States. He can carry recommendations to the President, and can reason in private with a cabinet level secretary or agency head. Other times, just by our asking questions at the right place, we may encourage agency personnel to see aspects of their own situations which lead them naturally to doing things earlier which might otherwise only come later. Often there is an institutional lag in any organization even when changes are clearly in the interest of both the office in question and the Nation.

Standard of Impartiality

I will not pretend our staff is more highly motivated or more pure than other people in the aerospace business, although we do try to set a standard. But it is true that we have no recognizable prejudice to favor one agency or company working in aerospace over another, and we have no project empire to build for ourselves at someone else's expense. If our recommendations on occasion are unwise in the eyes of some operating agency people, and I suppose they could be sometimes, then we want to be instructed in an awareness of their practical problems before we go off half-cocked. I would mention parenthetically that we do not have anything to do with the awarding of contracts to one company in preference to another.

All of the staff aerospace assistants work under the authority and guidelines of the executive head of our agency, Dr. Welsh. We do not try to put him on the spot deliberately by our maneuvers, but each of us has a very individual style in doing his job.

Method of Persuasion

In the work of persuasion, a few may find it best to plant philosophical ideas on space in discussion sessions with engineers and administrators after dinner at night or at any other opportunity. Some may work on the technical committees of organizations like the AIAA which is gathered here today. A few relish the rough and tumble of interagency committees. Others are persuasive by memorandum or oral discussion with first our Executive Secretary and then our Chairman, as described earlier.

Again, we shall have to leave to history a judgment of when we may have helped lead the way in policy reform, and when we merely rode the tide, either in the right direction, or were just plain wrong in our timing, and inexorably were carried in the opposite direction by more powerful forces.

Examples of Staff Advocacy

I recall as illustrations of our successful efforts the many speeches Dr. Welsh has made to define the proper roles of both NASA and Defense, interpreting peaceful activities to include both living better in peace and defending the peace. He also has hammered away over the years in a vigorous defense of space expenditures in terms of the benefits they will produce throughout our society, and he has done this when many others were offering excuses for doing less in aviation and space.

I recall staff efforts to promote a greater effort to utilize each major launch window for sending probes to the planets, and seeking a wider range of targets of

opportunity. We have been early and persistent supporters of development of high energy chemical propulsion, including a very high performance, moderate-sized precursor deep space probe. We have urged development of solid rockets as space boosters or strap-ons. We have defended development of a wide range of nuclear propulsion systems and SNAP auxiliary power devices. We have urged much heavier support of advanced research and technology, including work on the advanced gaseous core nuclear rocket. But we are ready to adjust our priorities on particular projects to anything which shows still greater promise.

We have favored work on manned lifting bodies as space ferries, inspectors, logistics craft, and for space rescue. We have believed in a greater degree of openness in the conduct of our space programs, without sacrifice of secrets which are really essential to our national security. We have pushed for the supersonic transport and the MOL, and we want the national space program to include advanced manned programs beyond Apollo.

U. S. -SOVIET SPACE COMPARISON STUDIES

Meeting the Need for Information

In my opening remarks, I promised to illustrate one specific way in which our staff makes studies to support formulation of national policy. This example is the subject of United States-Soviet space comparisons. Our studies add an important element to judging the desirable pace of national space programs. Our office has fallen heir to this assignment not too strangely because of the Act which created the Council. The first duty assigned relates to support of the President in keeping track of all space progress. In addition, in a democracy there is a need for the public to understand as realistically as practicable where we stand in world competition.

NASA quite properly feels that its mission is conducting research and development of the best possible U. S. program, not to make public judgments on foreign programs of which it has no direct information.

Portions of Defense or the intelligence community doubt that they are really in the public information business, and even where they know quite a bit about foreign space progress, they are not always in a good position to judge total American progress including the NASA efforts.

Thus, one of the few places, perhaps the only place, where many information resources on aerospace come into focus in this regard is at the Space Council staff level. Obviously we do not violate rules of information classification duly established by appropriate authority. But the need for public understanding is urgent, and we have tried to meet this need.

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A Philosophy toward Space Competition

Because our small staff is advisory and is free of the burdens of detailed program administration, we have been able to gain some time to think about the meaning of the total space program and its relation to our world position. We are not faced with the limitation that frequently seems to require a NASA man to talk as if only his brand of space activity exists, or the military officer who may measure national security in space solely in terms of a Defense program which is largely under wraps anyway, and hence hard to discuss meaningfully. We try to look at space performance and issues as a whole, and their relation to America's role as a leader on the world stage.

Philosophically, we most sincerely believe that what this country does in space is important to human progress and to our national well-being, and it would be worth doing on an urgent basis even if by magic the Soviet space program should disappear, leaving not a trace. But we are also realists, aware that our international standing, our national defense, our access to use of the space medium and to potentially useful resources throughout the solar system may ride upon our ability to judge fairly and accurately the rate of Soviet progress and the directions in which their space efforts are carrying them. Our country sets an independent course in space, ready and willing to cooperate with others as opportunities permit. But this planning must be done with an awareness of trends, and not in panicky reaction to current headlines. We also know as a practical matter that the visible signs of Soviet space activity have their consequences on the public mind and the mood of Congress in supporting our own space efforts.

Available Public Data

We have also made some interesting discoveries. Without in any way implying that classified information and public information are necessarily the same, we have found that some highly useful and generally sound comparisons between these two great space powers can be made from entirely open sources which compromise no military secrets, and that inferences can be derived with increasing accuracy as hindsight is constantly applied to the growing volume of past experience.

I will make only a few general observations today on United States-Soviet comparisons. The Senate Committee on Aeronautical and Space Sciences has been good enough to print over 50 pages of a more detailed report with text and tables which I originally prepared for the AIAA and NASA, and now have updated. This report is in a much longer compendium of considerable usefulness which the Committee has issued as Senate Doc. 56 (August 12, 1965).

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I am going to consider a brief review of some of those conclusions as an appendix to my remark today. (See attached notes.)

CONCLUSION

I hope my remarks this afternoon have given you a little more insight into our attitudes at the Space Council staff, although I must take responsibility for the views presented as an individual interpretation. I also hope that my selected illustration of a staff project, the appended material on United States-Soviet comparisons, also provokes your thinking on this complicated subject.

As just one of many issues constantly having an impact on national space policy, we need the best judgments available from all sources. On this and other policy issues, our staff reserves the right to amend its collective thoughts in the light of the best evidence. I have explained our great dependence on the many and varied parts of the total aerospace community. With your help and indulgence, we shall continue to attempt to draw meaningful inferences, balance sheets, and recommendations on the whole spread of problems and policies which legitimately concern the Council and the national view of aeronautics and space.

Thank you.

ADDENDUM

United States- Soviet Space ComparisonsExplanation

The National Aeronautics and Space Council staff makes studies on a variety of subjects as an input to national decision making on aeronautics and space policy. Of necessity, many of these studies are subject to executive privilege or to security classification. On some topics, however, individual staff members on their own responsibility, but within limits approved by the Executive Secretary, have ventured opinions and disclosed their own study results when these have not involved disclosure of formal policy recommendations or classified information.

The longest recently published study by a staff member has been printed in Senate Doc. 56, August 12, 1965, for the Committee on Aeronautical and Space Sciences. The 51-page appendix entitled "The Challenge of International Competition" gave a statistical and analytical review of the U. S. and Soviet space programs. The points which follow are abbreviated and illustrative of the author's views on this subject, and are generally consistent with the longer report referred to above.

A Long View of Space Progress

We must not judge the space race too much by current events, for any recent success by either party tends to influence judgments unduly. Mankind is going to master space travel to make it convenient and cheap in the years ahead. Many countries will participate in this adventure and in the following economic and scientific exploitation of the solar system. I want America to lead this race, and if we do not, the Russians almost certainly will.

Statistical Trends

Statistical comparisons are tricky and incomplete, yet do serve a certain purpose. The United States to date has launched successfully 325 satellites into Earth orbit and sent 12 more to escape. The Soviet Union has sent 137 into Earth orbit and 12 to escape, a ratio of 2.3 to 1 in our favor. But any reasonable estimate of weights of payload successfully launched shows a different picture. The Soviet Union has a marked lead in total payload launched, and worse, for each year of the last five years has shown a wider lead than it did for the year just before. Thus the gap is growing wider, even if one counts the ballast we have sent up on development shots. We hope to reverse the trend soon. We also note that the true value of scientific findings made by each country is harder to measure statistically, and neither country has been wholly capable of objective judgment in this regard. We publish more.

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Program Breadth and Versatility

Both countries have programs of broad versatility and aimed at multiple goals, with little difference in scope but some differences in particular emphases. Both countries have shown a strong trend toward greater reliability, success, and capability.

Who's Ahead?

No satisfying and impartial judgment can be made as to which country is ahead because philosophical differences as to intended goals can color such assessments. At the least, individual program elements require detailed examination.

Information Availability

Both programs have some gratifying degree of openness and discouraging aspects of secrecy, so that neither can wholly defend its conduct in propaganda exchanges. There is no evidence that either has violated international law in its space flights. Each claims to work exclusively toward peaceful ends, and on occasion accuses the other of ulterior motives. As an American, I strongly favor our cause and know we are right. But if I lived in a third country, I might be confused by the "verbalistics".

Heavy Launch Vehicles

The Soviet Union has had at its disposal since 1957 a launch vehicle used at Tyuratam with a first stage thrust of perhaps double the 430,000-pound thrust Titan II. With an improved upper stage, the Russians credit this vehicle with a total thrust of 1,433,250 pounds. Exaggerated or not, performance is what counts and it many times has carried over 14,000 pounds to low Earth orbit.

Our Saturn I has a first stage thrust of 1,500,000 pounds, and 90,000 pounds more in the second stage, permitting it to carry 20,000 pounds to orbit. It is fully operational in capability, but has gone out of production. Our more powerful Saturn IB has yet to fly, and our Titan IIC is still in development. These vehicles are expected to orbit about 34,000 pounds and 25,000 pounds respectively. Also coming, but farther away is our Saturn V with a first stage thrust of 7,500,000 pounds, and the vehicle is designed to carry 240,000 pounds to orbit.

Meanwhile, the Soviet Union has made a first flight of a long-awaited new vehicle which has already carried 27,000 pounds of payload to Earth orbit. Particulars about it are not available, but the Soviet claim is that this vehicle produced three times the horsepower of their standard vehicle of the past. This could mean that with improved upper stages, its lift capacity will rise markedly to put it beyond our Saturn IB, but still short of Saturn V.

Advanced Engineering

Although the Soviet Union has been the first to orbit ion and plasma electric propulsion systems, it has given less visible evidence of advanced development of high energy chemical propulsion or nuclear rockets. It also has been second to orbit SNAP nuclear auxiliary power devices. It has demonstrated on occasion highly successful guidance accuracy, and has good orientation systems. Its communications have repeatedly failed in long distance attempts, one reason why it is now testing Zond 3 in heliocentric orbit. Zond 3 took practice pictures of the far side of the Moon, and these are periodically rebroadcast to Earth from ever-greater distances.

Scientific Satellites

The Soviet Union started space science in spectacular fashion by gaining a week of biological data in orbit in 1957, and by sending up the first heavy geophysical laboratory in 1958, while our first followed in 1964. Since then they have tended to shy away from headlines with a succession of modest-sized Kosmos satellites from Kapustin Yar, more akin to our Explorers. They are slow to publish scientific findings, but gradually have released a fair number of studies, with especial emphasis on many fine volumes of work on space biology.

Lunar and Planetary Probes

Their total commitment of resources to flight to the Moon and planets has been far heavier than our own in demonstrated flight. This is striking in light of the few successes they have had to date. It belies the frequent charge that they concentrate on near Earth, while only we have been tricked into far out work. The relative Soviet commitment of spacecraft to lunar and planetary flight as a share of total national program has run four times our own. Their planetary program alone has invested ten times the weight of payload in launch attempts, yet not a single success looks as good as our work with Mariners 2 and 4. Still they go on, letting no Mars or Venus window pass without an attempt.

Practical Applications Satellites

In recent weeks, Premier Kosygin has identified as Soviet goals the development of practical applications of space to aid weather prediction, to conduct communications, and to supply navigation aids. Among Soviet officials, I have noted only former Premier Khrushchev having boasted to foreign visitors that Soviet satellites also are busy photographing the military bases of the world. There is no doubt that the United States has pioneered the way into all the civilian applications of space with very great success. I am not going to offer a judgment of relative standing in the area of military support flights. But for eight years, the

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Soviet Union has been exercising the universal right of free space passage over all the world, and since 1962 in particular it has conducted a program whose press releases can only be described as full of evasions. This Kosmos program within its multi-purpose tent has put up one heavy payload after another into low Earth orbit. Foreign studies of their orbital characteristics show them flying like stabilized Vostoks or Voskhods, presumably unmanned, and routinely disappearing from orbit after eight days, long before natural decay would bring them down. One can only conclude that Soviet engineers are applying space technology to meet Soviet needs in whatever directions Soviet state priorities establish as important to their national aims. It should be obvious that the same science and technology for any country can measure geophysical phenomena for civilian purposes, or supply similarly impersonal electronic data bits for military purposes. Both classes of missions can support the peace, and if military data gathering turns aggressive, that is not a difference in space technology but in the aims of the Government concerned.

Manned Space Flight

In manned space flight, the strong Soviet effort, with heavy, reliable vehicles has provided a good base for future advanced work. To our knowledge, neither country has lost an astronaut or cosmonaut in space flight. In comparisons, we have no need to be apologetic now that our own flights have done so well, and that we have even gained new records for duration and maneuverability.

Man to the Moon and Planets

Finally, I am bullish about the American future in space. I am convinced that both the United States and the Soviet Union are striving to land men safely on the Moon in this decade. I have such confidence in the progress we are making that I think we have every chance of being first. I do not think we can rule out the possibility that the Russians may still beat us there, but in any case, the 1970's will surely see both Nations able to travel to the Moon. I also think the Russians are planning now to go on with men to the planets. I would be happier if our own plans in this regard were moving more definitely from the dreams of engineers to the higher levels of national decision.

Charles S. Sheldon II
National Aeronautics and Space Council

October 25, 1965

DU 2-2806 (code 128-22806)

GSA-WASH DC 66-7206