The original documents are located in Box 31, folder "Science (2)" of the James M. Cannon Files at the Gerald R. Ford Presidential Library.

mtg 3/10/76
12:30 pm
Science

THE WHITE HOUSE

WASHINGTON

March 8, 1976

MEMORANDUM FOR: JIM CANNON

FROM: GLENN R. SCHLEEDE

SUBJECT: MEETING WITH DR. SIMON RAMO

The two Science and Technology Advisory Groups will be meeting again on Thursday and Friday of this week, March 11 and 12. A copy of their agenda is attached.

Simon Ramo will be in town most of the day on the 10th and currently is available any time from 11:00 AM to 2:00 PM during which he could meet with you if you have time.

The meeting would merely be a chance for you to get acquainted with Dr. Ramo and would provide an opportunity for him to tell you what the Committees are doing.

RECOMMENDATION

I recommend that you meet with him if you can spare 30 minutes.

Attachment

Meeting of the
Advisory Group on Anticipated Advances in Science & Technology

March 11, 1976
Conference Room 2008
New Executive Office Building
Washington, DC

AGENDA

0900 -- Convene, Chairman's report

1000 -- Reports of various ad hoc task assignments

Food and Nutrition - Dr. Hans Mark
Basic Science - Dr. Charles Slichter
Materials - Dr. John Baldeschwieler
Oceans - Dr. William Nierenberg

1200 -- Lunch

1300 -- Reports (continued)

Earthquake prediction - Dr. Frank Press & Mr. Glenn Schleede
Role of NAS and policy studies - Dr. Murray Gell-Mann
President's Biomedical R&D Panel - Dr. Harry Eagle

1400 -- Social R&D - progress report of NAS study

1500 -- Committee discussion

1600 -- Adjourn

Meeting of the
Advisory Group on Contributions of Technology to Economic Strength

March 12, 1976
Conference Room 2008
New Executive Office Building
Washington, DC

AGENDA

0900 -- Convene, Chairman's report

1000 -- Report of various task assignments

Innovation and Productivity - Dr. Herbert Holloman
Regulation, Health and Safety - Dr. Arthur Bueche
Science Court - Dr. Arthur Kantrowitz

1200 -- Lunch

1300 -- Report (continued)

Oceans (Technology-Economics) - Dr. William Nierenberg
Energy - Mr. Charles Hitch

1500 -- Committee discussion

1600 -- Adjourn

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

WASHINGTON, D.C., OFFICE

2029 K Street N.W. Washington, D.C. 20006 Suite 603 (202) 785-0017

March 18, 1976

Mr. James M. Cannon
Assistant to the President
for Domestic Affairs
The White House
Washington, D. C.

Dear Jim:

Last week by way of follow-up to my letter of March 9 to you, I spoke with Jennifer Morgan about the possibility of seeing you to resolve some conflicting information we had received about the Administration's position on S. 32. She indicated that your schedule was such that it would be simply impossible for you to meet with us in the immediate future. However, the severity of our concern, coupled with the urgency of the matter, seemed to indicate to us that in your absence another conference with Mr. Schleede might be warranted. We were pleased that Mr. Schleede could arrange his schedule to meet with us on Friday morning.

It would now appear that the problem was one of communication and that we, and perhaps others, had misread Mr. Schleede's position on Section 204 of the Science, Engineering, and Technology bill. Some of the usually reliable information we get from the Hill was apparently in error in indicating Administration opposition to the inclusion of the word "engineering" in the title and substance of the conference bill (although it is contained in S. 32).

We regard our meeting with Mr. Schleede as having been most satisfactory and were extremely pleased to learn of the likelihood of compromise on Section 204 and, indeed, that he would advocate the maintenance of the word "engineering" in the title and substance of the conference bill. I am sure you will be glad to know that we have taken steps to inform our memberships of the Administration's active support.

I sincerely hope that your office will keep us momentarily advised of developments so that we can avoid the kind of confusion and misunderstanding that previously occurred.

Sincerely,

Leonard B. Farrell
Director
Professional Services

LBF:JP

Copy to Mr. Glen Schleede

THE WHITE HOUSE

WASHINGTON

March 22, 1976

MEMORANDUM FOR: JIM CANNON

FROM: GLENN SCHLEEDE

For your information, Dave Swansen called on behalf of Congressman John Anderson indicating that the Congressman had not been consulted on Mark Rowden's appointment as Chairman of the Nuclear Regulatory Commission. He indicated that the Congressman was a bit unhappy. He also indicated that he would like to be consulted on the appointment to the NRC vacancy.

I suggested that he make his views known to Charlie Leppert and also told him I would pass the information on to you.

June 1, 1976

MEMORANDUM FOR THE VICE PRESIDENT

FROM: JIM CANNON

SUBJECT: Suggested Telephone Call

The National Science Foundation appropriation for basic research in FY 76 is $517 million. The President proposed $611 for the National Science Foundation for basic research for FY 77.

The House Appropriations Subcommittee on the National Science Foundation Budget (headed by Representative Boland of Massachusetts) cut the President's figure of $611 million to $555 million, a reduction of $56 million.

The reason given was that moving up to $611 from $517 was too big an increase in one year.

To permit the Subcommittee action to stand, at $555 million, would mean an increase of only about 7% from the FY 76 figure of $517--barely enough to cover inflation.

Would you consider telephoning Chairman George Mahon and Ranking Minority Member Elford Cederberg this morning and asking them to restore the cuts?

The full House Appropriations Committee is taking the matter up at 10 a.m. today.

THE WHITE HOUSE

WASHINGTON

May 28, 1976

MEMORANDUM FOR: JIM CANNON

FROM: GLENN SCHLEEDE

SUBJECT: Telephone Calls by the Vice President on the Basic Research Budget Cut

At the Staff Meeting this morning, you asked for a list of the people the Vice President could call on the House Appropriations Subcommittee's cut in NSF's basic research budget.

By order of importance, the calls should go to:

Chairman Mahon
Congressman Cederberg
Subcommittee Chairman, Boland
Subcommittee Senior Minority Member, Talcott

Tab A is a brief paper summarizing the situation which could be the basis for the Vice President's calls.

The problem is that the full House Appropriations Committee is meeting on the matter at 10 o'clock Tuesday morning, June 1. Calls would need to be made before then.

If it proves impossible to get calls by then, the Vice President's help on the Senate side would still be desirable. The Senate Appropriations Subcommittee is due to take up the matter about June 7. Subcommittee Chairman is Senator Proxmire, Senate Minority Member is Senator Mathias. Mathias does not need a call; he has already been convinced of the need to restore the money.

ACTION

THE WHITE HOUSE

WASHINGTON

June 3, 1976

MEMORANDUM FOR THE PRESIDENT

FROM: JIM CANNON

SUBJECT: Announcing the Fifteen 1975 Winners of the National Medal of Science

You recently selected fifteen 1975 winners for the National Medal of Science. All have been informed of their selection (including the family of one who is deceased) and they have indicated that they would be pleased to accept the awards.

Attached for your consideration is a proposed statement announcing the 1975 winners at this time and indicating that an awards ceremony will be held later at the White House (probably in September).

OMB (Loweth), Doug Bennett, Counsel's Office (Lazarus) and I recommend that you approve the attached statement which has been cleared by the White House Editorial Office (Smith).

RECOMMENDATION

That you approve the statement at Tab A.

Approve _____ Disapprove _____

~~DRAFT~~ STATEMENT BY THE PRESIDENT ANNOUNCING THE FIFTEEN WINNERS OF THE 1975 NATIONAL MEDAL OF SCIENCE

The National Medal of Science is the Nation's highest award for outstanding achievement in science and engineering. I am most pleased to announce the selection of fifteen outstanding Americans who are designated as the 1975 recipients of this award.

The records of discovery, contribution and service to the Nation of these medalists demonstrate the diversity and strength of our Nation's scientific and engineering endeavors. The winners have contributed to the fundamental understanding of our natural environment in both the world and universe in which we live. Their accomplishments include dramatic contributions to increased productivity in agriculture and improvement of human health. Their research in mathematics and its applications have revolutionized our methods of conducting research and our utilization of computer technology in operations and systems research. New sources of energy have been derived from the fundamental research undertaken by other recipients.

In short, the contributions of these fifteen distinguished people are a useful reminder to all of us ~~of the value of~~ how valuable it is to maintain ~~the~~ a strong national effort in research and development ~~in the United States~~. I am committed to the belief that a vigorous effort to discover and apply new knowledge will

keep our nation strong.

I have selected the following people to receive the 1975 National Medal of Science:

. John W. Backus of San Francisco, California
. Manson Benedict of Weston, Massachusetts
. Hans Bethe of Ithaca, New York
. Shiing-Shen Chern of El Cerrito, California
. George B. Dantzig of Stanford, California
. Hallowell Davis of St. Louis,Missouri
. Paul Gyorgy (Posthumous Award)
. Sterling Brown Hendricks of Silver Spring, Maryland
. Joseph O. Hirschfelder of Madison,Wisconsin
. William H. Pickering of Pasadena, California
. Lewis H. Sarett of Skillman, New Jersey
. Frederick E. Terman of Stanford, California
. Orville Alvin Vogel of Pullman, Washington
. E. Bright Wilson, Jr. of Concord, Massachusetts
. Chien-Shiung Wu of New York, New York

I look forward to meeting with these distinguished Americans and with the family of Dr. Gyorgy at the White House in the near future.

NASA

National Aeronautics and
Space Administration

Washington, D.C.
20546

Office of the Administrator

June 4, 1976

The President
The White House
Washington, DC 20500

Dear Mr. President:

I have had the honor to serve as the Administrator of your National Aeronautics and Space Administration for the past five years. During that time, this exciting and dynamic agency has realized many proud accomplishments -- but these have come about largely as the consequence of earlier investments in science and technology.

As a matter of conscience and duty, I must inform you of the steady erosion of the United States space capabilities and of the dangers this poses. Over the past five years, we have not been permitted to maintain the program breadth or momentum necessary for continued contributions to national security, international policy, and technological progress.

If the civil program continues to be held below its critical threshold, we run a real risk of foregoing rich future benefits in international prestige, military spinoffs, economic and industrial stimulation, and constructive noninflationary employment -- as well as in critical new space capabilities. I feel we are also risking what may be the single most important potential for inspiring America's future generations. I have recently mentioned these problems to the Vice President, Brent Scowcroft, and Jim Cavanaugh among others. I believe they all were surprised at the serious loss of our abilities to compete, cooperate, or advance in space.

In my view, we have reached a breaking point: We have already lost much of the capability of our unique government-university-industry aerospace team, and are in danger of losing even more. We are risking not meeting important expanding international commitments. We are in danger of losing a critical national resource as well as our leadership as a space power. Even the

usually conservative financial community is recognizing the signs of a national technological crisis -- and the shrinkage of the NASA program has been a major contributor to that crisis.

Mr. President, I wholeheartedly support your strong commitment to fiscal responsibility and balanced budgets. However, I must point out that NASA, the Executive Agency dedicated to creating long-term future technological strength for the Nation, is in critical difficulty. In blunt terms, if we cannot expand the scope of NASA's activity, the civil space program will be irreparably damaged.

I believe it is important to express my concerns directly to you before the start of the normal budget cycle. I am writing separately to Jim Lynn on this subject, and I will, of course, be working with him during the fall. In my judgment, the effort required to reverse current trends is relatively small. An initial 10% of real growth in program content can make the difference between a strong national program and one at or below the threshold of survival.

If you could make some time available, I would be most pleased to discuss the issue of NASA's future with you in detail. Recognizing your extraordinarily full schedule, I am enclosing two attachments which may help focus both the problem and opportunity: the first is a short paper on the civil aerospace program, and the second is a summary of a new five-year plan for space and aeronautics currently being developed.

On a different but related matter, Don Rumsfeld and I hope to meet with you later in the year to recommend a joint approach to the procurement of the operational Space Shuttle.

Respectfully,

Jim F

James C. Fletcher
Administrator

2 Enclosures

cc: The Vice President
James T. Lynn
James M. Cannon
Lt. Gen. Brent Scowcroft
L. William Seidman
James H. Cavanaugh

SPACE AND AERONAUTICS: CHALLENGE AND OPPORTUNITY

A rational, productive aerospace program is a vital component of the near- and long-term future of the United States -- and of the world.

- Space technology is an integral element of international policy: the satellite has become indispensable to intercontinental communications and to international weather services; satellites are positive contributors to accurate United States information on global earth and ocean resources and conditions; aerospace programs provide the United States powerful selective options for cooperation or competition with advanced and developing nations.

- Space technology -- and the concomitant of an advanced and imaginative aerospace industry -- is critical to the national defense posture of the United States. Civil programs, because of their open, exploratory character, generate broad technological advance that energize entire industries as well as being directly employed for civil or military ends.

- Aerospace programs, by their nature, are at the cutting edge of technological advance -- they demand and create, above all, "high" technology. Technology of all levels is recognized as a necessary major contributor to national productivity; what is less well recognized is the enormous economic leverage exercised by investment in and development of "high" technology. Recent assessments indicate that a dollar spent in NASA R&D creates a 14:1 return over 10 years in terms of increased productivity alone, and that small but sustained changes in the levels of NASA expenditures have a disproportionately large effect in creating and sustaining permanent new jobs in the national economy.

- The challenge of space is an exciting inspiration to the younger generations of America and the world. The nation that meets this challenge boldly will strengthen and enlarge the spirit of all its citizens and create the drive for future progress and achievement.

- The civil space agency -- NASA -- is the single Federal instrumentality squarely focused on the future. NASA has developed into the nation's most effective technical problem-solving agency. It is an instrument available for use; it should not be allowed to sag into mediocrity or to dwindle away for lack of forward-looking assignments.

An immediate opportunity now lies before our country: to mobilize its civil aerospace resources in pursuit of national objectives. If action is not taken, the nation's ability to mount effective programs will erode beyond repair, and the international competitors of the United States will establish commanding leads in such areas as permanent manned facilities in space, planetary exploration, space communications, and high speed intercontinental aviation. Aerospace objectives of great value and importance are:

- A global information service -- strengthening the United States' posture at home and abroad with revolutionary improvements in timely and accurate reporting on world-wide economic and environmental conditions through the organized use of space-based observation systems.

- Permanent American occupancy of space -- guaranteeing free access to space by all for peaceful purposes, providing a new and expanding dimension for United States industry and commerce in exploiting the unique environment and technology of space for new goods and services, and opening new horizons for the human spirit.

- The integrated scientific exploration of the Universe -- to find the answers to central questions of life, matter, and energy.

- Reestablishment of American preeminence in aviation -- creating the commercial competence to compete effectively in world markets with new aircraft using new designs, materials, propulsion and technology.

The returns from investment in civil aerospace are power -- economic, scientific, and political. This can flow only from a steady level of activity; research and development cannot

thrive or deliver its technological products in an environment of uncertain commitment or sporadic support. Focused investments in high technology are significant national economic tools in the search for prosperity without inflation.

To provide for the future requires thoughtful and prudent investments in the present. At stake are the leadership, prestige, and power of the United States in a critical technological domain affecting the life and livelihood of every citizen -- and, through example and political extension of that power, the future of all the world.

June 4, 1976

NASA FIVE-YEAR PLANNING

INTRODUCTION

The management of the National Aeronautics and Space Administration is preparing a five-year plan to provide an integrated framework within which policy and program recommendations and decisions can be evaluated. While not complete at this time, the basic structure of the recommended five-year plan is outlined below.

One critical factor must be kept in mind: the lead-times involved in the development of sophisticated space technology are often such that individual projects may require as much as five to seven years to be complete; in the case of certain exploration missions to the far planets, flight times of as many years are required before new information can be received on earth. The planning context, therefore, has to extend considerably beyond the next five years in order to provide a solid base for the near-term decisions.

In addition, plans for the future must be carefully integrated with the present ongoing program. It is important to take maximum advantage of momentum and technical capabilities in being, and to be ready to exploit new or enlarged opportunities presented by the evolving scientific and technological environment.

GOALS AND OBJECTIVES

The first generation of space and aeronautical activity has come of age. Taken together, the growing maturity of the existing technologies, the experimental successes of the first tentative moves toward delivery of new services from space, the preliminary investigations of important natural phenomena, and the rapid expansion of space and aeronautical activities abroad, now require the United States to choose the major directions for the future that will be pursued in the national interest. These goals and objectives cannot, and should not, be either all-encompassing or narrowly rigid; they must, however, reflect a sense of national purpose, provide a basis for measuring accomplishment, and offer a set of unique and important values in their own right.

The National Aeronautics and Space Administration has identified four goals to characterize the national space and aeronautics program for the next decade. These flow naturally from the growing world consensus on the definition of the major problems and questions confronting human society, from the political and economic realities of today, and from the ongoing programs of the United States and other nations.

1. A major goal is the rapid expansion of significant national services from space. The past fifteen years have sufficiently proven the capabilities of space systems for global observation and communications; the challenge now is to exploit fully these important capabilities for the United States, recognizing that otherwise the advantages of time and technology will pass to others.

   a. One clear direction to follow is the immediate implementation of a global resources information system. This represents a major policy decision with enormous implications for the future of the United States. Critical national decisions of international importance depend on accurate, timely, and continuing information about food, energy, environmental quality, and climate. Space observations coupled with new computer techniques would provide accurate bi-weekly forecasts of global agricultural production for all crops of major economic significance, geological assessments related to the potential for mineral and petroleum discovery and recovery, water quality status and trends, ocean condition forecasts, and eventually annual and long-term climate predictions.

      This wholly new class of information services, already being experimentally demonstrated in grain surveys, would afford the United States a widely expanded horizon for wise political and economic decisions in areas ranging from agricultural commodity exports through national resources management to avoidance of climatic catastrophe. It behooves the United States to have and to use these capabilities in

pursuit of domestic and international policy objectives rather than have them developed by others in opposition to United States aims.

The Next Five Years. The expansion of the current Landsat experimental program would begin immediately, allowing the inclusion of improved instruments and relying on dual satellites to afford repetitive world coverage every nine days. A new and complex ground data handling system, to extract and disseminate information from satellite data rapidly and incorporating forecasting and prediction models, would be developed at the same time. Major milestones tied to an investment of less than $100 million per year would be:

-- By 1981, bi-weekly global wheat production forecasts.

-- By 1983, begin production forecasts for rye, oats, barley, rice, corn, soybeans, and sugar; and, global geological resources assessments and ocean condition prediction.

-- By 1985, using an expanded system combining low and synchronous satellite observatories, and an understanding of climate trends and mechanisms.

-- By 1990, routine delivery of the full range of terrestrial, oceanic, and climatic information, leading to climate prediction services.

b. Another clear direction to follow is the aggressive advancement of space communications to assure United States industrial superiority. Current assessments indicate that, without a significant national program in space communications technology, United States industry will lose its present position of international leadership to the state-supported industries of Japan and Europe. Already key elements of

international telecommunications services, particularly in the high-power, high-frequency regimes, are being provided by German and Japanese technology more advanced than that which United States industry has been able to sponsor with its own resources. Similarly, new national services made possible and economical because of space technology are ready to be deployed to improve the quality of life and the sense of security of every citizen. Recognition of a Federal responsibility for the health and progress of the private United States telecommunications industry is, in itself, a significant policy initiative.

The Next Five Years. For the competitive advancement of civil space communications technology and the development of practical new commercial services -- such as personal mobile telecommunications, remote health care delivery, direct broadcast to individual receivers, or expanded electronic mail -- joint development and demonstration programs with the electronics and communications industries would establish an American beachhead in high-power, high-frequency satellite technology. The demonstration systems, once developed, could then be leased to commercial operators to amortize the Government's technology investment.

A more immediate new application of space communications services -- search and rescue -- would be demonstrated in 1981 for some $30 million. A key problem in the past has been the unambiguous location of an emergency distress signal. Satellites in conjunction with the new software and aircraft and shipboard emergency transmitters would overcome these limitations. Full-scale operational deployment following the demonstration would be in 1984.

2. Another major goal is the permanent beneficial occupancy of space to promote the national interest, to assure that space will be kept an open resource for all peaceful purposes of free peoples, and to forbid the foreign domination of space.

Current United States programs are focused on the Shuttle and Spacelab systems, critical elements in expanding the scope and capability of short duration space activities at low recurring costs. The next generation of capability, building on the experience developed in the first phase of space utilization, would have the development of the commercial utility of space as a major thrust. This industrialization of space would create new markets, new products and new economic strength for the United States. The position the United States holds in space technology and the investment the United States has made in space capability must be fully exploited to maintain United States world leadership. The key element would be a permanent manned orbital center to service new commercial devices and industrial processes that take full economic advantage of the unique space conditions -- weightlessness, access to a near-perfect vacuum, and solar energy.

The same center would serve as a construction base for the assembly, test, and maintenance of the very large orbital structures required in the future for information acquisition, communications, and energy management. As a research and development laboratory, the center would house experimental and operational research instruments -- telescopes, antennas, biological instrumentation, physics and chemistry facilities -- for continuing investigations under essentially shirt-sleeve conditions.

Serviced by the Shuttle, the space center would be the most important test of future opportunities which may prove critical to man's continued development: long-duration manned planetary expeditions, space colonization, and expansion of human civilization into the solar system.

The Next Five Years. Technology programs using the Shuttle and Spacelab will foster the development of the orbital techniques and methods required for the space center. Spacelab manufacturing and processing experiments -- taking advantage of the space environment to create such new materials as unique crystals, semiconductors, integrated circuits, or pharmaceuticals -- will be intensively pursued in conjunction with United States industry beginning with the earliest Shuttle flights in 1979. Major new milestones, presuming an investment level for these elements growing toward $900 million by 1983, are:

-- By 1982, the first experimental large space structure -- perhaps a 100-meter antenna supporting the expanded space communications effort -- would have been assembled in orbit by crews operating from the Shuttle to demonstrate space construction and maintenance techniques.

-- By 1984, the first permanent space center -- a 4-to-6-man space station -- would be in operation, together with the first commercial manufacturing and processing facilities which would be expected to repay their costs early in this phase of space utilization. The space center would use an evolutionary modular design initially based on the technologies developed for Skylab, Shuttle, and Spacelab. Space center operations would rely on the Shuttle for transportation and service, and the center would be designed to permit major expansion in size and function without encountering technological obsolescence.

-- By 1986, a small-scale prototype of a solar power energy system would be in operation, initially converting solar energy to electrical power for use within the space center. If necessary, this technology could be later expanded to provide beamed energy from space to earth for commercial use; this would also require expansion of the space center to a 12-man station and development of synchronous visit and operations capability.

3. A third goal is the integrated scientific exploration of the Universe: to push back its frontiers, to discover its origin, evolution, and future; to probe and master its dynamic processes; and to understand its relationship to life on Earth and elsewhere.

A new element in NASA's continuing science work is the development of a program that brings together in a new core the traditionally separate disciplines and approaches of classic space research. It is necessary to relate the atmospheres of far planets to our own, the mechanisms of our sun to those of other stars, the tectonics of Earth to those of Mars and Venus and Mercury, the geochemistry of the Moon to that of the terrestrial planets and asteroids and major satellites.

Exploration falls into two large classes: in remote exploration, man uses instruments to observe and measure phenomena at great distances; in direct exploration, man or his instruments operate at the site of the phenomenon.

Remote exploration is characterized by the orbital telescope, operating for extended periods in selected spectral bounds to study the Sun, far stars and galaxies, nearby planets and moons. Direct exploration within the solar system starts with initial reconnaissance, followed by detailed study for extended periods, and in special cases, atmospheric and surface samples must be returned to Earth for analysis. The ultimate steps may include temporary or permanent human occupancy, supported by a planetary environment tailored to human needs.

Connecting remote and direct exploration of the solar system and the Universe to life on Earth is the translation of new knowledge of extraterrestrial phenomena -- energy generation and transmission, internal star dynamics, planetary atmospheric activity -- into clearer understanding of our own life support system of sun, air, and oceans. It is this understanding -- and the wise long-term management of the Earth that can stem therefrom -- that will guarantee a continued safe habitation for man on his home planet.

The Next Five Years. The total space science and exploration program, covering as it does a multiplicity of targets and many disciplines, is not readily summarized. The major elements noted below are only a part of an overall program estimated to require some $600 million per year. There would need be augmentation beyond this level if, for example, it becomes necessary to follow up the discovery of life within the solar system or of intelligence within the galaxy.

The most critical and immediate need in remote exploration capability is the 2.4-meter Space Telescope, a permanent man-tended orbital facility that can quadruple the reach of man into the Universe, can find planets around nearby stars, can look back into time some 15 billion years, and can help decipher the now unexplained energy-generating mechanisms of stellar systems and objects. The Space Telescope would be delivered into orbit by the Shuttle in 1983 and maintained thereafter by routine service flights. Other remote exploration needs would be met by a 1981 solar mission to view the Sun's poles, thought to be sources of particles escaping to galactic space, by continuing Spacelab flights starting in 1982 and carrying such instruments as 1-meter solar and infrared telescopes, and by a second generation of refurbishable high-energy observatories operating in 1983.

The most critical and immediate new capability for direct exploration of the planets would be embodied in a long-duration orbital planetary laboratory carrying multiple atmospheric probes. This mission would first be launched to Jupiter in 1981 to analyze the unique atmosphere of that giant planet and to define its magnetosphere and radiation belts. A similar mission would be launched to Saturn in 1984.

Exploration of the terrestrial planets would rely on a geophysical/geochemical long-duration orbiter, the first deployed around the Moon in 1981 and another around Mercury in 1983. The pervasive cloud layer of Venus

requires an orbital radar mapper to investigate the surface; this mission would be launched in 1983. The findings of the 1976 Viking surface exploration of Mars will define critical follow-on investigations; a major step would be the automated return of surface samples to Earth for analysis.

4. The final goal is to reestablish United States dominance in aeronautical technology and, concomitantly, to assure United States preeminence in civil aviation markets at home and abroad. Civil aviation, comprising aircraft manufacturers and airline operators, has been among the most successful of the United States commercial sectors. The historical reasons for this success have been threefold: a reliable base of Federal research and technology, consistently supported since 1915, responsible for managing national aeronautical facilities as well as for technical advances in aviation; a steady demand for new aircraft types for military purposes and their subsequent deployment into the civil sector; and a healthy condition of competition for both domestic and foreign markets among the United States airlines and manufacturers.

   Aviation is still growing; 800 billion revenue passenger miles per year are predicted by 1986, or double current world levels. Through 1986 there will be a world-wide market of $50 billion for civil transports, and demand is growing for efficient and profitable short-haul aircraft, helicopters, and general utility aircraft.

   The United States aviation industry today, however, is not in a position to capitalize on opportunities for new markets: the airlines' economic difficulties, driven by fuel costs and the problems of operating an aging fleet, are deferring orders for new aircraft; the manufacturers cannot finance the development of new systems for lack of capital and because the needed new technologies have not been exercised to the point of being ready for new

aircraft at reasonable risk; and for the first time, aggressive state-supported foreign competition is threatening to penetrate former United States markets and to seize a disproportionately large share of new markets now just opening.

In supersonic passenger service, in helicopters, and in quiet short-haul transports, the Europeans already are ahead of the United States. In military aviation, United States superiority is no longer assured. United States leadership can be regained only by a purposeful injection of high technology tailored to the specific economic and transportation environment of the mid-'80's and beyond.

The Next Five Years. Current estimates suggest that an increase in aeronautical research and technology investment over the current $200 million per year level would be necessary if the United States is to regain -- and maintain -- a position of leadership in world aviation through the end of the century. Advanced aeronautical facilities and a sustained government-industry technological partnership are important ingredients of that leadership. Significant areas of effort would include:

-- An integrated energy-efficient technology package to improve new models of current aircraft within the next five years and to permit the wholly new aircraft of the mid-eighties to operate at half today's fuel consumption.

-- A focused effort on quiet, efficient supersonic transport technology to place United States industry in a position by 1985 to respond to the Franco-British and Soviet initiatives in this area.

-- Developments for high speed vertical take-off aircraft with important military as well as civil applications.

-- Design and engineering advances for quiet, comfortable, economical helicopters that have a wide domestic and foreign market.

-- Technology and systems engineering to improve the economics of agricultural aviation services.

SUMMARY

The goals and challenges sketched above together represent the opportunity that now lies before the United States:

-- To capitalize on prior investment in space and aeronautics.

-- To establish new thresholds of national strength and creativity.

-- To regain an unquestioned position of world leadership in high technology deployed in the public interest.

June 4, 1976

Com. on Science & Tech.

THE WHITE HOUSE

WASHINGTON

July 14, 1976

7/26/76

Glenn — Thanks Jim

MEMORANDUM FOR: JIM CANNON

FROM: GLENN SCHLEEDE

SUBJECT: Weekly Briefing -- Energy, Science and Technology

I. Science and Technology

A. Office of Science and Technology Policy (OSTP).

Delay in starting Office and Committee continues. You have my July 10 memo outlining possible actions. Doug Bennett called today to indicate that he thinks that it may be possible to send up the nomination next week, but it all seems pretty fuzzy.

Meanwhile, the Senate has cut the OSTP and Committee 1977 Budget request by $1 million ($3.3 to 2.3M) and the House is talking about cutting more in Conference because of the delay.

Glenn What would money be spent for?

B. Earthquake Prediction. Program plan preparation continues with two problems on the horizon: (a) potential for hugh budget increases (up to $100M) and (b) dealing with issues of earthquake and preparedness --which go beyond research. Congressional attention seems to be focusing on this latter issue. Dennis Barnes (working with Lynn May) is preparing a memo for you on this issue.

C. Food and Nutrition. Nothing new now. Recommendations from Baker-Ramo Committees will surface again at next meeting of groups in Los Angeles on August 5-6.

D. NSF Appropriations. Conference should occur next week to settle difference between Senate provision of President's full request and House cut of $56 M.

E. Fletcher Letter. Schedule proposal forwarded for your approval.

Glenn — what is OMB Position?

II. Energy

A. Uranium Enrichment.

-- Legislation. According to John Anderson, Bill is now scheduled for House floor action on July . Senate will not act first. Preparations underway for floor action include (a)fact sheet, (b) 1 page response to key criticisms, (c) position paper on 5 amendments introduced so far.

-- Constitutionality. Late today, I received word from ERDA that the financial community is exceedingly concerned about the constitutionality of the concurrent resolution approach in the JCAE bill. They apparently are concerned that a constitutional test might undermine guarantees in the bill and thus will not be willing to provide debt financing. I will get a focus on this early Thursday.

-- Power Supply. Problem not resolved for either add-on or private gaseuous diffusion plant. We are continuing to meet with ERDA and OMB on this. ERDA has developed some alternatives.

-- Budget Committee Treatment. OMB has prepared material for submission to committee which is now being reviewed by ERDA and Connor. Issue is whether $8 billion is counted as BA. Underlying issue also is the adequacy of the $8 billion to cover all possible contingent liabilities.

-- Harsha Letter. Draft will be ready tomorrow. (You indicated you'd like to meet on this and I'm ready.)

-- Impact Statement for add-on. ERDA working on cover letter to deal with deficiency on coverage of environmental impact of power supply.

-- Contract Negotiations. Several sticky points remain.

-- Commercial Charge. In ERDA authorization bill, awaiting Conference.

-- Need for Meeting. Enough loose ends now exist to warrant another meeting with ERDA, OMB, Connor WH Counsel and us. I will try to set up tomorrow. Subjects should include all items above except commerci-l charge.

B. Energy Legislation. Table attached. No change from last week.

C. Nuclear Policy Study and Statement. Scowcroft-Cannon-Lynn memo sent to the President yesterday after being shown to Secretary Richardson and members of the ERC Executive Committee. Secretary Richardson has asked to have ERC involved in the action but did not make an outright claim for it.

D. CEQ-ERDA Dispute over Coverage of Extraterritorial Impact in Environmental Impact Statements. Dispute has focused on adequacy of an ERDA final impact statement on nuclear exports which in CEQ's opinion, does not deal adequately with environmental impact outside the United States. Dispute is heating up:

-- CEQ backed off somewhat from its earlier stand. CEQ has sent a letter to ERDA, despite my request that they hold off until you and NSC had specifically signed off -- as earlier agreed.

-- EPA has now sent a letter to ERDA raising most or all the questions that CEQ had originally raised.

(Perhaps George Humphreys has more information on this from the environmental agencies' point of view.)

Jim - Will this be included in the study?

E. Presidential Statement on Energy Conservation. Will get to this as soon as possible.

F. LNG Import. We are reviewing ERC draft decision memo.

G. FEA extension. Richardson and Zarb have prepared an information memo for the President indicating that the outlook is still uncertain and that FEO may have to be created.

H. Oil Price Decontrol

-- FEA is preparing decontrol plans on lubricants and greases for submission to the Congress next week for a 15-day review period.

-- FEA is considering a proposal to increase the composite price of crude oil at a rate greater than 10 percent for this year -- a step that will require Congressional review. Timing of this depends on outlook for certain provisions in the House and Senate FEA extension bills which exempt some crude oil from composite price ceilings.

I. Energy Updates for the President. FEA is preparing (a) a six-month update on the energy situation, and (b) a report on implementing the December, 1975, Energy Policy and Conservation Act. An ERC meeting with the President will be proposed for (a) within the next two weeks.

J. Coal Leasing Bill. We will try to have a proposed letter from the President expanding on his veto message ready for circulation to senior staff tomorrow night. It should go to the President on Friday or Saturday. OMB, FEA, Interior, and Commerce are involved.

K. Alaska Pipeline. ERC meeting tentatively scheduled for Friday for an update on this issue.

III. Clean Air Act

Bill Gorog is continuing work on a compromise position. He promises to have a proposed memo to the President ready by Thursday.

IV. Upcoming Problems and Opportunities

A. Alaska Pipeline. Possible public releases will depend on assessment from the ERC.

B. Viking-Mars Landing. Now scheduled for July 20.

cc: Jim Cavanaugh
Art Quern

Do any progress being work?

Science

THE WHITE HOUSE

WASHINGTON

SCHEDULE PROPOSAL
DATE: July 14, 1976
FROM: Jim Cannon
VIA: Bill Nicholson

MEETING: With NASA Administrator James Fletcher

DATE: Week of July 19, 1976, if possible

PURPOSE: To permit Dr. Fletcher to present directly to you his views on the importance of the U.S. space program, the potential contribution of NASA, and the impact of restrained funding on NASA's future.

FORMAT:
- Oval Office
- Dr. Fletcher, Brent Scowcroft, Jim Cannon, Jim Lynn
- 20 minutes

CABINET PARTICIPATION: None

SPEECH MATERIAL: Talking Points will be provided

PRESS COVERAGE: White House Photographer

STAFF: Jim Cannon/Glenn Schleede

RECOMMEND: Brent Scowcroft, Bill Seidman, Jim Cannon

OPPOSED:

PREVIOUS PARTICIPATION:

BACKGROUND: Dr. Fletcher has written to you to:
- express his serious concern about the future outlook for NASA and the space program under the resource constraints over the past few years;
- present his view that an expanded U.S. advanced technology effort is needed;
- request an opportunity to meet with you prior to the setting of a budget planning ceiling for NASA for FY 1978.

An analysis of his letter is being prepared in cooperation with NSC, OMB and Mr. Seidman and this will be presented to you prior to the proposed meeting. Dr. Fletcher feels very strongly about his views and we believe that he should have an opportunity to present them directly to you.

APPROVE _____ DISAPPROVE _____

Com. on Science & Tech

Jim Cannon file

FYI

AID

Energy

THE WHITE HOUSE

WASHINGTON

August 20, 1976

MEMORANDUM FOR: JIM CANNON

FROM: DENNIS BARNES

RE: President's Committee on Science and Technology

Glenn Schleede assisted in the preparation of the list of prospective appointees to the President's Committee on Science and Technology proposed by the Presidential Personnel Office (attached at Tab A).

He supports the candidates, whom he feels represent the balance of professional fields, experience and stature called for in the statute, as well as a good balance geographically, politically and otherwise.

Recommendation - You approve the attached memorandum concurring in the list of candidates as proposed.

Attachments

OK Jim

Jim, I indicated our approval to Bennett

file
Science

THE WHITE HOUSE

WASHINGTON

August 23, 1976

MEMORANDUM FOR: JIM CANNON

FROM: GLENN SCHLEEDE

SUBJECT: PROPOSED REPLY TO AMERCIAN GEOPHYSICAL UNION

I recommend that you sign the attached memo and forward it to Jim Connor.

The AGU has told us that they need the response by August 26 at the latest.

Attachments

THE WHITE HOUSE

WASHINGTON

August 23, 1976

MEMORANDUM FOR: JIM CANNON

FROM: GLENN SCHLEEDE

SUBJECT: PROPOSED REPLY TO AMERCIAN GEOPHYSICAL UNION

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Attachments

THE WHITE HOUSE

WASHINGTON

Signature

MEMORANDUM FOR: THE PRESIDENT

FROM: JIM CANNON

SUBJECT: ANSWERS TO QUESTIONS ON YOUR SCIENCE POLICY POSED BY THE AMERICAN GEOPHYSICAL UNION (AGU)

Attached for your consideration is a proposed response to four questions on your science policy posed by the American Geophysical Union (AGU) (letter at TAB A). The AGU has posed the same questions to the Democratic party candidate and plans to publish the responses in the September issue of their journal.

The proposed response has been reviewed by OMB, NSC, State Department, Doug Bennett and Guy Stever.

RECOMMENDATION

That you sign the letter attached at TAB B.

Attachment

AGU AMERICAN GEOPHYSICAL UNION
1909 K STREET, N.W., WASHINGTON, D. C. 20006 (202) 331-0370

July 9, 1976

The Honorable Gerald R. Ford
The White House
Washington, D.C. 20500

My Dear Mr. President:

The American Geophysical Union is a scientific society of more than 12,000 members who are engaged in research in the various disciplines of earth and space science. We would like to present to our membership the views of the two principal presidential candidates on matters that affect the potential we have as scientists for making a real contribution to society; a contribution that we feel is essential if there is to be a future America but is in risk of neglect because the time frame for the application of basic research exceeds that which traditionally concerns politicians.

In this letter we pose several questions, your response to each of which we believe will be of great interest to our members. We propose to publish your responses, together with those of the Democratic nominee, in the first issue of our journal that appears after the conclusion of the two nominating conventions. To do this we will need your response, and would appreciate your photograph, within 30 days. We hope you can be brief, confining yourself to about 2,000 words in total for all of the questions, but if you require more to provide a substantive response to our inquiry we will accept your decision within the limits of what can be reasonably presented in our magazine. Our questions are as follows:

1. What do you expect the role of the science advisor to be in your administation?

2. There are a number of organizations within the federal government that have a preponderantly scientific or technical role; examples are the United States Geological Survey, the National Oceanic and Atmospheric Administration, the Energy Research and Development Administration, and the National Aeronautics and Space Administration. How will you go about selecting the Directors/Administrators and their key staff and specifically to what extent do you feel political consideration should enter into the selection of such individuals?

3. Research and development consumes approximately 15% of the federal budget at the present time, but of this amount a

very small fraction is spent on basic research. Quantification of the benefits of basic research is a classically difficult problem. How do you propose that the federal government should determine how much money should be spent on basic research? Do you have any feeling as to whether we are now spending too much, too little, or about the right amount.

4. What role do you feel should be played by science and scientists in support of the United States foreign policy and how would you propose to implement that role?

We thank you in advance for your responses to these questions and want to express now our interest in working with you to assure that the United States government gets the advice and support it needs from its scientists.

Sincerely yours,

A. F. Spilhaus, Jr.
Executive Director

AFS:ecc

THE WHITE HOUSE

WASHINGTON

Dear Dr. Spilhaus:

Thank you very much for the opportunity to respond to the thoughtful questions you have asked concerning several matters of interest to the American Geophysical Union. I hope the answers provided in the enclosure to this letter will be useful in explaining my views.

With warm personal regards,

Dr. A. F. Spilhaus, Jr.
Executive Director
American Geophysical Union
1909 K Street, N.W.
Washington, D. C. 20006

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With warm personal regards,

Dr. A. F. Spilhaus, Jr.
Executive Director
American Geophysical Union
1909 K Street, N.W.
Washington, D. C. 20006

GRF:JMC:GRS:kk
Enclosure - answers to four questions posed in AGU letter dtd 7/9/76

Question

What do you expect the role of the science adviser to be in your administration?

Answer

The Congress has approved my proposal to create an Office of Science and Technology Policy (OSTP) in the White House. As I indicated when submitting this proposal in June 1975, the Director of the OSTP will serve as my adviser on science and technology.

The principal overall responsibility of this adviser will be to provide advice on the scientific, engineering and technical aspects of issues requiring attention at the highest levels of government. He will be one of my senior advisers and he will also provide advice and assistance to other senior people in the White House and the Executive Office of the President.

In carrying out his responsibilities, I expect my science and technology adviser to:

-- Participate in the formulation of my budget and legislative proposals, particularly where scientific and technical considerations are involved.

-- Review existing policies and programs to identify opportunities for and constraints upon the use of our scientific and technical capabilities in achieving national objectives.

-- Help identify new opportunities for using science and technology to improve our understanding of national problems and contribute to their solution.

The Director of OSTP will be a member of the Domestic Council and an adviser to the National Security Council. He will be a member of and play a major role in the President's Committee on Science and Technology which will consist of 14 experts from outside the Federal Government and will conduct a two-year review of Federal science and technology policies, activities and organization. He will also be Chairman of the Federal Coordinating Council on Science, Engineering and Technology which will promote the coordination of R&D among Federal agencies. Finally, he will lead a panel that will focus attention on problems at the State and local levels of Government which can be mitigated through the application of science and technology.

Question

There are a number of organization within the Federal Government that have a preponderantly scientific or technical role; examples are the United States Geological Survey, the National Oceanic and Atmospheric Administration, the Energy Research and Development Administration, and the National Aeronautics and Space Administration. How will you go about selecting the Directors/Administrators and their key staff and specifically to what extent do you feel political consideration should enter into the selection of such individuals?

Answer

The principal criteria for selection of men and women to fill top level positions in such organizations are:

-- Recognized professional qualifications, competence, and standing in their area of responsibility;

-- Capacity or proven ability to (a) manage the resources that they will have to carry out their agency's responsibilities, and (b) work effectively in a complex environment such as that found in the Federal Government.

-- An understanding of the mutual responsibilities of the public and private sectors.

I will continue to seek recommendations for such positions from respected leaders of scientific and engineering communities before making selections for positions requiring scientific and technical backgrounds.

The question of partisan political affiliation inevitably is raised in the case of any Presidential appointment requiring Senate confirmation. While this is the case, political affiliation of candidates has not been an overriding consideration in my appointments to scientific and technical positions in the past and it will not be an overriding consideration in the future.

Question

What role do you feel should be played by science and scientists in support of the United States foreign policy and how would you propose to implement that role?

Answer

Science and scientists have played a major role in the support of U.S. foreign policy and this role can be continued and expanded.

For example, scientific and technical considerations are very important in a number of problems that have global importance, including population growth, food supply, energy, mineral resources, environmental quality and weather and climate modification. We must draw upon scientists and engineers to identify and describe these problems more accurately and to contribute to their solution.

In addition, science and technology have contributed significantly to our economic strength and national security. For example, we have an important competitive advantage in world trade because of the contributions of science and technology in agriculture, electronics, communications, computers, aircraft and other high technology areas. We look to our scientists and engineers to assist in finding new and better solutions to the problems facing lesser developed countries of the world. Often scientists are the first to be aware of problems, solutions and new opportunities. This awareness is shaped in a variety of ways including the participation of U.S. of U.S. scientists in international meetings with their colleagues.

The conduct of research has become increasingly international, as witnessed by worldwide programs of scientific exploration and discovery such as the International Geophysical Year and the Global Atmospheric Research Program. The U.S. now has formal arrangements with some 25 countries for cooperation in science and technology which involve our colleges and universities, Federal laboratories, professional scientific and engineering communities, the National Academy of Science, the National Academy of Engineering, the Institute of Medicine and hundreds of individual scientists and engineers.

Opportunities and problems such as those outlined above generally are complex and involve many considerations in addition to scientific and technological. However, scientific and technological considerations are very important and we will continue to engage scientists and engineers as a part of teams involving people with expertise in other areas to work cooperatively in finding the most effective approaches.

Question

Research and development consumes approximately 15 percent of the Federal Budget at the present time, but of this amount a very small fraction is spent on basic research. Quantification of the benefits of basic research is a classically difficult problem. How do you propose that the Federal Government should determine how much money should be spent on basic research? Do you have any feeling as to whether we are now spending too much, too little, or about the right amount?

Answer

There is no precise way to determine either how much Federal investment there should be in basic research or where the investment should be made to optimize the contributions which basic research can make. As the question indicates, basic research does not lend itself well to cost-benefit analysis. We must, therefore, look to other means for evaluating and justifying our basic research funding.

My Administration strongly believes that we must continue to look to basic research to provide the new knowledge that underlies our advances in science and technology. We have examined trends in Federal support of basic research and undertaken to assess the impact of these trends on the status of basic research in the United States.

Based on our analysis, my 1977 Budget proposed $2.6 billion for 1977 -- an increase of 11 percent over 1976 estimates -- for basic research to help assure that the flow of new scientific knowledge continues. This level of funding would reverse the steady decline -- in constant dollar terms -- in the Federal investment in basic research which began in 1967.

Since much of the nation's basic research is conducted at colleges and universities, I requested significant funding increases for the NSF and other agencies that support basic research in these institutions. In my request, basic research funding by the NSF would have increased by 20 percent. Unfortunately, the Congress has not approved all of the funding that I requested for NSF support of basic research in 1976 or 1977. This means that both the scientific community and the Administration will have to work harder to explain to the Congress the importance of basic research.

Although the role of the Federal Government in the support of basic research is very important, the role of the private sector is also significant. Industry and other elements of the private sector must continue to support basic research and we should seek ways of preserving or expanding incentives for the private sector to continue these investments.