Overton Brooks to the Vice President of the United States, 4 May 1961, NASA Historical Reference Collection, NASA Headquarters, Washington, D.C.

Overton Brooks (D-LA), chair of the powerful House Committee on Science and Astronautics, wrote to Lyndon Johnson on 4 May proposing a strong U.S. civil program in space as the best means of demonstrating "unequivocal leadership in Space Exploration." He emphasized the prestige factors involved in the U.S./U.S.S.R. rivalry during the Cold War, and offered several possible options to pursue in meeting the challenge, among them an aggressive Apollo effort.

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May 4, 1961

MEMORANDUM

To: The Honorable Lyndon B. Johnson, Chairman,
National Aeronautics and Space Council

From: Overton Brooks, Chairman,
House Committee on Science and Astronautics

Subject: Recommendations re the National Space Program

General

It is my belief -- and I think on this point that I can speak for our committee -- that the United States must do whatever is necessary to gain unequivocal leadership in Space Exploration.

This means the procurement and utilization of sufficient scientific talent, labor and material resources as well as the expenditure of sufficient funds. This means working around the clock, if need be, in all areas of our Space program -- not just a few.

The reason is patent. Rightly or wrongly, leadership in space research and exploration has assumed such a powerful position among the elements which form the political stature of our country in the eyes of the world that we cannot afford to slight it in any fashion whatsoever. This is perhaps even more true of the non-military phase of our national space endeavor than it is of the military. Obviously, neither phase can be slighted.

According to the best information and estimates available to our committee, the Soviets are putting about 2%

of their gross national product into their space effort -- possibly as much as 2½%. For various reasons, this is a difficult thing to correlate in terms of equivalent dollars. But I think it is indicative of national attitudes and effort to contrast the Russian percentage with the less than one-half of one per cent of the United States gross national product which is going into the space program, civilian and military. A similar financial commitment on our part would involve some $10 billion a year.

Of course, I am not suggesting anything of this magnitude, but I do believe we need to accelerate our space program to the maximum that it can be accelerated by adding money to it.

I understand the restrictions and limitations imposed by our budget and by the many other legitimate demands for federal money. But I also am convinced that this space effort must be made and can be made within the flexible confines of the existing budget.

Let me emphasize that while the recommendations to follow deal mainly with the augmentation of our immediate and short-range program, we on this committee are equally committed to a forceful and stepped-up long-range endeavor. We believe that a particular effort must be made to strengthen such programs as Apollo, Saturn, Rover and the solid-segmented and F-1 liquid engine concepts.

I totally reject the defeatist notion that we are so far behind the Soviets in certain space areas that there is little point in trying to overtake them, nor can I accept the philosophy that our Space endeavor should be limited to a moderately-paced, purely scientific program. In today's volatile world our very security is linked to a dynamic, operational, broad-gauged program.

WHAT THE UNITED STATES CAN DO ON A SHORT-TERM BASIS TO RAISE U. S. PRESTIGE WITH RESPECT TO PRACTICAL SPACE ACCOMPLISHMENTS

1. There is no doubt that it will be five to eight years before we can overtake the Soviets with respect to operational use of very large rockets of either the nuclear or chemical variety.

2. If we are to do anything in the immediate future to regain prestige, we are intimately tied to the propulsion system now in being. This is basically Atlas, Titan and Thor. Don't expect too much use out of Saturn until 1965.

3. Based on Atlas, Titan, and Thor, our only hope for short-term payoff will be to accelerate the operational use of what I consider the utility packages. These are:

(a) Worldwide communications satellites
(b) Worldwide television satellites
(c) Worldwide weather satellites
(d) Worldwide navigation satellites

4. Worldwide communications and television satellites

I believe that we can have them as useful systems in three years on an experimental basis. They are important because the nation that controls worldwide communications and television will ultimately have that nation's language become the universal tongue.

5. Worldwide weather satellite systems

We have already developed a strong and sound technological leadership in this area. It appears that we excel the Soviets in the development of this type of satellite. This is one area where we can win worldwide competitive support. The world could be offered a limited operational system within one year, and a completely operational system within three years if we put the money behind it. Attendant political, psychological, and economic benefits that would accrue can be easily measured against our political goals.

6. The navigation satellite

The Transit satellite is well on its way to being operational. Within one year you could achieve a demonstrable worldwide navigation system. Within three years you could have a fully operational system, including the development of ground read-out equipment which would be relatively inexpensive and could be offered to all countries of the world. Such ground read-out equipment is already under development. Offering all nations of the world the use of this satellite will have an important effect with respect to the image we desire to project internationally.

7. Funding of utility packages

My staff has estimated that it would require an additional $100 to $150 million to accelerate the programs mentioned above to insure having them all operational within three years, except for the television relay satellite, which may only be operational on an experimental basis within that time. The significant reason for increased funds will not be the cost of payload development, but rather the procurement of launch vehicles, launching services, and the production of worldwide read-out equipment.

8. Inflatable structures

Current developments in inflatable structures may be significant, in that they represent one of the few ways in a relatively short time span of placing large structures in space with our current rocket vehicles. Inflatable structures make small packages in the nose of a rocket and in space can be inflated to large, complex shapes with plastic foam hardened in double walls to create light weight, rigid structures. They could be useful for placing payloads into space which we have previously thought could not be done until we had the Saturn operational. Perhaps $6 to $8 million invested in this development area might have significant short-term payoff.

A POSSIBLE, SHORT-TERM DRAMATIC ACHIEVEMENT WITH RESPECT TO BASIC SCIENCE

THE ORBITING ASTRONOMICAL OBSERVATORY

The first nation which is able, on the basis of observation, to make a cosmological determination of the origin, evolution and nature of the universe will have reached one of the great milestones in the history of man.

Not only will this determination be a scientific achievement of the first magnitude, but it very likely will have a highly dramatic impact on the populations of every nation. All people are instinctively and deeply interested in how the world began and where it is going.

Such a determination can also be expected to capture the fascinated attention of every physical scientist -- men and women who have been trying for years to learn the truth concerning the creation of the universe and who are divided over the conflicting Explosion, Steady-State and Expansion-Contraction theories of leading cosmologists.

Astronomers agree that the only way to make such a determination is through observation. They also agree that perhaps the largest remaining obstacle to the necessary observation is acquiring the capability to observe from a point undisturbed by the earth's atmosphere.

This is what the 3500-pound, unmanned Orbiting Astronomical Observatory (OAO) is designed to do.

This is also a portion of our scientific satellite program which is being funded on a relative shoestring and without any particular urgency attached to it.

In view of the potential drama and prestige connected with the OAO, and in view of the fact that it does not require excessive developmental time, it is suggested that this program be provided with additional funds and assigned a high priority.

The OAO is not dependent on undeveloped boosters. It contemplates use of the Atlas-Agena B, which is in existence. The planned payload for the first OAO, while complicated, presents no exceptionally difficult problems. The most difficult problem connected with the OAO appears to be the very high order of stabilization necessary to permit an accurate charting of the heavens -- but here again the basic techniques are known. It is a matter of development.

NASA, in its 1962 recommendations, is asking about $5.7 million for further development of the payload and $12 million for launch and flight units. A request to the Budget Bureau for an additional $7 million for this program was not approved, which will slow even the present schedule.

The first OAO is not scheduled for launch until late 1963. Indications are, however, that the program can be speeded up considerably with the addition of not more than $15 or $20 million and with the assignment of priority to it.

It is therefore recommended that:

(1) The OAO be assigned all necessary funding and priority to get it off the ground at the earliest possible moment. This should include adequate backups both for launch vehicles and for a variety of payloads.

(2) An ad hoc Cosmology Assessment Board composed of about five noted astronomers (such as Whipple of Smithsonian, Gold of Cornell, Code of Wisconsin, Roman of NASA, Mayall of Kitts Peak) be formed to work out the details of the experiments -- and to evaluate subsequent results.

(3) The emphasis on this program not be publicized until the Board is ready to release data which has significant cosmological meaning.

It is recognized that important findings in this field will take time and study and that they will not immediately be conclusive. Nonetheless it is believed that results which may even point in the direction of the truth concerning the nature of the universe may carry an impact to make our scientific findings to date pale by comparison. We should not let Russia report the first important findings in this field.

To get moving on this program we need not wait for the development of a Saturn, a nuclear rocket or a life support system. We can begin now and cheaply.

WHAT THE UNITED STATES CAN DO ON AN INTERMEDIATE-TERM BASIS TO GAIN AND MAINTAIN WORLD LEADERSHIP IN SPACE TECHNOLOGY

1. We snould embark immediately upon a back-up or alternate for the Saturn project. All indications are that Saturn will slip.

2. Industry, through NASA or DOD, or both, should be given an immediate go-ahead in the development of large, segmented, clusterable solid rocket engines to back up the Saturn.

3. A family of large, first stage "space trucks" should be developed so that proper upper-stage rocket vehicles and our payload program can be effectively planned and designed.

4. The Rover Project should be pursued vigorously; however, since this is one area where we may leapfrog the Soviets, we need insurance. We should immediately embark upon a back-up nuclear rocket development, should Rover fail to be the correct approach. There is a great deal of reactor "know-how" and rocket engine "know-how", which I do not believe is being utilized to the fullest in achieving a successful nuclear rocket. We may be overlooking many bright ideas by giving the Rover Project group monopoly on the development of nuclear rockets.

5. There is need for sustained development in the chemical rocket field, despite the anticipated successful development of nuclear rocket engines. Both liquid and solid rocket developments must continue at high priority, since there is a place for both the chemical and nuclear boosters in the national program.

6. It is important that military designed criteria be incorporated in NASA-developed large space trucks, because I do not think we can afford to have two agencies running parallel programs which will spend many billions of dollars over the next ten to fifteen years.

7. Because large space boosters are so expensive, serious thought should be given to designing both manned and unmanned recoverable systems.

8. If we accelerate our space program, we will soon exhaust our storehouse of basic and applied research. We must put more emphasis in these areas by drawing in more scientific talent and channeling more funds into the fundamentals of basic space technology.

9. We should pursue vigorously our man-in-space program. We cannot concede the Moon to the Soviets, for it is conceivable that the nation which controls the Moon may well control the Earth.

10. The military aspects of space must not be overlooked. We should embark upon serious developments in the area of anti-satellite weapons, covert reconnaissance, and other offensive and defensive systems which can be done better from a space environment than an earth environment. These developments admittedly will be expensive, therefore we must be careful that we do not embark upon military space systems for the pure sake of doing them from space if they can be done more effectively and economically from Earth.

11. We must start now to plan not only the exploration of the Moon, but the exploration of the planets if we are to wrest the initiative in this area from the Soviets. The driving force which has brought man to the level of mastery of the world around him has been his insatiable intellectual curiosity. I believe we are in the initial phase of man's drive to break out into the universe.

12. <u>Can we support a broad-based national space program</u>? I have already said that the United States can sustain a massive space effort, and if carefully planned, it can be accomplished without creating undue imbalance in our structure for scientific research and in our economy. A $5 billion a year space program represents only about 1% of our gross national product, even half of which offers returns crucial to the leadership, the prestige, and perhaps even the survival of the United States.

QUESTIONS WHICH I BELIEVE SHOULD BE CONSIDERED BY THE SPACE COUNCIL

1. Has there been developed a recognizable set of national space objectives?

2. Are we merely reacting to Soviet accomplishments with space projects that parallel theirs? If so, we can never hope to surpass them because we will always be behind.

3. Will the Space Council staff, as now envisioned, be capable of providing the information the Council will need make decisions on a national basis? Will the Council insure that its staff is made up of knowledgeable civilians, rather than utilizing military personnel?

4. Will the Space Council review both DOD and NASA programs, assess them against the national objectives, limit overlap and duplication, and set plateaus of achievement?

5. Will the Space Council have as its principal objective the tying together of our technological goals in space with our geopolitical goals?

6. Does the Space Council intend to fix program responsibilities and write report cards?

7. Will the members of the Space Council continue to work closely with the Committees in Congress charged with the legislative responsibility for the national space effort?

8. Will the Space Council adjudicate DOD-NASA conflict?

9. Since the DOD and NASA members of the Space Council have an understandable stake in the competition for dollars channeled into the national space program, will it be possible to make realistic program determinations between the two without independent staff studies by competent experts not connected with either DOD or NASA?

10. Will the Council be sufficiently staffed to develop a national 5, 10, 15, 20 - year program for space endeavor which takes into consideration not only our technological goals in space, but the international political goals of the United States?