EXECUTIVE

OS
FG11-4

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

EXECUTIVE SECRETARY

January 10, 1969
10:15 A.M.

Rec'd "Jan" Sat-Jan

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Soviet Launches. The USSR has announced that it launched successfully two Venus probes, Venus-5 on January 5 and Venus-6 on January 10. The stated purpose is to make slow descents through the Venusian atmosphere while making measurements of it, one on the light side and one on the dark side of the planet. Arrivals at Venus would be in mid-May 1969. Of the 12 Soviet spacecraft launched toward Venus since 1961, so far only one in 1967 was successful. The U.S. has made 3 attempts at Venus fly-by missions since 1962, of which 2 were successful.

2. Astronauts. On January 9, the Apollo 8 astronauts were awarded NASA's Distinguished Service Medal by the President at the White House. They then traveled in a motorcade to the Capitol, where they addressed a joint session of Congress. Later, they held a news conference, attended a dinner, and briefed members of the Congress.

3. Apollo 9. The launch vehicle and spacecraft for the Apollo 9 mission are being checked out on the pad at the Kennedy Space Center for their scheduled February 28 lift off. The mission calls for an Earth-orbital flight of nearly 10 days to test performance of the three-man crew and carry out rendezvous and docking activities, using the Lunar Module with a man aboard for the first time.

4. Airport Noise. The FAA has proposed rules to keep at reasonable levels aircraft noise around the Nation's major airports. The rules would limit noise for new aircraft to about half the level presently produced by the noisiest aircraft now in service. The proposal, issued under terms of a law enacted by Congress last year, gives interested parties until March 12 to file comments, after which the FAA can either modify the new rules or put them into effect unchanged.

5. Unidentified Flying Objects. A two year study of UFO's has been completed and the conclusion that further study is not merited is supported by the National Academy of Sciences. The report states that no evidence was found that UFO's are associated with non-Earth visitors. However, it did recommend further study of atmospheric optics, radio wave propagation, and atmospheric electricity.

6. Apollo 8 Footnotes.

a. Preliminary examination of the Apollo 8 spacecraft by the development contractor indicates that it could be refurbished and flown again. The salt water corrosion resulting from the Pacific Ocean landing did most of what damage occurred.

b. In their post-flight interrogation, the Apollo 8 astronauts have indicated that the black-and-white photography of the Moon's surface represents more closely than the color prints the hue they observed while in lunar orbit.

c. Overseas reaction to the mission continues to be overwhelmingly favorable. Two themes predominate: (1) the mission gives the United States clear supremacy in space achievement, and (2) the historic flight is a victory for all mankind.

7. Space Payloads Successfully Launched
(January 10)

	U.S.		USSR	
	1968	1969	1968	1969
Earth Orbit	1	0	0	0
Escape	1	0	0	2

E. C. Welsh

EXECUTIVE
OS
FG 11-4

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

EXECUTIVE SECRETARY

January 3, 1969
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches. The Soviet Union launched Cosmos 261 on December 19 and Cosmos 262 on December 26, both into orbits normally used for scientific research. According to a Moscow announcement, six other Soviet bloc nations are participating in the Cosmos 261 scientific program.

2. Pending Launches. The fifth Orbiting Solar Observatory (OSO-5) is scheduled to be launched on January 22 from the Eastern Test Range aboard a Thor-Delta vehicle. This satellite will receive data on the Sun's radiation in the X-ray, gamma ray, and ultraviolet ray ranges of the spectrum.

3. Supersonic Transports.

a. On December 31, the Soviet Union became the first nation to fly a supersonic transport when the prototype of the TU-144 took off from a Moscow airport and traveled for 38 minutes at subsonic speeds. The Russians report that the jet can fly at 1,550 miles per hour, carry 80 to 120 passengers, and have a range between 3,000 and 4,000 miles.

b. Flight of the U.S. supersonic prototype is scheduled for 1972. It is expected to fly at 1,800 miles per hour, carry 230 to 300 passengers, and have a range between 3,000 and 3,500 miles.

4. Apollo.

a. Apollo 8 -- Astronauts Borman, Lovell, and Anders will be honored in Washington on January 9.

b. Apollo 9 -- The spacecraft and Saturn V launch vehicle for Apollo 9, the first manned space flight with the Lunar Module, are now on the launch pad at Kennedy Space Center. Launch is scheduled for February 28.

c. Apollo 10 -- The Apollo 10 spacecraft's Saturn V launch vehicle has been erected in the Vehicle Assembly Building at the Kennedy Space Center. The plan is for a lunar-orbit mission, with crew transfer to the Lunar Module

and descent to within 50,000 feet of the Moon and return to the lunar-orbiting Command and Service Modules. The flight is scheduled for late April.

5. Communications Satellite. The INTELSAT III communications satellite, launched December 18, was placed into a stationary orbit 22,300 miles above the east coast of Brazil. The satellite is now in commercial service. It has carried, among other programs, the Apollo 8 TV pictures to Europe and the Pope's Christmas mass to North America.

6. Navigation Satellite. The United Kingdom's new ocean liner, SS Elizabeth II, will make use of the U.S. navigation satellite system, using a commercial version of the shipboard receiver.

7. X-15. The X-15 rocket plane program was ended by NASA this week, after a very successful ten-year 199 flight program. In establishing world records, the aircraft reached a peak altitude during the program of 354,200 feet, and a top speed of 4,520 miles per hour.

8. Space Statistics. Since the first spacecraft was launched in 1957, there have been 963 spacecraft (605 U.S. and 358 USSR) launched into Earth orbit or on escape missions to the Moon or the planets.

E. C. Welsh

Files

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E. C. Welsh

NATIONAL AERONAUTICS and SPACE COUNCIL

December 27, 1968

To: Honorable George E. Christian

This brief summary of space and aeronautics activities for 1968, might be a useful paper for the President to release. I have prepared it for his information but it is not classified in any regard and should get fairly impressive coverage if released.

E. C. Welsh

EXECUTIVE
OS
FC 11-4
PR 18-3

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

EXECUTIVE SECRETARY

December 27, 1968
12:15 P.M.

MEMORANDUM FOR THE PRESIDENT

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

1. Manned Space Activity.

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

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

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

3. International Activities.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Space Payloads Successfully Launched
(December 27, 1968)

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

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

E. C. Welsh

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

EXECUTIVE SECRETARY

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OS 7

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WASHINGTON 20502

EXECUTIVE SECRETARY

December 20, 1968
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Apollo 8. The astronauts and their equipment are getting ready for the first manned flight around the Moon. The countdown is proceeding towards a planned lift-off at 7:51 a.m. on Saturday, December 21. The schedule calls for the craft to orbit the Moon on Christmas Eve. The Vice President is scheduled to be at the Cape. Also, 67 Ambassadors are planning to attend the launch, as are at least 50 members of Congress. Live television coverage is planned for home and foreign viewing.

2. Launches.

a. The Soviet Union launched Cosmos 259 on December 14 into an orbit normally used for geophysical research. On December 16, the Soviet Union launched Cosmos 260 into an orbit similar to that previously used by Soviet communications satellites.

b. NASA successfully launched an ESSA 8 weather satellite from the Western Test Range on December 15, using a Thor-Delta launch vehicle. The spacecraft is functioning normally, and is expected to transmit local cloud cover data on a global basis by Christmas Eve.

c. NASA successfully launched INTELSAT III on December 18, for the ComSat Corporation from Cape Kennedy, using a Thor-Delta launch vehicle. The satellite was placed into a transfer orbit for injection today into a synchronous orbit. It will be positioned above the equator in the Atlantic to provide communications between North and South America and Europe.

3. Other Pending Launches.

a. An Orbiting Solar Observatory (OSO-F) will be launched January 15 from the Eastern Test Range using a Thor-Delta launch vehicle. This solar observatory will receive data on our Sun's radiation output in the X-ray, gamma ray, and ultraviolet ray ranges of the spectrum.

b. The International Satellite for Ionospheric Studies (ISIS-A) will be launched on January 22 from the Western Test Range using a Thor-Delta

launch vehicle. This program is a joint United States-Canadian venture in which the United States supplies the launch vehicle and the Canadians the spacecraft. The satellite will investigate radio noise and radiation from the upper atmosphere in the polar regions.

4. Space Molecules. Astronomers have discovered traces of ammonia in the vast clouds of space dust which exist between stars toward the center of our galaxy. They said that the discovery marks the first time that a relatively complex molecular compound has been definitely identified in the vast regions between the stars. Ammonia is one of the essential ingredients in the formation of elementary life.

5. OAO Star Mapper. NASA's Orbiting Astronomical Observatory launched on December 7 is performing flawlessly in its task of photographing stars with its 11 telescopes. During the week of December 23, the spacecraft will be programmed to begin photographing the sky for a "sky map."

6. Aerospace Industry Peak. Aerospace industry sales in 1968 reached a record $30.1 billion -- a 10.5% increase over sales in 1967. With the exception of non-military space business, every category of aerospace sales registered gains. The level of net profits after taxes, as a proportion of sales, increased over 1967 from 2.7% to 3.1%. This profit ratio is to be compared with a 5.1% return in the general manufacturing segment of the economy. The Aerospace Industries Association presented these data and predicted a slight decline in aerospace sales in 1969, primarily because of an expected decrease in civilian space expenditures and in the delivery of civilian transports. The export picture for aircraft and spares is favorable and is largely responsible for any merchandise export surplus anticipated.

7. Public Opinion Survey on Space. A Trendex Survey of 1283 people was conducted in six cities in late October of this year. The cities were: Cincinnati (Ohio), Pasadena (Calif.), Des Moines (Iowa), St. Paul (Minn.), Sandusky (Ohio), and Boston (Mass.). The inquiries had to do with the space program. Most impressive of the findings was that the favorable attitude toward space exploration had increased to 68% compared with 51% of a year ago. Moreover, a combination of those wanting to continue the present rate of space activity or to increase it was at the highest point in five years.

8. Space Payloads Successfully Launched
(December 20)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	77	60	64	69
Escape	10	2	1	3

E. C. Welsh

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

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

December 13, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The second Orbiting Astronomical Observatory (OAO-2) was successfully launched by NASA from Cape Kennedy on December 7, using an Atlas-Centaur vehicle. The spacecraft, which carries eleven telescopes, began functioning on December 10 and is photographing the stars, some of which have not been previously observed. The pictures are transmitted to Earth electronically.

b. The Soviet Union launched Cosmos 258 on December 10 into an orbit from which a spacecraft is usually recovered after eight days.

c. The Department of Defense successfully orbited a classified satellite December 12 from the Western Test Range.

2. Apollo 8. Apollo 8 remains on schedule for launch on December 21, as the first manned flight to the vicinity of the Moon. Reports that a leak in a first-stage engine might delay the launch are incorrect. The countdown demonstration test was successfully completed with the prime crew aboard on December 11.

3. Test Accident. On December 8, at Ellington AFB near Houston, a test pilot lost attitude control of the Lunar Landing Test Vehicle (LLTV) during a final test flight. There had been 13 previous flights of this vehicle. The pilot ejected successfully, but the vehicle was destroyed. It matches as closely as possible the flight characteristics of the Apollo's Lunar Module, but there is no actual similarity in the hardware. So far, the accident does not appear to have adversely affected the Apollo program schedule.

4. Pending Launches.

a. An ESSA weather satellite is scheduled for launch from the Western Test Range aboard a Thor-Delta vehicle in the afternoon of December 13.

b. The INTELSAT IIIB communications satellite, for Pacific area coverage, is scheduled for launch from the Eastern Test Range on a Thor-Delta vehicle on December 19.

5. White House Dinner. On December 9, President and Mrs. Johnson entertained at a dinner at the White House persons prominent in the space program. Among the guests were the Vice President, former NASA Administrator Webb, twenty-three NASA astronauts, and others from industry and government. The Medal of Freedom was awarded to Mr. Webb by the President.

6. International Space Developments.

a. Canada has disclosed plans for the initiation of a domestic communications satellite system for initial operation in 1971. The first satellite in the system would be capable of carrying 6,000 one-way voice circuits or six color T.V. programs from a synchronous orbit.

b. It is reported that the West German Republic plans an expansion of its space research and development efforts over the next three years to a proposed annual outlay for space by 1971 of about $130 million a year.

7. Space Payloads Successfully Launched
(December 13)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	77	58	62	67
Escape	10	2	1	3

E. C. Welsh

BBI

EXECUTIVE (5)
FG11-8
FG 260
OS

December 13, 1968

MEMORANDUM

TO: Dr. Thomas O. Paine
Acting Administrator
National Aeronautics and Space Administration

FROM: Charles S. Murphy

SUBJECT: Information for Nixon Task Force

President-elect Nixon has established a task force on Space to make recommendations to him. The Chairman of the task force is Charles Townes.

Chairman Townes wishes to obtain from your agency information for the use of his task force. The President will be glad for you to provide such information to the task force as you deem proper.

As a general guideline, it is suggested that the information made available to the task force should be the same as if the task force had been appointed by the present Administration. This will take into account, of course, the appropriate restrictions on making information available to private individuals.

cc: William Harman

CSMurphy:jm

Cy made for Permanent Files

3

EXECUTIVE

FG 11-4

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE SECRETARY

December 6, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The Soviet Union launched Cosmos 255 on November 29 into an orbit from which the spacecraft is typically recovered after eight days; Cosmos 256 on November 30 into an orbit usable for navigation purposes; and Cosmos 257 on December 3 into an orbit previously used for scientific measurements of the space environment.

b. The Department of Defense successfully launched a classified spacecraft into orbit from the Western Test Range on December 4, using a Titan IIIB vehicle.

c. NASA successfully launched a scientific satellite, HEOS (Highly Eccentric Orbiting Satellite), into a highly elliptical orbit from Cape Kennedy on December 5, using a Thor-Delta vehicle. The satellite was designed and built by the European Space Research Organization (ESRO) and is the third ESRO spacecraft to be put into orbit by NASA for that organization. It is also the first such launch for which NASA will receive full reimbursement for the launch and the launch vehicle. The satellite will make cosmic radiation, solar wind, and other measurements in the interplanetary environment.

2. ELDO Failure. The European Launcher Development Organization (ELDO) failed November 30 in its attempt to launch a satellite from the Woomera Test Range in Australia aboard the ELDO F-7 vehicle. The vehicle's third stage, developed by West Germany, failed shortly after ignition.

3. Pending Launches.

a. The second Orbiting Astronomical Observatory (OAO-2) is now scheduled for launch on December 7 on an Atlas-Centaur vehicle at Cape Kennedy. The payload includes eleven telescopes.

b. An ESSA weather satellite is scheduled to be launched by NASA from the Western Test Range aboard a Thor-Delta vehicle on December 12. Two APT cameras will furnish local weather data around the world.

4. Agreement. On December 3, the President announced the entry into force of the international Agreement providing for the rescue and return of astronauts, and the return of space objects from foreign soil. More than 75 nations have signed the Agreement.

5. Trophy. On December 3, the President presented the Harmon Aviation Trophy to Air Force Major William J. Knight. The award recognized Knight's flight in the X-15 rocket aircraft to a speed of 4,534 miles per hour, setting a new world record, on October 3, 1967.

6. Apollo 8. The countdown demonstration test started on December 5. On December 10, the astronauts will run through their phase of the countdown demonstration test on board the space vehicle. The countdown for the launch will begin at 7:50 p.m. on December 16.

7. Space Payloads Successfully Launched
(December 6)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	75	56	62	66
Escape	9	2	1	3

E. C. Welsh

Gate/ET

IV

December 2, 1968

FOR THE PRESIDENT'S NIGHT READING

FROM Joe Califano

Do you want to have Dr. Paine look at this?

Yes_____ No_____

MEMORANDUM

(3)

EXECUTIVE
OS
CO 303
76 11-9
76 726

THE WHITE HOUSE

WASHINGTON

Monday, December 2, 1968
2:00 pm

MEMORANDUM FOR

THE PRESIDENT

SUBJECT: Assessment of the Soviet Space Program

The Space Science and Technology Panel of your Science Advisory Committee has given me a very good, concise assessment of the Soviet space program and its probable future course. It is attached, and I commend it to you. It is the judgment of a group of experts who have been involved in this problem for some time and who have had access to high level intelligence data.

Although the report makes no recommendations, several additional observations appear pertinent:

--If the U. S. is to accept the challenge of space competition with the Soviet Union as a symbol of our relative technical strengths, a continuing vigorous space program will be required.

--Since the Soviets utilize their space program for political objectives by achieving "firsts", overt cooperation in the selection of important missions and objectives is not likely in the foreseeable future.

--Effective competition does not require that the U.S. challenge the probable Soviet program on a mission-by-mission basis since the effect of individual space spectaculars is becoming less significant as an indication of leadership in space.

Donald F. Hornig

Donald F. Hornig

Attachment
a/s

SPACE SCIENCE AND TECHNOLOGY PANEL

REPORT

AN ASSESSMENT OF THE SOVIET SPACE PROGRAM

The Soviet Union has pursued space exploration together with space science and technology in a manner that indicates commitment to a long term planned effort expanding in a planned relationship to its gross national product. Its effort relative to that of the U.S. is characterized by certain patterns of which the following are particularly significant:

1. Pursuit of an objective until achieved in spite of repeated failures.
2. Substantial development difficulties with attendant frequent flight failures for a considerable period in the early phases of a program, followed by program maturity with very high reliability thereafter.
3. An apparent plan for a gradually increasing funding level over a period of several years which is consistently adhered to and can be counted on by the space program managers.
4. Selection of objectives with emphasis upon achieving simply described and easily visualized "firsts" of high public interest.
5. An exploratory effort deliberately directed at expanding its knowledge of the solar system and the universe.
6. Selective exploitation of space applications on the basis of utility to the Soviet Union.

At the present time the dynamic drive of the Apollo program and the leadership of the United States in electronics and instrumentation has enabled the United States to attain the lead position in space. Recent successes by the Soviet Union in probing the atmosphere of Venus and in circling the moon followed by lifting reentry recovery portend a threat to the U.S. leadership, in planetary exploration and possibly in exploration of the moon as well.

Based on the presently approved U.S. program and the assumption that the Soviet program will continue in its past pattern, the following predictions are made:

1. The United States is leading in its manned lunar landing program by at least a year relative to the Soviets.
2. The Soviets are likely to try to minimize the effect of this leadership by attempting
   a. a manned circumlunar flight within the next three months.
   b. an unmanned lunar soft landing with the return of a lunar sample to earth before the U.S. manned lunar landing.
3. Following the U.S. manned lunar landing, the Soviet Union is likely to rebuild its prestige in space and move towards a position of world leadership by dominance in planetary exploration, parity in manned lunar exploration, and competition in space astronomy.
   a. We expect an agressive Soviet program of planetary

exploration during 1969-73 including landings on Mars and Venus, exploiting newly available large launch vehicles. U.S. decisions already made make it impractical to have a competitive landing program prior to '73.

b. With the present trend towards stretchout of manned lunar exploration by the United States following the first successful Apollo mission, it is probable that the Soviet Union will at least equal U.S. efforts in manned lunar exploration in the early 70's. The mode of accomplishment of the manned lunar landing that we expect the U.S.S.R. to adopt will be particularly well adapted to follow on exploration after the first landing.

c. In addition, the Soviet Union is likely to undertake a substantial program of earth orbital, manned or unmanned astronomy.

d. Considerations of the pace of the Soviet lunar landing program, manned spacecraft systems and launch vehicle availability suggest to us that the Soviets have the capability for an early space station consistent with extended earth-orbital operations. In this event we can expect a substantial expansion in space biomedical research, in which the Soviets have taken a broad and basic interest.

In summary, when we compare the relative balance within the U.S.S.R. and U.S. space programs we find: (a) the U.S.S.R. places greater emphasis on planetary exploration, (b) the U.S.S.R. can be expected to become fully competitive in lunar exploration within a few years following the initial U.S. landings, (c) the nature of Soviet manned and unmanned earth orbital work cannot be predicted with confidence, but existing Soviet capabilities make possible the development of earth orbiting space stations.

EXECUTIVE
OS
FG 11-4

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE SECRETARY

November 29, 1968
12:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Satellite Photographs Save Cities. Photographs from the ESSA VI weather satellite helped to save two cities in Mexico from inundation during the recent passage of Hurricane Naomi. The cities -- Gomez Palacios and Torreon -- are near a dam whose river basin had been filled by the torrential rains created by the storm. Officials were contemplating opening the dam and flooding the cities to avert the danger of further rains destroying the dam and the cities as well. However, data from the satellite, received and interpreted in Mexico, indicated that the weather was clearing, and the decision was made to keep the dam closed.

2. Pending Launches.

a. The second Orbiting Astronomical Observatory (OAO-2) is now scheduled for launch on an Atlas-Centaur vehicle from Cape Kennedy on December 4. A series of technical problems have caused delays.

b. The third European Space Research Organization (ESRO) satellite is expected to be launched from Cape Kennedy into a highly elliptical Earth orbit on December 5. The satellite, named HEOS (for Highly Eccentric Orbiting Satellite), will be launched by NASA but ESRO will be responsible for its operation. It will be used to investigate interplanetary magnetic fields and study solar and cosmic ray particles during a period of maximum solar activity.

3. France Cuts Concorde Funds. The French government announced on November 26 that France's participation in the Concorde supersonic transport project would be cut by $12 million as part of the nation's economic retrenchment to maintain the value of the franc. European aviation experts claim that the cut will not affect the schedule for the first flight of the French prototype, due in late January.

4. First Lady Visit. Mrs. Johnson toured the Kennedy Space Center on November 23. The First Lady and her party were escorted by NASA officials and the Executive Secretary of the National Aeronautics and Space Council. She was presented with space mementos for the Johnson Library.

5. Apollo 8. Preparations for the Apollo/Saturn V, a manned lunar orbit mission due for launch from the Kennedy Space Center on December 21, are proceeding on schedule.

6. Weather. ESSA satellites photographed three typhoons in the western Pacific during the period of November 18-26. Warnings were issued to the Philippines and South Vietnam.

7. Space Payloads Successfully Launched
(November 29)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	73	54	61	63
Escape	9	2	1	3

for E. C. Welsh

E. C. Welsh

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: TUESDAY A.M.
December 3, 1968

RELEASE NO: 68-204

PRESS KIT

PROJECT: HEOS-A

contents

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11/27/68

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: TUEADAY A.M.
December 3, 1968

RELEASE NO: 68-204

HEOS-A SATELLITE

The European Space Research Organization's first interplanetary physics research satellite, HEOS, is scheduled for launching on a National Aeronautics and Space Administration Thor-Delta vehicle from Cape Kennedy, Fla., no earlier than Dec. 5.

HEOS (Highly Eccentric Orbit Satellite) will be the first spacecraft launched under an ESRO-NASA agreement providing for launchings on a reimbursable basis.

HEOS' scientific mission is to study interplanetary physics -- particularly magnetic fields -- cosmic radiation and solar wind outside of the magnetosphere and the Earth's shock-wave. For this purpose a highly elliptical orbit was selected, with an apogee of 225,000 kilometers (138,000 statute miles) equivalent to two-thirds the distance from the Earth to the Moon and well above the regions of space influenced by the Earth.

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11/27/68

The HEOS mission was planned for the period of high solar activity, near the end of 1968 or the beginning of 1969. The 238-pound satellite will have a perigee of 440 kilometers (274 miles) an inclination of 28.3 degrees and a period of approximately five days.

HEOS is capable of modifying its attitude and spin rate on ground command. It also has the unique feature of being "magnetically clean," i.e.: the magnetic field induced by the satellite itself as measured by the on-board magnetometer is only 0.15 gamma.

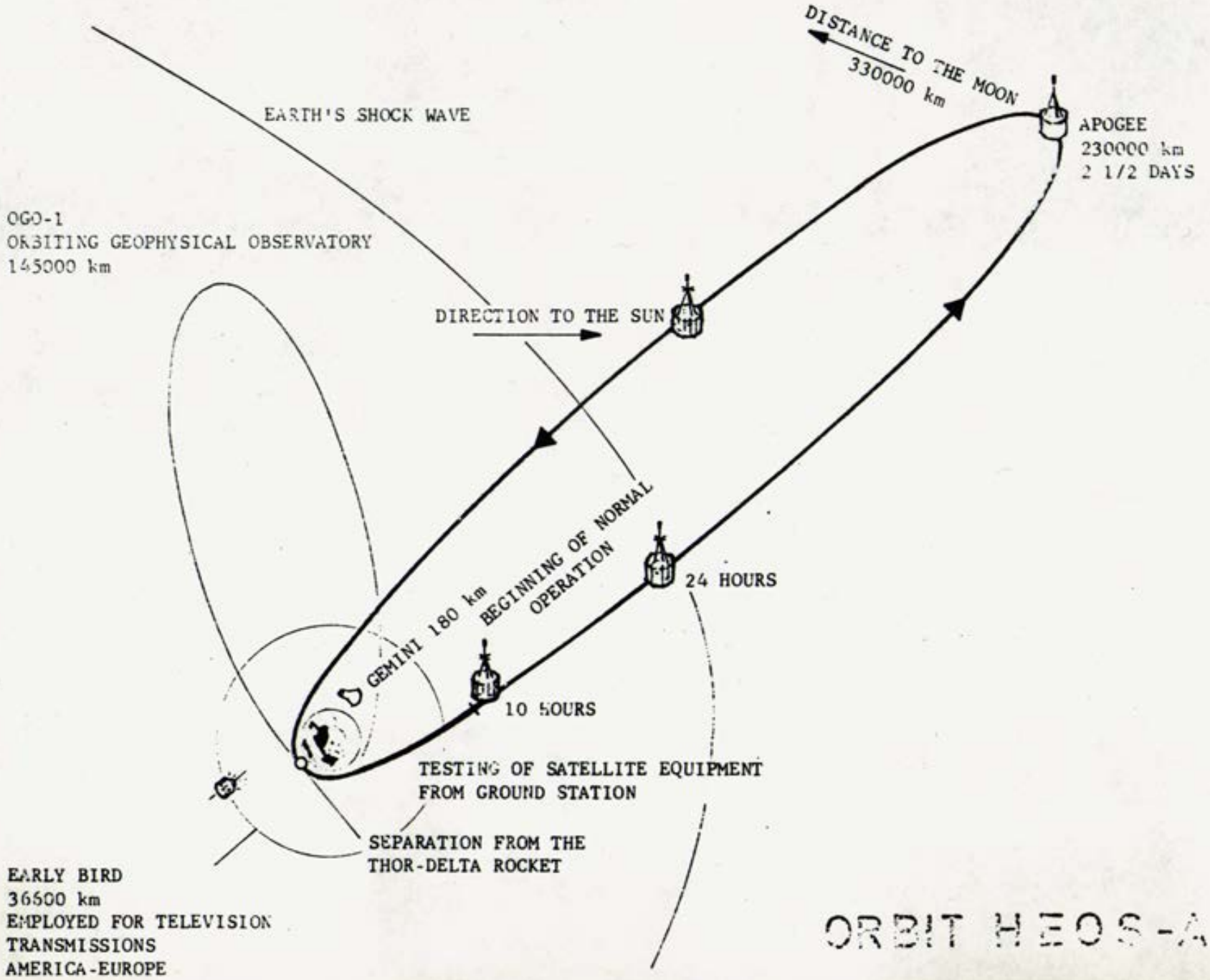
HEOS was prepared under the supervision of ESRO's European Space Technology Center (ESTEC) at Noordwijk, Holland. The satellite carries eight experiments prepared by university laboratories in Belgium, Federal Republic of Germany, France, Italy and the United Kingdom. The spacecraft was developed by a consortium of industries in Belgium, Federal Republic of Germany, France and the UK. Total cost of the project is estimated to be $16 million including the launching costs of approximately $4 million.

The NASA-ESRO agreement of December 1966 concerning reimbursable launchings provides that ESRO will furnish the spacecraft and reimburse NASA for Delta launch vehicle costs and other support.

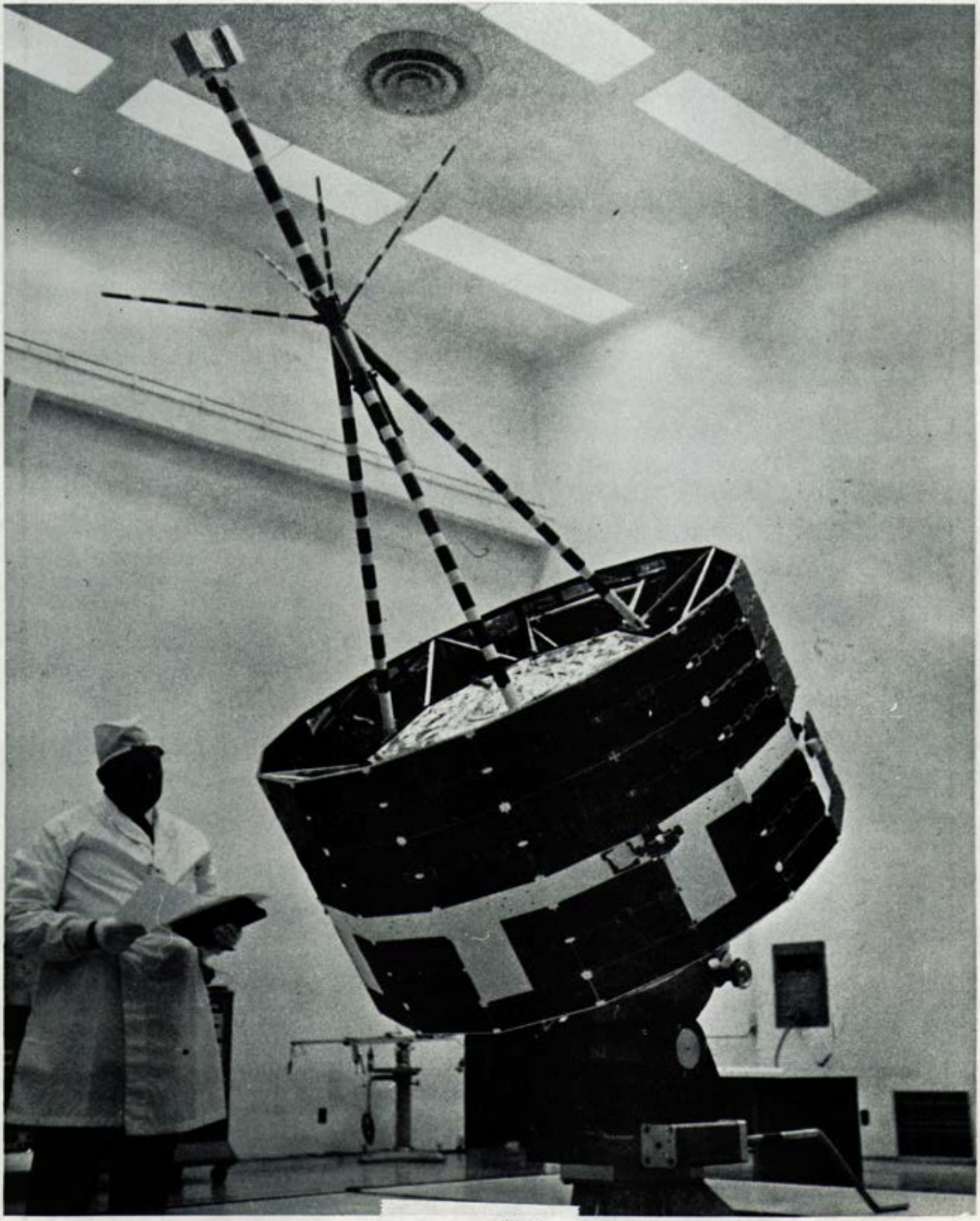
The HEOS contract was signed March 8, 1967.

HEOS will be the third ESRO satellite to be placed in orbit by NASA. ESRO's Earth orbiting scientific satellites ESRO II and ESRO I were launched from the Western Test Range, Calif., on May 16 and Oct. 3, 1968, respectively. Both satellites were cooperative projects in which ESRO provided the spacecraft and experiments and NASA furnished the Scout vehicles and launchings.

(END OF GENERAL RELEASE; BACKGROUND INFORMATION FOLLOWS)


DISTANCE TO THE MOON
330000 km
EARTH'S SHOCK WAVE
APOGEE
230000 km
2 1/2 DAYS
OGO-1
ORBITING GEOPHYSICAL OBSERVATORY
145000 km
DIRECTION TO THE SUN
BEGINNING OF NORMAL OPERATION
GEMINI 180 km
24 HOURS
10 HOURS
TESTING OF SATELLITE EQUIPMENT FROM GROUND STATION
SEPARATION FROM THE THOR-DELTA ROCKET
EARLY BIRD
36600 km
EMPLOYED FOR TELEVISION TRANSMISSIONS AMERICA-EUROPE

ORBIT HEOS-A



THE HEOS-A MISSION

The scientific mission of HEOS-A is the investigation of interplanetary space during the period of maximum solar activity.

Two factors influence the space environment near the Earth, the first being the Earth's magnetic field, the presence of which has been known for hundreds of years. The second is the solar-wind. Its presence was established by early space probes, most of them within the last ten years.

"Solar-wind" is the term used to describe the continuous out-flow of plasma (protons and electrons) from the Sun, characterized by a velocity of several hundred kilometers per second under quiet conditions. But this velocity is not constant. At times of high solar activity the wind blows more strongly. The number of Sun spots and solar flares has been observed to vary within a solar cycle extending over an 11-year period. The Sun is presently near its peak of activity for the current solar cycle.

Strength of the Earth's magnetic field decreases rapidly with distance from the Earth. The limit of the magnetic field is a boundary or perimeter where the pressure of the solar wind is balanced by the pressure of the magnetic field. The region inside this boundary (the magnetopause) is called the magnetosphere and is closely controlled by the Earth's magnetic field. The region beyond the magnetosphere is referred to as the transition region where the Earth's field does not exist and the interplanetary field is highly disordered. This transition region is bounded on its outside by a shock front caused by the solar wind which is "supersonic", i.e.: is bodily travelling faster than magnetohydrodynamic waves can propogate in it. The situation of an aircraft travelling supersonically in the atmosphere, producing a shock wave and hence the sonic boom, is somewhat analogous.

The region beyond the shock wave is termed interplanetary space and is uninfluenced by the presence of the Earth. The closest approach to interplanetary space is along the Earth-Sun line where the shock front is some eleven Earth radii distant (70,000 km). The positions of the shock front and the magnetosphere are greatly influenced by the solar wind and solar activity. Thus in order to study interplanetary space, a spacecraft must be orbited with an apogee well in excess of eleven Earth radii. The orbit chosen for HEOS-A means that the experiments can study interplanetary space for some eighty hours of every five-day orbit for the first four months of operation.

The eight HEOS experiments will make measurements of magnetic fields, the solar wind, and solar and galactic comsic rays.

-more-

LIST OF HEOS-A EXPERIMENTS

-- S-16-Optical observation of an Ion Cloud to investigate magnetic field and electric field within magnetosphere, Max Planck Institute for Extraterrestrial Physics (Munich, Germany), Prof. R. Lust and Dr. H. Gollnitz.

-- S-24-A-Measurement of the interplanetary field and its irregularities, Imperial College, University of London (England), Prof. H. Elliot and Dr. P. Hedgecock.

-- S-24-B-Measurement of the flux of cosmic ray protons of energy greater than 350 MeV, Imperial College, University of London (England), Prof. H. Elliot and Dr. A. Engel.

-- S-24-C-Directional measurement of protons in the energy range from .9 to 20 MeV, Imperial College, University of London (England), Prof. H. Elliot and Dr. R. Hynds.

-- S-58-Investigation of the angular distribution positive component of the solar wind, University of Brussels (Belgium), Prof. Coutrez and Mr. W. Scholiers.

-- S-72-Measurement of the flux and energy distribution of various cosmic ray particles (protons in the energy range from 5 to 850 MeV, alpha particles in the range 150 to 1500 MeV and electrons in the range 1.5 to 15 MeV, Centre D'Estudes Nucleaires De Saclay (France), Prof. J. Labeyrie, Dr. J. Engelman and Mrs. L. Koch.

-- S-73-Measurement of the energy distribution of the solar wind in the range from 100 to 15000 MeV, University of Florence and Rome (Italy), Prof. A. Bonetti and Prof. G. Pizzella.

-- S-79-Detection of electrons in the cosmic radiation in the energy range from 50 to 600 MeV, University of Milan (Italy) and Centre D'Etudes Nucleairs De Saclay (France), Prof. C. Occhialini-Dilworth, Dr. C. Bland, Prof. J. Labeyrie and Dr. Koechlin.

Abstract of Experiments

S-24A is designed to measure magnetic fields in the range $\pm$ 64 gamma with an accuracy of 0.5 gamma (a gamma is one one hundred thousandth part of a gauss). The field at the Earth's surface is typically 0.5 gauss. Because of its very high sensitivity, the three-axis magnetometer sensor is placed at the end of a boom support some 1.6 meters from the main spacecraft structure, so that the net effect of magnetic components within the satellite is reduced to a tolerable level.

One of the main features of the project has been the attempt to reduce the residual field due to the spacecraft to 0.5 gamma at the sensor. Less than 0.15 gamma has been achieved on the flight model spacecraft.

S-24A will relay information on fields within the magnetosphere, transition and interplanetary regions on a continuous basis. When operated in a selected mode, it will record data at a high rate to obtain high resolution when the satellite is passing through the shock front and magnetopause or other "irregularity". These data are stored in the experiment to be transmitted later, on a continuous, basis, at a much lower rate than they were recorded.

S-24B is designed to observe high energy cosmic ray protons with energy greater than 350 MeV and to detect directional anisotropies which may be correlated with the interplanetary field configuration observed by S-24A. The sensors consist of telescope arrangements of Cerenkov scintillation counters.

S-24C will observe solar protons of low energy in the region 0.9 to 20 MeV and will detect directional anisotropies which together with data from S-24A should yield fundamental information on the propagation mechanisms of solar protons.

The sensors consist of four-element solid-state-detector telescopes. Both S-24B and S-24C radial sensors view space through the Equators of the satellite, perpendicular to the spin axis, so that as the satellite spins the sensors scan through 360 degrees. Use is made of the satellite's attitude reference system to divide the 360 degrees into eight 45-degree counting sectors. S-24B and S-24C axial sensors view along the spin axis.

S-58/S 73 will measure both the energy distribution and angular distribution of the positive (proton) component of the solar wind. The sensor consists of a hemispherical electrostatic analyzer to select protons of a given energy and a Faraday cup to collect and count the selected protons. The sensor views through the equator of the satellite and so can make angular measurements as the satellite spins about its axis.

By making use of the spacecraft's attitude control system, the direction of the spin axis can be varied so that these experiments can scan, for example, first in the plane of the ecliptic and then perpendicular to the ecliptic. This reorientation feature also enables intercalibration of sensors to be made.

S-72 consists of a four-element, solid-state-detector telescope and is designed to measure electrons, protons and alpha particles of solar and galactic origin over wide energy ranges.

S-79 will measure the spectrum of high energy cosmic ray electrons in the range 50 to 600 MeV. The sensor, a four-element telescope, embodies a gas Cerenkov detector to filter out effectively a large proportion of the greater proton flux at comparable energies.

S-16 At a predetermined point in the orbit of the spacecraft a capsule will be ejected containing a barium/ copper oxide mixture. When the capsule is some 40 km from the spacecraft, the mixture will be ignited, releasing a cloud of barium ions and atoms which will be furhter ionized by solar radiation. This cloud will be observed from ground stations in North and South America and its motion will yield information on the magnetic field at the ignition point. The choice of location of the ground stations and time of release must take into account the weather conditions at the stations, the position of the Sun and the position and phase of the Moon, to optimize the observation conditions.

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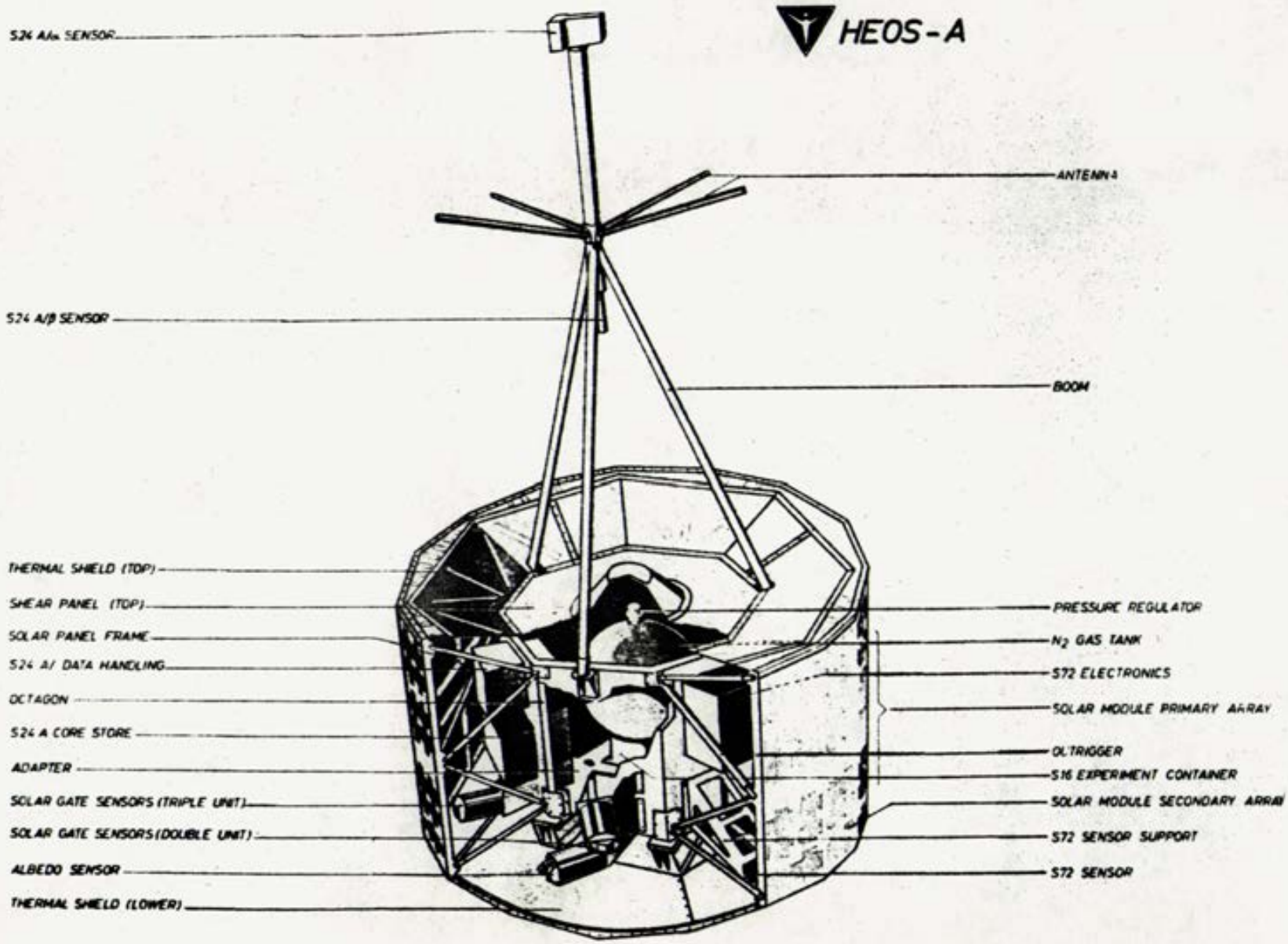
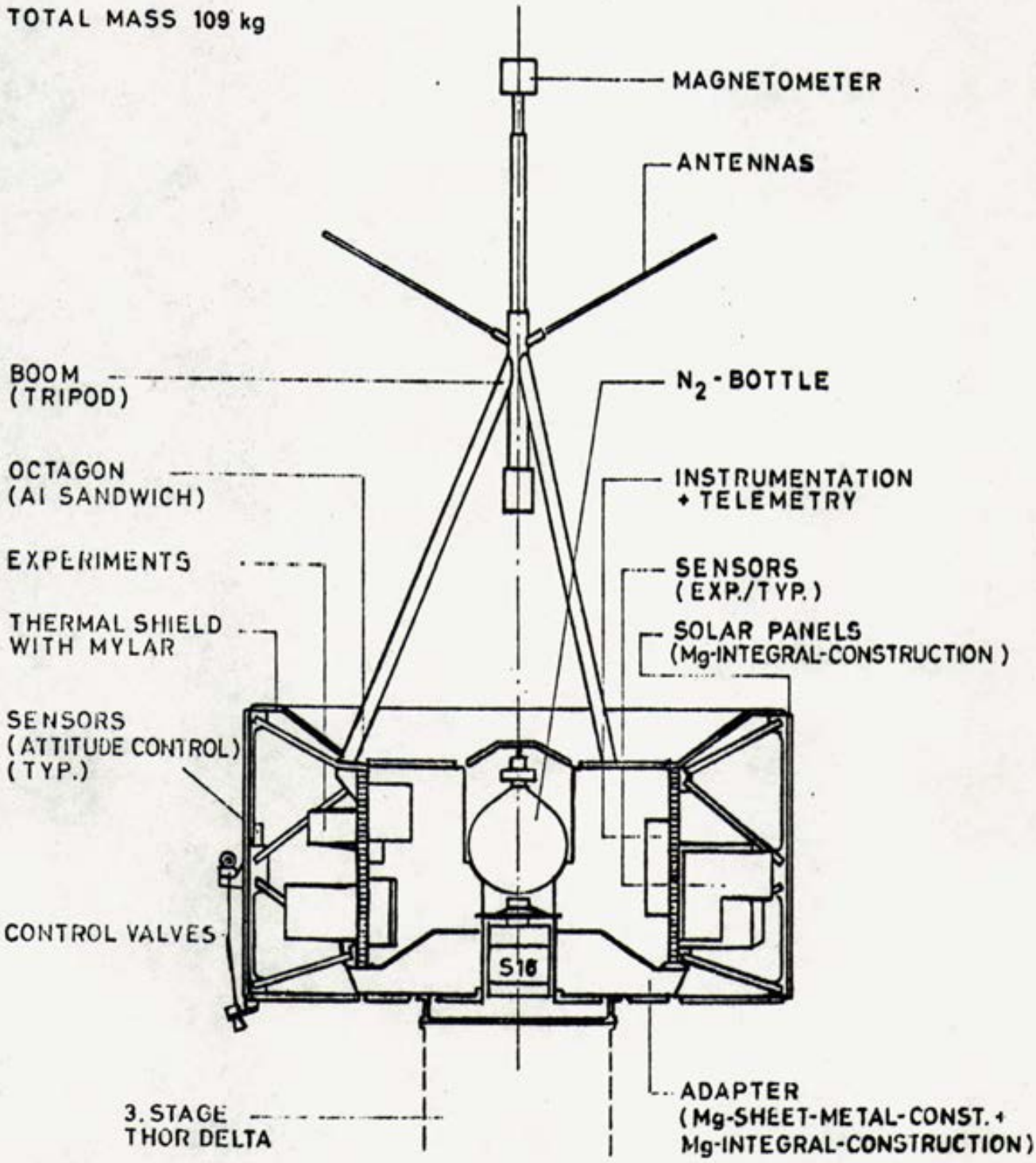

HEOS-A
S24 A/α SENSOR
S24 A/β SENSOR
THERMAL SHIELD (TOP)
SHEAR PANEL (TOP)
SOLAR PANEL FRAME
S24 A/ DATA HANDLING
OCTAGON
S24 A CORE STORE
ADAPTER
SOLAR GATE SENSORS (TRIPLE UNIT)
SOLAR GATE SENSORS (DOUBLE UNIT)
ALBEDO SENSOR
THERMAL SHIELD (LOWER)
ANTENNA
BOOM
PRESSURE REGULATOR
N_2 GAS TANK
S72 ELECTRONICS
SOLAR MODULE PRIMARY ARRAY
OUTRIGGER
S16 EXPERIMENT CONTAINER
SOLAR MODULE SECONDARY ARRAY
S72 SENSOR SUPPORT
S72 SENSOR

PRINCIPAL LAY-OUT HEOS-A



SPACECRAFT

HEOS is an octagonal structure 255 centimeters high and 130 centimeters in diameter. It will have an expected lifetime of one year. The satellite will be spin stabilized at 10 rpm, a rate that will be regulated by a gas jet system. The spin axis is capable of reorientation. The inertial attitude of the spacecraft will be determined with an accuracy of $\pm$ 2 degrees by the attitude measurement system. Exterior of the spacecraft carries 8,576 solar cells for electrical power generation.

Eclipses of less than one hour are predicted for the first six months in orbit and thereafter eclipses near apogee of only three hours are expected. During long eclipses the spacecraft systems, except the command receiver, will be shut down; consequently only a 5 ampere-hour battery is carried.

All data will be transmitted in real time, the telemetry rate being 12 bits per second. The transmitter operates on 136.65 megahertz and has a power of 5.5 watts. Seventy commands can be transmitted to the spacecraft via the command receiver operating on 148.25 megahertz. Almost 100 per cent telemetry coverage will be possible at one or other of the ESTRACK stations at Redu, Belgium and Fairbanks, Alaska.

TRACKING

An extended parking orbit will bring the injection point into the final trajectory above the Indian Ocean, and thus the apogee will be well above the Equator in the Northern hemisphere. This will permit the use of the ESTRACK stations at Redu (Belgium), Fairbanks (Alaska) and Spitzbergen (Norway) to follow the high altitude part of the orbit, instead of having to rely only on the remote ESTRACK station in the Falkland Islands supplemented by the ELDO station of Gove in Australia as would have been required with a direct ascent trajectory from Cape Kennedy which would have brought the apogee in the Southern hemisphere.

In the injection phase the spacecraft will be followed by the NASA down range stations and by three telemetry stations of the Centre National D'Etudes Spatiales (CNES, France), located in Africa.

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LAUNCH VEHICLE

The HEOS-A will be launched by NASA's Improved Delta rocket. The Delta will be launched from Complex 17B at Cape Kennedy on an initial launch azimuth of 89.8 degrees. The 15-minute launch window opens at 2 P.M. EST and is acceptable Dec. 5 through Dec. 13.

Spacecraft separation is scheduled some 50 minutes after liftoff midway between Africa and Australia, 28 degrees South latitude and 90 degrees East longitude (northeast of Amsterdam St. Paul Island in the Indian Ocean).

The Delta rocket is the first launching service to be purchased from NASA by a fireign country. The European Space Research Organization will be charged an amount of $8 3/4 million.

The launch vehicle, including a thrust-augmented Thor first stage, the enlarged Delta second stage, and the FW-4 third stage, is known as the Thrust Augmented Improved Delta (TAID).

Delta project management is directed by NASA's Goddard Space Flight Center. Launch operations are conducted by the Kennedy Space Center Unmanned Launch Operations. The Douglas Aircraft Co., Santa Monica, Calif., is the prime contractor.

Delta Statistics

The three-stage Delta for the HEOS-A mission has the following characteristics:

Height: 92 feet (includes shroud)

Maximum Diameter: 8 feet (without attached solids)

Liftoff Weight: about 75 tons

Liftoff Thrust: 270,000 pounds (including strap-on solids)

First Stage (liquid only): Modified Air Force Thor, produced by Douglas Aircraft Co., engines produced by Rocketdyne Division of North American Aviation.

Height: 51 feet

Diameter: 8 feet

Weight: approximately 53 tons

Thrust: 172,000 pounds

Burning Time: 2 minutes, 30 seconds

Propellants: RP-1 kerosene is used as the fuel and liquid oxygen (LOX) is utilized as the oxidizer.

Strap-on Solids: Three solid propellant Castor II rockets produced by the Thiokol Chemical Corp.

Height: 25 feet

Diameter: 3 feet

Weight: 30,000 pounds (all three solids)

Thrust: 100,000 pounds (all three solids)

Burning time: 38 seconds

Propellants: solid

Second Stage: Produced by the Douglas Aircraft Co., utilizing the Aerojet-General Corp., AJ-10-118E propulsion system; major contractors for the auto-pilot system include Minneapolis-Honeywell, Inc., Texas Instruments, Inc., and Electrosolids Corp.

Height: 16 feet

Weight: 6½ tons

Diameter: 4.7 feet

Thrust: 7,700 pounds

Burning Time: 6 minutes, 26 seconds

Propellants: Liquid-Unsymmetrical Dimethyl Hydrazine (UDMH) for the fuel and Inhibited Red Fuming Nitric Acid (IRFNA) for the oxidizer.

<u>Third Stage</u>: FW-4 developed by the United Technology Corp.

Height: 5 feet, 2 inches

Diameter: 19.6 inches

Weight: about 660 pounds

Thrust: 5,450 pounds

Burning Time: 31 seconds

Propellant: solid

SEQUENCE OF LAUNCH EVENTS

Event	Time	Surface Range*	Altitude*	Velocity (miles per hour)
Solid Motor Burnout	38 sec.	3.0 miles	5.0 miles	1,347
Solid Motor Separation	60 sec.	9.0 miles	12.0 miles	1,828
Main Engine Cutoff (MECO)	2 min., 30 sec.	108 miles	66 miles	9,000
Second Stage Ignition	2 min., 36 sec.	124 miles	71 miles	8,983
Shroud Separation	2 min., 46 sec.	143 miles	81 miles	9,018
Second Engine Cutoff	9 min., 2 sec.	1,264 miles	267 miles	16,244
Third Stage Ignition	48 min., 35 sec.	11,765 miles	277 miles	16,200
Third Stage Burnout	49 min., 6 sec.	11,916 miles	284 miles	22,840

* All distances are statute miles.

HEOS PROGRAM PARTICIPANTS

European Space Research Organization

Professor Hermann Bondi	Director General
Jean-Albert Dinkespiler	Director, Plans and Programs
Marcel Depasse	Director of Administration
Werner Kleen	Director, European Space Technology Center, Noordwijk, The Netherlands
Pierre Blassel	Director, Satellite and Sounding Rocket Department
Jean V. Vandenkerckhove	Project Manager
Graham Booth	Deputy Project Manager
Andre Moritz	Deputy Project Manager
Die Ter Lennertz	Test Director
Ernst Trendelenberg	Director, Space Science Department
Brian Taylor	Project Scientist
Ugo Montalenti	Director, European Operations Center, Darmstadt, Federal Republic of Germany

NASA

Robert W. Manville	Program Manager, Headquarters
Isaac T. Gillam	Delta Program Manager Headquarters
William R. Schindler	Delta Project Manager Goddard
Robert J. Goss	HEOS-A Project Manager Goddard
Dr. Kurt H. Debus	Director Kennedy Space Center
Robert H. Gray	Director, Unmanned Launch Operations, Kennedy Space Center

Hugh Weston — Manager, Delta Operations
Kennedy Space Center

INDUSTRIAL PARTICIPANTS

Prime Contractor

Junkers Flugzeug und Motorenwerke GmbH, Munich, FRG

Co-Contractors

British Aircraft Corp., Stevenage, UK
Etudes Techniques et Constructions Aerospatiales, Charleroi, Belgium
Messerschmitt AT, Augsbourg, FRG
Societe Nationales d'Etudes et de Constructions de Moteurs d'Aviation, Paris, France

Consultant

Lockheed Missiles and Space Corp., California, USA

Communications Equipment

Compagnie Francaise Thomson-Houston-Brand-Hotchkiss, Paris, France
Societe Anonyme de Telecommunication, Paris, France
Laboratori Elettronici e Nucleari, Milan, Italy

-end-

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG 11-4

EXECUTIVE SECRETARY

November 22, 1968
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Soviet Launches.

a. The Soviet Union launched Proton 4, a 17-ton spacecraft carrying 12-1/2 tons of scientific instrumentation, into Earth orbit on November 16. Tass announced that the satellite would measure high-energy cosmic rays and their interaction with atomic nuclei.

b. The Soviet Union also launched Cosmos 254, November 21. It is the type of spacecraft customarily returned to Earth in eight days.

2. Zond 6. The Zond 6 spacecraft, launched by the Soviets on November 12, passed behind the Moon at a distance of about 1,500 miles and returned to Earth where it successfully re-entered the atmosphere on November 17, using the aerodynamic glide-skip technique. It reached the atmosphere over the Indian Ocean, slowed down, skipped out, and re-entered over the Soviet mainland. The Zond 6 flight may contribute confidence to the Russians of the feasibility of sending men or at least one man on a circumlunar trip early next month. The next Soviet lunar launch "window" will begin December 8.

3. The Vice President. The Vice President visited Cape Kennedy on November 19. He was briefed by Apollo 8 astronauts. The spacecraft is scheduled to orbit the Moon at Christmas time. The Vice President performed a rendezvous maneuver on a spacecraft simulator, and later praised the U.S. space program as a wise investment for the Nation.

4. Apollo 8. During its 10 orbits above the lunar surface late next month, the Apollo 8 spacecraft is expected to obtain photographs of the hidden side of the Moon. Both still photographs and moving pictures will be taken.

5. Centrifugal Medicine. A NASA centrifuge is being used in an unparalleled attempt to save the life of a man who suffered a bullet in his brain during a holdup in California. The 63-year-old shooting victim, who has part of the bullet in an inoperable area of his brain, is resting after a

25-second whirl in the centrifuge at Ames Research Center to shift the metal. Doctors will decide within two weeks whether to subject the patient to further time in the machine.

6. Weather. ESSA satellites maintained surveillance of a typhoon on November 11-12 and a tropical storm on November 11-18. Both storms were in the western North Pacific. Bulletins were also issued regarding a tropical disturbance in the Indian Ocean.

7. Universities. Sixteen universities have agreed to become charter members of the Universities Space Research Association, a consortium proposed by the National Academy of Sciences to manage the Lunar Science Institute now being established near NASA's Manned Spacecraft Center in Houston.

8. Resources Satellites. At the request of the National Aeronautics and Space Council staff, the National Academy of Sciences hosted a one day review of the potential uses of Earth applications satellites on November 21. The audience consisted of an interdepartmental group of about 150 persons.

9. Space Payloads Successfully Launched
(November 22)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	73	54	60	63
Escape	9	2	1	3

E. C. Welsh

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

November 15, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Apollo.

a. NASA announced that the next Apollo mission would carry its three-man crew into lunar orbit during Christmas week. Launch is currently scheduled for December 21 (7:45 a.m. EST). A successful launch and cis-lunar flight would enable the astronauts to perform 10 orbits about 60 miles from the lunar surface. The spacecraft would then start its return to Earth on December 25. Splashdown would be on December 27 in the Pacific Ocean south of Hawaii.

b. On November 13, the National Aeronautics and Space Council staff held a NASA briefing on the Apollo 7 and Apollo 8 flights. It was attended by staff representatives of the Department of State, the Air Force, the Senate Committee on Aeronautical and Space Sciences, the Bureau of the Budget, the National Security Council, the National Council on Marine Resources and Engineering Development, and the National Academy of Sciences, as well as NASA and the National Aeronautics and Space Council.

c. NASA states that Apollo 9 will include the first manned flight of the combined command and lunar landing modules in Earth orbit and that Apollo 10 will include a manned flight to within 10 miles of the lunar surface.

2. Soviet Launches.

a. The Soviet Union launched the unmanned Zond 6 into a circumlunar path on November 10. On board were some low order living organisms. The spacecraft passed behind the Moon on November 13 and is on its way back to Earth. It is expected to re-enter the atmosphere over the Indian Ocean on November 17, having traveled a route similar to that of the recent unmanned Zond 5.

b. The Soviets launched Cosmos 253 on November 13 into an orbit from which the spacecraft is usually recovered after eight days.

3. Pending Launch. The second Orbiting Astronomical Observatory satellite (OAO-2) has been rescheduled for launch approximately November 27. The launch from Cape Kennedy will be aboard an Atlas-Centaur vehicle.

4. Lifting Body Success. An experimental craft (HL-10) was flown successfully under its own power at Edwards Air Force Base, California, on November 13. The lifting body was launched with its pilot from a B-52 aircraft and completed its seven-minute flight plan.

5. Airport Facilities. The Federal Aviation Administration said yesterday the United States must build more than 800 new airports and improve almost 3000 existing ones within the next five years to relieve present congestion and accommodate future growth.

6. Aerospace Economics. Aerospace industry sales for the first half of 1968 are running at an annual rate of $30.2 billion, compared with actual sales of $27.2 billion in 1967, according to the Aerospace Industries Association. The industry had a backlog of $34.3 billion at the end of the second quarter 1968, compared with $28.9 billion for the same period in 1967. Exports of aerospace products and services have also increased over last year. Employment in the industry stood at 1,423,000 in August, compared with 1,394,000 a year earlier.

7. Planet Mars. The National Aeronautics and Space Administration has authorized the Jet Propulsion Laboratory to proceed with two spacecraft to orbit Mars in 1971.

8. Space Payloads Successfully Launched
(November 15)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	73	54	58	61
Escape	9	2	1	3

E. C. Welsh

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

November 12, 1968

Mr. Ernest Goldstein
Office of the President
The White House
Washington, D.C.

Dear Mr. Goldstein:

In accordance with our telephone conversation of this morning, enclosed are copies of several pieces of correspondence which, in part, reflect the role of the National Aeronautics and Space Administration in the negotiation of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.

Also enclosed are reprints of four articles on the role of the United Nations in the development of the law of outer space which I co-authored with Mr. Daniel M. Arons of my staff. The first three of these, which were published by the Journal of Air Law and Commerce, may be of particular interest to you in your work on the Outer Space Treaty.

Sincerely yours,

Paul G. Dembling

Paul G. Dembling
General Counsel

Enclosures

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

November 8, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The Department of Defense launched two classified spacecraft into orbit from the Western Test Range, using a Thor-Agena vehicle on November 3 and a Titan IIIB on November 6.

b. NASA successfully launched the interplanetary Pioneer and a "Test and Training Spacecraft" from Cape Kennedy on November 8, using a Thor-Delta vehicle. The Pioneer 9 will join three sister craft in orbit around the Sun to collect data on solar plasma, energetic particles, and magnetic fields. The "Test and Training Spacecraft" will travel in Earth orbit for calibration and training in the Apollo tracking system.

2. Pending Launch. The launch of the second Orbiting Astronomical Observatory is now scheduled for November 21 at Cape Kennedy, utilizing an Atlas-Centaur vehicle.

3. Presidential Ceremony. On November 2, the President awarded NASA's Exceptional Service Medal to the three crew members who flew the highly successful Apollo 7 mission. He also awarded NASA's Distinguished Service Medal to James E. Webb, retired NASA Administrator.

4. Election Coverage. The Communications Satellite Corporation beamed 18-1/2 hours of U.S. election programs to Europe via the INTELSAT II and ATS-3 satellites. The ComSat Corporation's Pacific INTELSAT I satellite carried election coverage to Hawaii, Australia, Japan, and the Philippines.

5. Storm Surveillance. U.S. weather satellites photographed Typhoons Kit and Judy in the western north Pacific and also a tropical storm east of Madagascar. Typhoon Judy hit Guam on October 27; Typhoon Kit hit Guam on November 1; and a Bay of Bengal storm hit the southwest coast of India on November 4-5. Advance warnings were issued.

6. Housing. An aerospace company has been given a detail design contract for building 200 family housing units at George Air Force Base, California. The contract calls for using the latest advanced management, materials, and industrial techniques in an attempt to reduce costs.

7. Timely Flight. The first flight of the giant 747 commercial air transport is scheduled for December 17, a fitting tribute to the 65th anniversary of the Wright Brothers' first flight. Its powerful turbo-fan engines, as well as the aircraft, are U.S. manufactured.

8. Space Payloads Successfully Launched
(November 8)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	71	53	58	60
Escape	9	2	1	2
	80	55	59	62

E. C. Welsh

BBI

EXECUTIVE

05
FG 11-4

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

EXECUTIVE SECRETARY

November 1, 1968
10:15 A.M.

Rec'd 12:11 P

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Soviet Space Flight.

On October 26 the Soviets launched a manned Soyuz spacecraft and put it into Earth orbit. Colonel Georgi T. Beregovoi was the only cosmonaut on board. It then rendezvoused with an unmanned spacecraft, Soyuz 2, which had been launched the day before.

The Soyuz 3 manned flight lasted about four days. It re-entered and landed safely in the Soviet Union the morning of October 30.

From a Soviet point of view, this flight was a successful advance in manned space flight experience. Its accomplishments were: a checkout of the changes made in the Soyuz spacecraft since the fatal flight of Soyuz 1 in April 1967; their first manned rendezvous with another spacecraft in space; their first substantial maneuver of a manned spacecraft in space; and the safe re-entry and recovery.

It was expected that Soyuz 3 might have attempted to dock with Soyuz 2. Apparently this did not happen, either because it was not programmed or because of some failure of equipment.

So far as accomplishment is concerned, this brings the Soviet manned space program up to about where we were in late 1965 and early 1966 with the Gemini program. By that time we had rendezvoused two manned spacecraft and even had docked a manned spacecraft with a target Agena.

To date, we have had 17 manned flights and the Soviets 10. We have had a total of 2774 man-hours compared with their 628. This total of man-hours by the Soviets is less than the 781 we recorded in the Apollo 7 flight alone.

2. Apollo.

a. NASA is expected to decide on November 11 whether the next Apollo manned mission will go out around the Moon or limit itself to an Earth-orbital flight. Meantime, the Apollo 8 spacecraft is being checked out at Kennedy Space Center. If the mission is to be only Earth-orbital, the target launch

date will be December 6; if it is to be circumlunar or lunar-orbital, the launch will be scheduled for later in December or early January.

b. All of the spacecraft and launch vehicle components for Apollo 9, which will be a mission using a manned Lunar Module for the first time, are at Kennedy Space Center and going through checkout. The tests thus far are all on schedule.

c. NASA reports that pictures were taken by the Apollo 7 astronauts of Earth areas recommended by the National Aeronautics and Space Council staff as subjects for the mission's photography experiments.

3. Pending Launches.

a. NASA plans to launch the Pioneer D scientific spacecraft into an elliptical orbit around the Sun on November 6, using a Delta vehicle at Cape Kennedy.

b. A second Orbiting Astronomical Observatory satellite has been rescheduled for launch aboard an Atlas-Centaur vehicle from Cape Kennedy on November 17. Trouble with the propellant system has forced postponement of the launch several times.

4. U.S. Olympic Exhibit. The U.S. atomic and aerospace exhibits held in connection with the Olympics at Mexico City have been well received and well attended by the public. The exhibits are scheduled to continue for another three weeks.

5. Other Launches. The Soviet Union launched Cosmos 250 on October 30 and Cosmos 251 on October 31, the former could be a navigational satellite and the latter was put into an orbit from which a spacecraft is normally recovered after eight days. In addition, Cosmos 252 was launched on November 1, without identification of the mission.

6. Space Payloads Successfully Launched
(November 1)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	70	50	58	60
Escape	8	1	1	2
	78	51	59	62

E. C. Welsh

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(3)

DEPARTMENT OF STATE

Washington, D.C. 20520

14356

November 1, 1968

LIMITED OFFICIAL USE

MEMORANDUM FOR MR. WALT W. ROSTOW
THE WHITE HOUSE

Subject: Message to the President from Former Mayor of Florence, Giorgio La Pira

In view of La Pira's mystical and extremely unhelpful stance on Viet-Nam and other issues, as well as the frequency of his messages to the President and other United States Government officials, it is recommended that no response be made to the attached telegram.

Benjamin H. Read
Executive Secretary

Enclosures:

1. Telegram from Giorgio La Pira, dated October 24, 1968.
2. Translation.

Check w/Bligh before [illegible] 11/4 RD

LIMITED OFFICIAL USE

EXECUTIVE

FE12/Johnson, L.B./2-3

FG260

OS

F-G11-8-1/Goldstein, Ernest

October 30, 1968
11:50 a.m.

MR. PRESIDENT:

Jim Webb called concerning the projects for the Johnson Library.

Webb says the records at NASA are inadequate to do a good history job for the library. Webb pointed out that the University of Miami has a contract with NASA to do a three year study of the comparative value brought about by the space program in the Soviet Union and United States. This will be under the guidance of Foy Kohler and five good graduate students.

Webb suggests possibly working out a contract whereby the Johnson Library will get all drafts of this study as soon as they are complete. Webb asks if the President thinks well of this idea and if so who should Webb work with on the White House staff:

Califano____

Levinson____

Temple____

Pierson____

McPherson____

Goldstein___√___

Jones____

JimJ

October 31, 1968
4:00 p.m. Thursday

MEMORANDUM FOR ERNIE GOLDSTEIN

I will tell Jim Webb to get in touch with you on the attached.

James R. Jones

20

EXECUTIVE

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

EXECUTIVE SECRETARY

October 25, 1968
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Apollo Success.

a. The Apollo 7 spacecraft re-entered the Earth's atmosphere as scheduled on October 22, landing right in the planned target area, after a flight of almost 11 days, in which 4.5 million miles were travelled.

b. All three astronauts are in good health.

c. All mission objectives were accomplished.

d. Among the important "firsts" of Apollo 7 were: live television transmissions from space; drinking water produced as a by-product of fuel cells; and the largest number of inflight re-starts of a manned spacecraft propulsion system.

e. The three-man flight, first for the U.S., totalled 781 man hours in space, a new record.

f. The President telephoned the astronauts aboard the recovery aircraft carrier to congratulate them. The Vice President also sent messages of congratulations.

g. A decision will be made in mid-November as to whether the Apollo 8 flight in December will go around the Moon or will be an Earth-orbital mission only.

2. Apollo Reaction Abroad. Foreign news media reacted very favorably to the Apollo 7 flight, calling it a significant step forward in the U.S. space program. The openness of the U.S. program has been lauded, in contrast with the great secrecy surrounding Soviet missions.

3. Launches.

a. The Soviet Union launched Cosmos 248 on October 19 and Cosmos 249 on October 20. Their missions were not announced.

b. The Department of Defense launched a classified spacecraft into orbit from the Western Test Range on October 23, using a Thor-Burner II vehicle.

4. SST Design Change. The contractor for the U.S. Supersonic Transport announced on October 21 that the variable-wing design has been dropped and a fixed-wing design will be proposed to the FAA and the airlines by January 15. First test flight of the transport is expected in 1972.

5. Weather Reporting.

a. U.S. weather satellites tracked a cold front in the vicinity of the Apollo 7 splashdown area and furnished continuous weather information during the flight. Satellite pictures also highlighted interesting cloud areas for close observation by the astronauts.

b. U.S. satellites, including Apollo 7, furnished information about hurricane Gladys, one typhoon, and two tropical storms. Warnings were issued.

6. Olympics. Communications satellites have been used to beam the Olympic activities live from Mexico City to Western Europe and Japan on a daily basis.

7. Space Payloads Successfully Launched
(October 25)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	68	50	58	55
Escape	8	1	1	2

E. C. Welsh

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EXECUTIVE

OS
FG11-4

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE SECRETARY

October 18, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Manned Flight.

a. The Apollo 7 spacecraft, launched with its three-man crew from Cape Kennedy on October 11, has now successfully completed most of its mission objectives. It is scheduled to re-enter the Earth's atmosphere and be recovered about 200 miles south of Bermuda at about 7:15 a.m. EDT on October 22.

b. This first manned flight in the Apollo program has demonstrated successful performance of the spacecraft, the flight crew, and the ground support.

c. Rendezvous of the spacecraft with the orbiting second stage of the Saturn IB launch vehicle has been effected.

d. Live television transmissions from the spacecraft to Earth have been conducted successfully.

e. Photography of Earth and its weather is being accomplished on schedule.

f. Messages of congratulations and good wishes have been transmitted to the astronauts from the President and the Vice President.

2. Next Apollo. The Apollo 8 spacecraft and its Saturn V launch vehicle are on the pad at the Kennedy Space Center and being readied for launching late in December. While concern about risk of damage from hurricane Gladys is somewhat less, it continues. A decision will be made in early November, based on results of the Apollo 7 mission, as to whether the Apollo 8 mission will include a manned orbital flight around the Moon.

3. Curtailment. NASA announced it is deactivating, for economy reasons, the two Saturn IB launch pads at Cape Kennedy, pending launches in the Apollo Applications Program. In the interim, all manned Apollo flights will be launched from Pad 39.

4. Soviet Launch. The Soviet Union launched Cosmos 247 on October 11 into an orbit from which a spacecraft is usually recovered after eight days.

5. Astronomy Satellite. NASA has extended the four X-shaped antennas aboard its Radio Astronomy Satellite to their full length -- totalling about 1,500 feet. The satellite was launched on July 4, and the antennas have been extended in steps in order to take measurements at varying lengths.

6. Paris Air Show. Preparations for U.S. participation in the 1969 Paris Air Show are progressing smoothly. A total of 32 industry firms have requested booth space in the U.S. Pavilion. A possible theme for the U.S. exhibit is "The Year of the Apollo."

7. UN Committee. The United Nations Outer Space Committee began its current session in New York on October 15.

8. IAF Annual Meeting. The Executive Secretary of the National Aeronautics and Space Council gave the welcoming address to the International Astronautical Federation in New York City on October 14, quoted the President, and read a message from the Vice President. Large numbers of delegates came from many countries, including about 35 from the Soviet Union.

9. Storm Activity. U.S. weather satellites sighted two severe storms in the Pacific, a tropical disturbance in the Atlantic, and hurricane Gladys in the Caribbean. Warnings were issued.

10. ESSA III. After two years of service, ESSA III ended operations on October 9. Launched October 2, 1966, this satellite took over 90,000 useable cloud cover photographs which formed the basis for 10,000 cloud analyses and nearly 2,000 storm advisories.

11. Space Payloads Successfully Launched
(October 18)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	67	49	50	53
Escape	8	1	1	2

E. C. Welsh

EXECUTIVE (2)

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October 17, 1968

Dear Mrs. Goddard:

I am sorry that I could not be with you at the dinner observing the tenth anniversary of NASA. Only the heavy pressure of duty here at the White House kept me from this celebration.

In the short span of a single decade, America has extended its reach far out into space. Our tremendous achievements in the sky above have improved the earth below and the men and women limited to its surface.

That I played a role in this leap upward is a source of pride to me. But that any advance into space could have been made at all, should be a far greater source of pride to you -- for your husband's pioneering effort and vision was this nation's springboard to the stars.

Sincerely,

LBJ

Mrs. Robert H. Goddard
One Tallawanda Drive
Worcester, Massachusetts 01603

Esther Goddard

LBJ:FP:jlc - 2

FILE MEMO:
BH/dg
October 16, 1968

EXECUTIVE
FG 11-8-1/Moyers, Bill

FG 105	FG 283
FG 11-8-1/Sinclair, Ivan	FG 110
LE/NR 7	SO 4
LG/Yuma	FG 282
WE 8	HS
PE 12	FG 170-4
PQ 2	ND 19-4
CM/Uranium	CM/Wheat
CO 312	Roosevelt, James
LE	Roybal, Edward R.
ND 13	Story, Bascom H.
FG 11-6	Stinson, Frank
OS	Weisl, Edwin L., Sr.

Box #1577 sent to Central Files, above date from Mr. Moyers' Office.

Mr. Moyers - all folders - 1964-1966

1. Personnel
2. Story, Bascom H.
3. State Department Press Contacts
4. Ivan Sinclair Memos
5. Wild Rivers Legislation Plan
6. Yuma, Arizona Test Station
7. Youth Opportunity Campaign
8. White House Fellowship Commission
9. Uranium Contract
10. Vietnam-Economy
11. State-Weekly Preview (folder 2 of 2)
12. Legislative Status Reports
13. Military Ready Reserve Program
14. Telecommunication Management/OEP
15. Space - (Outer)
16. Stinson, Frank
17. Small Business Administration
18. Treasury Department
19. White House Navy Mess
20. Weisl, Edwin L., Sr.
21. Selective Service
22. Sunny Highlands-Roosevelt, Roybal-FHA Retired Housing Foundation
23. War Crimes Trials (Mock)
24. Wheat Sales
25. Miscellaneous

EXECUTIVE
OS
FG260

October 15, 1968

Dear Jim:

Thank you for letting me see your fine letter to Edwin Aldrin. It spells out so articulately what we have so often discussed and agreed upon, and it captures the measure of our deep concern for continuity and for sustained, effective leadership in NASA's operation.

I share your hope that NASA may steer away from "yes men" and toward men whose creative responsibility will make them dynamic leaders in the constructive concern for all mankind.

All good wishes to you -- always.

Sincerely,

LBJ

Honorable James E. Webb
National Aeronautics and
Space Administration
Washington, D. C. 20546

LBJ:FP:jlc

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

October 7, 1968

MEMORANDUM FOR THE PRESIDENT

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Although I know your required reading is extensive, I thought you might like to see the enclosed letter from the father of Astronaut Aldrin and my reply.

His concern of safety and the need for protection from "Yes-men" is more than that of the father of an astronaut. He and I both have been in this business for a long time and he was expressing, as an old friend, something he wanted me to know.

I do hope you will approve the way I am presenting to him the action which you and I have taken with respect to the period from October 7 to January 20. The team here at NASA has reacted outstandingly well to this action which I have explained in very much the same terms as I have used to Aldrin, making it clear that you have established this plan because you believe it is best for continuity and effectiveness in NASA's operation.

James E. Webb

James E. Webb
Administrator

Enclosures

Cc ltr to Mr. Aldrin
10/7/68.

Cc ltr from Mr. Aldrin
9/29/68

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

October 7, 1968

OFFICE OF THE ADMINISTRATOR

Mr. Edwin E. Aldrin
15 Brandywyne
Brielle, New Jersey 08730

Dear Ed:

Thank you for your note of September 29, and your frankness about the needs of the program. I agree and have been working very hard with my associates over the past year to make sure that we had a critical examination of every factor. Your own support and the participation of your son as an astronaut make it important, I think, that you fully understand what President Johnson and I are trying to do.

A year ago, when Bob Seamans requested permission to resign as Deputy Administrator in order that he might seek a new career before age 50, I gave the President a very clear view of the need for continuity in the Agency and the necessity for the appointment of a Deputy Administrator who could bring to NASA the qualities required for dealing with science, with engineering, with organization, and also with the relations of these in NASA to the economic, social and political institutions and forces at work in our country. Tom Paine is equal to all of this. I would be very proud if I could say that I had found Tom Paine and assessed him as a man capable of doing this. The President and John Macy were the ones who did find him and I was delighted that after careful examination to find that he did indeed have all the qualities required and in addition -- youth. He is 46 and therefore able to utilize the accumulating knowledge and experience of his work here in NASA over many years, either in Government or in industry.

The net effect of what we have done is that, with my birthday coming before the election and Paine's agreement to serve as Deputy Administrator under either a Republican or Democratic president, we have created conditions that leave the new president completely free to choose an administrator in the knowledge that Tom would be willing to stay. This provides the necessary framework within which the new administration can make its decisions as to how it will proceed with the flights of the Saturn V/Apollo system without extraneous or personal consideration.

Paine is as willing to leave on January 20, if this is the decision of the new administration, as to stay; but he is also willing to stay and provide continuity of leadership. In the meantime, on January 20, 1969, he and the other senior officials here will have behind them three months of experience and two successful Apollo flights. During this period, I will be available for one-half of my time for advice and consultation, but I can assure you I will not attempt to guide the decisions and actions, but rather to help them and make sure on behalf of the President that all factors are taken into account when the decisions are made. In addition, I will spend some time on the government-wide problems of the transition from one president to another. This should add a little to my value as an adviser and consultant in NASA.

You will recall that I was secretary to the Chairman of the House Rules Committee during the 1932 election and the subsequent period through which President Hoover and President-elect Roosevelt passed, and also during the famous "one hundred days" after Roosevelt was inaugurated in March of 1933. It happens that I have had some involvement in each transition from one president to another since, and served on the Brookings Institution study group at the time of the transfer from Eisenhower to Kennedy.

All of this is to say that I believe you and those like you concerned with the future of this country in the advanced areas of science, technology and management can feel that there will be both continuity and effective leadership in NASA, and that while the staff here has already given me a "Carolina rocking chair" I am not going to occupy it all the time.

No one could be more proud of the fact that Astronaut Aldrin developed the intellectual concepts which permitted the rendezvous operation of Gemini VI and VII and then proceeded to take his seat in the Gemini spacecraft and fly the mission to prove that he was also a man of action. He proved that the United States can bring together the man of the intellect and the man of action. You and I have seen how important this combination is in the development of advanced aeronautical systems for more than thirty years, and I will always remember your participation in the efforts of the National Aeronautics Association in the 1930's to gain support for a forward-looking aeronautical policy. This was at a time when you were carrying heavy leadership responsibilities at Standard Oil and also serving as a pilot.

With highest regards and all good wishes, believe me

Sincerely yours,

Jim Webb

James E. Webb
Administrator

Personal

EDWIN E. ALDRIN
15 BRANDYWYNE
BRIELLE, N. J. 08730

29 Sept. 1968

Hon. James E. Webb,
Administrator, NASA,
Washington, D.C.

Dear Jim:

I really am sorry as I can be to see you resign from NASA after all the good work you have done. It has been a remarkable feat to build up such an efficient organization. You must have you own reasons beside the fact you have a birthday coming up. You certainly are not going to retire completely and I hope the plan will make your contact not so remote our paths will not cross.

I have tried to keep posted on technical aspects of the space program. I do not favor a manned flight of Saturn V until the changes being made have been proven. What is the value of risking lives at this stage? You really need less Yes-men in the space program.

With best wishes,

Sincerely yours,

Ed

BB1

EXECUTIVE
OS
FG11-4

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

EXECUTIVE SECRETARY

October 11, 1968
12:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Apollo. The first manned Apollo spacecraft lifted off on schedule today from Cape Kennedy. The Saturn IB launch vehicle successfully placed a three-man crew into Earth orbit on an 11 day flight. Mission assignments include rendezvous and station-keeping with the S-IVB Saturn stage after separation, verification of spacecraft communications capability with the tracking network, and evaluation of crew and mission support activities. Splashdown is scheduled to take place 200 miles south of Bermuda in the Atlantic.

2. Saturn V. The Saturn V launch vehicle expected to carry the manned Apollo 8 into space in December was rolled from the Vehicle Assembly Building to its launch pad at Cape Kennedy on October 9. A decision as to whether to orbit the Moon on this flight is to be made in late November, after a study of the results of the Apollo 7 flight.

3. Treaty. On October 8, the Senate unanimously ratified the Agreement on the Rescue and Return of Astronauts and Objects Launched into Outer Space. More than 70 other nations, including the Soviet Union, have signed the agreement.

4. Other Launches.

a. On October 5, the DOD launched a classified satellite from the Western Test Range, on a Thor-Agena vehicle.

b. The Soviet Union launched the tenth Molniya communications satellite into orbit on October 5, and on October 7 Cosmos 246 into an orbit from which a spacecraft is usually recovered after eight days.

5. Zond 5. The Soviet unmanned circumlunar spacecraft, Zond 5, recovered in the Indian Ocean on September 22, arrived in Bombay on October 3 by ship. It was unloaded from the ship in a container and then flown to the Soviet Union aboard a special aircraft.

6. Intelsat Spacecraft. The Interim Committee of the Intelsat consortium approved on October 4 a contract with a U.S. firm to build one prototype and four operating spacecraft of the new INTELSAT IV series of communications satellites. Total cost will be $72 million, of which $19 million will be spent on foreign procurement. Each satellite will provide about 5,000 voice or 40 TV channels. The first satellite is to be launched in early 1971.

7. SST. A DOT technical committee of government and industry personnel has been appointed to make an evaluation of the manufacturer's new fixed-wing design for the U.S. Supersonic Transport.

8. Nimbus B/SNAP-19. On October 9, a salvage crew recovered some of the wreckage of the Nimbus B meteorological satellite from the Pacific Ocean floor off California. The SNAP-19 nuclear auxiliary power unit aboard the satellite was retrieved. The spacecraft was lost on May 18 when its launch was aborted after a booster failure.

9. Storm Activity. U.S. weather satellites tracked two typhoons in the Western Pacific, one storm off the coast of Mexico, three tropical storms in the Bay of Bengal, and disturbances off the African coast. Warnings were issued.

10. Space Payloads Successfully Launched
(October 11)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	66	49	48	52
Escape	8	1	1	2

E. C. Welsh

EF
OF

EXECUTIVE

(3)

OS
FG260
CO303
FI4
FG2/Kennedy, John F.
FG11-8-1/Hornig, Donald F.
FI1-2

filed:
Oct. 11, 1968

MEMORANDUM FOR DR. HORNIG

This will acknowledge your memorandum of September 26, 1968.

It is hard for me to believe that Jim Webb would make "unconscionable statements" or be "motivated" entirely by budgetary problems. During each of the past two budgetary preparation periods, he has carefully and responsibly arranged to have before me the intelligence estimates and data on which he based his serious concern regarding the USSR: the trend of the Soviet program upward and the U.S. program downward that could produce for the Soviets a base of competence that would provide options they could take up and use to achieve both the image and reality of power and forward motion. I know he now feels they are beginning to take up these options.

Over the entire period of his service as Administrator of NASA, during both the Kennedy and Johnson Administrations, I have supported his strong desire to present to the Congress the importance of proceeding without stretch-out or delay with the Apollo and other important NASA programs. At the same time, he has always assured me that NASA was in position to operate at lower levels under effective control should my budgets not receive full approval. I wanted him to succeed and it was only with great reluctance that for the past two years I have taken action to meet the overall fiscal requirements laid down by a determined group in the Congress by accepting cuts made in the House Appropriations Committee.

I note with interest your statement that "a continuing vigorous Soviet program coupled with a constrained U.S. program" could reverse the positions you believe now exist. This is very close to what I believe Webb has been saying.

As you know, I am always conscious of the importance of maintaining the value of the Office of Science Advisor in the functioning of the White House. It seems to me there is a danger that even if your group should develop evidence to sustain your views, your report might be shortly followed by some tragic occurrence in the U.S. program or a major triumph in the Russian one. This would inevitably bring into question the judgment of your group in a way that might impair its usefulness.

All this raises questions as to why we should try to establish a public record of the kind you suggest. Further, I have serious doubt that the public release of a report of the Science Advisory Committee would go unquestioned in this pre-election period when both Democratic and Republican presidential candidates have urged strong space programs.

When I begin to study the 1970 Budget needs in detail, I will be prepared to consider all factors related to the space budget and consider at that time whether the Science Advisory Committee should be asked for a special report.

Call
Horney
and read to him

EB

OS

THE WHITE HOUSE

WASHINGTON

October 10, 1968

MEMORANDUM FOR THE FILES

Pursuant to instructions, I called and read the attached memorandum to Dr. Bennett and asked him to relay these thoughts to Dr. Hornig when he returned. The memorandum is not to be sent.

L. T.

Larry E. Temple

Original sent to the handwriting files 9/24 10/31/79

THE WHITE HOUSE

WASHINGTON

MEMORANDUM FOR DR. HORNIG

This will acknowledge your memorandum of September 26, 1968.

It is hard for me to believe that Jim Webb would make "unconscionable statements" or be "motivated" entirely by budgetary problems. During each of the past two budgetary preparation periods, he has carefully and responsibly arranged to have before me the intelligence estimates and data on which he based his serious concern regarding the USSR: the trend of the Soviet program upward and the U.S. program downward that could produce for the Soviets a base of competence that would provide options they could take up and use to achieve both the image and reality of power and forward motion. I know he now feels they are beginning to take up these options.

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BB1

EXECUTIVE

SP

OS

FG 11-4

(2)

October 9, 1968

MEMORANDUM FOR

ED WELSH

We will appreciate your preparing a speech draft on the following subject:

America's Role in Outer Space

The speech is for possible Presidential use. It should be between 1800 and 3000 words. It should cover what has been achieved in the field, what should be achieved in the future, and, so far as it can be determined, how that can be achieved.

We would like to have the draft within 3 weeks. You should not consider yourselves bound to existing legislative programs or by today's budgetary restrictions. The aim is to speak for the long pull.

Call me if you need further clarification.

Harry C. McPherson, Jr.
Special Counsel to the President

gah/

EXECUTIVE (3)

OS
CO 303
76 11-4
76 260

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

October 5, 1968

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Letter from Dr. Edward C. Welsh with respect to my statement on US and USSR positions in space.

In accordance with your instructions, I have had a very friendly and extended talk with Dr. Welsh.

I believe there are no differences between us on the fact that the present trends are against the United States.

The real difference between us is, I believe, in how to appraise our present situation with reference to that of the USSR. Dr. Welsh uses, as a basis of measurement, what has been accomplished by the United States to date, including accomplishments of the Department of Defense. My statements have been based on a present and growing capability in the USSR for future use, as demonstrated by USSR accomplishments such as the Zond 5 flight.

The most important element in my conversation with Dr. Welsh is complete agreement between us that there is no basis for complacency on the part of the United States. We both believe that it is urgent for the United States to find ways to avoid a rapid deterioration of our present strength and relative position. We also believe that at the earliest possible time the United States should take action to reverse the U.S. downward trend.

James E. Webb

James E. Webb
Administrator

2 9

5:15 p.m., Monday
October 7, 1968

FOR THE PRESIDENT'S NIGHT READING

FROM Joe Califano

October 5, 1968
Saturday - 10:30 a.m.

TO JOE CALIFANO
FROM Larry Temple

CF

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

8:00 p.m., Friday
October 4, 1968

FOR THE PRESIDENT

FROM Joe Califano

Here is a further report from Jim Webb on Ed Welsh's letter. Webb asks whether you would like him to discuss his views with Ed Welsh:

Yes ✓ No_____

Attachment

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

October 2,1968

OFFICE OF THE ADMINISTRATOR

The President
The White House

Dear Mr. President:

I appreciate the opportunity you have given me to comment on Dr. Welsh's letter of September 30 regarding the status of and prospects of our space program as against the Soviet program. The issues, I believe, are fundamental to where we go as a nation. I believe also that they are basic to an understanding of the great accomplishments of your Administration and of your personal leadership in the Senate and as Vice President, as well as President. I believe further that they bear importantly upon the leadership role in regard to space the nation will need from you, and will expect of you, as a private citizen in coming years.

You have been the moving force in our emergence as a space power. The space program will stand as a tribute to you as long as we endure as a nation. And in my view, the program is indeed a worthy tribute. In an address at Harvard on September 30, just this past Monday, I attempted to explain the basic importance of the capabilities we have developed under your leadership and through the appropriations you have requested from Congress:

> "I do not believe our Nation could have long continued as a great power if we had not built up the means to conduct operations in space -- if we had instead conceded a monopoly of this new dimension of man's activity to the USSR or any other country. I believe we would have sacrificed our chances to keep pace in the technological competition that is the crucial test of our times. We would have turned our backs on the opportunities space offers for large extensions of scientific knowledge. We would have denied to ourselves the tools and the knowledge necessary to bring to bear on the problems that beset us and the rest of mankind

> the benefits that surely will follow from the full development of space applications. Of those who are skeptical of my view, I would simply ask: Had we not done the things necessary to develop these capabilities, how would the outside world look to us today? How would we look to the outside world? What would our people think of our leaders and of themselves? What would our future be? I believe what we have done in space measures up in importance to any of the other great national accomplishments in our history."

I am not willing to concede to any of your other advisers a greater understanding than my own of what you have sought and what we have achieved in space under your leadership and direction. I am immensely proud of the record. I am proud of having been a part of the extraordinary team of men from government, industry, and universities that has made this record possible.

I am convinced, however, that it would be a grave mistake to give the impression at home or abroad that the job in space has been largely done, or that we can at this time assume U. S. preeminence, or can look forward with assurance to the years ahead. The evidence we have of an accelerating Soviet program, of an expanding base of modern facilities for research and development, and of a growing range of Soviet mission capabilities is too conclusive to be ignored in public appraisals. Particularly since 1966, you have made clear in your messages to the Congress and in other public statements that a further sustained effort is necessary for us to attain the broadly based, total capabilities that we need to assure our position as a space power. You have also made clear that where you have found it necessary to accept Congressional actions that have scaled down the level of our efforts, you were doing so with reluctance and only because of other urgencies. You have left no room for doubt that you consider that our thrust into space must be a continuing one.

I do not believe your Administration will be served by statements underestimating the magnitude and importance of the advances the Soviet Union has made and particularly where the mission accomplished represents a clear indication of a growing base of competence that is a harbinger of further and large advances. Neither do I believe it would be a service to your Administration to publicly ignore the

serious consequences that would follow from continuance over an extended period of a situation in which the USSR is accelerating its space efforts while we curtail our own. Among other things, there is always the possibility of a sudden quantum jump by the Soviets, as well as the possibility that our own program will encounter set-backs.

For the longer term, I cannot escape the conclusion that the USSR will gain significant advantages as a result of the reductions we have already had to effect in our program. Under these circumstances, I feel it extremely important that none of us who has worked closely with you in the program creates the impression that your Administration has been unmindful of the gravity of the situation or has been willing to gloss it over.

In my own case, I have tried to be as forthright as I could in reporting to you, the Congress, and our citizens where we stand as against the USSR. When we have had reason for satisfaction, I have reported it without equivocation. But I have tried to avoid exaggerating the significance of particular successes. My concern has been to keep fully in the public view the trends that mark our respective space programs and where these trends appear to be leading, rather than to engage in a "score-keeping" exercise.

The importance that I have attached to the successful circumlunar flight of the Soviet Zond V derives not from the feat in itself but from the confirmation it gives to accumulating mission successes as indications that the USSR is thrusting forward across a broad spectrum. As I told the press, the mission represented in my view "the most important demonstration to date of all the capabilities required for operations around the earth and outward to the moon and planets -- in other words, all the capabilities for any purpose in space." The point I was trying to make was that one flight certainly does not change the basic equation of relative capabilities. But from time to time a major mission includes so many elements that it must come from an increased capability and it means more than the others.

This latest demonstration of new Soviet capabilities represents the sort of thing I have repeatedly warned of in my Congressional appearances. Thus, in my testimony before the House Committee on Appropriations on March 11 of this year I said:

> "During this period when we are reducing our effort by one-third, the USSR is still increasing its effort. We must therefore face the probability

> that in the coming year, and in those following, the Soviets will continue to demonstrate capabilities beyond those which we will have. They will soon be in a position to launch a booster with greater thrust than the Saturn V. I expect them to resume manned space flights soon. They may well land large instrument packages on Mars in 1969 and again in 1971. In terms of scientific advance and in applications of immediate economic use, such as meteorological and communications systems, our program has, in my opinion, contributed more than theirs. But in terms of the use of large launch vehicles and in the rate at which future greater capabilities are being developed, they are and will remain ahead, at our 1969 budget level. The hard fact we now face is that just as we have begun to catch up in large-scale booster operations -- as shown by the flights of Apollo 4 and 5 and the bringing of Launch Complexes 34, 37 and 38 on stream -- we are cutting back our program while the Soviets continue to advance."

I have not, of course, been alone in taking the view that the Soviet threat in space continues to be serious. All knowledgeable authorities have appeared to be at one in recognition of this in our governmental discussions. It was consequently with considerable surprise that I read in Dr. Welsh's letter of September 30 that it is a "disservice to both the Administration and the Congress" to question US leadership in space vis-a-vis the Soviets. I find it difficult to reconcile this with Dr. Welsh's previously expressed views, as for example in the testimony he gave before the Senate Appropriations Committee on May 17, 1968:

> "Here is the thing I want to emphasize, sir: The acceleration of the space program in the Soviet Union is much greater than ours. They are stepping up their activity. Just in a 14-day period last month they had nine space launches, the most space launches that any country has had in an equal period of time. So they have accelerated their program. They have continued to expand their resources, manpower, and facilities devoted to space activity, so I would say that their technology progress is greatly increased."

As I see it, the fault that underlies the reasoning of Dr. Welsh's letter, in contrast to his statement above, is that it fails to take into account these indicators of real power and capability in space and the kinds of missions that give the best basis for assessment. Understandably, Dr. Welsh takes pride in detailing our accomplishments of the past. But these accomplishments do not necessarily relate to the kind of continued momentum that we must have to secure and retain our purposes in space. To me the essence of the whole matter is this: We are losing momentum while the USSR is gaining momentum.

Dr. von Braun similarly stressed this point in testimony before the House Committee on Science and Astronautics earlier this year:

> "There are no signs that the Soviets are cutting back in their space program. Under these circumstances our national posture in this competition is already rapidly worsening as the strength of the Soviet thrust is affirmed again and again while our own space budget is shrinking year after year."

In terms of a concrete but very important example of the contrasting situation developing in regard to program momentum, I believe we should keep clearly in mind the critical area of boosters. As I testified during the Senate Appropriations hearings last June:

> "The USSR is now building a rocket bigger than the Saturn V and they are moving rapidly toward its flight and test. It is quite likely they're also developing propulsion power for space use in addition to the image of this very large rocket. If we have cancelled the Saturn V or reduced its production or gapped its production and cancelled the nuclear engine, we are facing the world with an accomplishment in both fields by another nation, and all we can say is we stopped before we developed the capability. We must continue Saturn V to remain cost effective. NERVA is an incremental unit that adds great value to an investment made over the last ten years."

A critical aspect of lost momentum in a complex undertaking like the space program is not so much the immediate impact but the impact over time. Dr. Welsh's letter fails to recognize the factor of long lead times. As you know, years rather than months are needed not only to

develop major new spacecraft and boosters, but to assemble and train the required design, engineering and management teams. As those teams which NASA has built up disperse in the process of our shrinking program, the problem of regaining momentum at a time when we decide to close the gaps will become increasingly difficult. This, I believe, is a matter of vital importance to our position as a nation.

What our nation's space programs add up to, in the last analysis, is national power in a basic sense -- power as a function of new knowledge, of technological prowess, of economic wellbeing, of influence and leadership on the world scene, and of continued growth in essential areas of national security. These, in my view, are the things we must keep in mind as we appraise where we stand in space and the factors that affect our future.

Would you like for me to take these matters up with Dr. Welsh? He has not discussed them with me.

Sincerely yours,

James E. Webb

James E. Webb
Administrator

October 1, 1968

The President
The White House

Dear Mr. President:

As requested, I am preparing comments on Dr. Welsh's letter of September 30 to you. Meanwhile, I wanted to pass on these thoughts in the belief that they would help refresh your memory as to events that affect our situation in space.

In every year from Fiscal 1962 through Fiscal 1966, the President's Budget for the space program was presented by officials of NASA in terms of securing for the U.S. preeminence in space. This was in support of your policy, which was stated in your budget for 1965 as follows:

> "The space program of the U.S. is aimed at maintaining world leadership in space..."

In FY 1966 your budget stated:

> "The goal of our space program is to secure the benefits of world leadership in space exploration and in scientific knowledge and technology."

Nevertheless, in each of the years between FY 1962 and FY 1966, the Congress made substantial cuts in Presidential requests. The cuts ranged from $612 million in Fy 1964 to $85 million in Fy 1966.

Beginning in FY 1967, there was a trend away from the theme of "pre-eminence" in budget messages. Objectives of the space program were stated in more selective terms without allusion to world leadership.

For FY 1967, your budget stated:

> "Our task is to use the tools [that have been developed] wisely, carefully choosing our priorities in space in the context of overall national policy priorities."

In FY 1968:

> "The primary objectives of the programs of the National Aeronautics and Space Administration are to extend our ability to operate in space and to use that capability for the benefit of mankind."

Finally, in FY 1969:

> "The National Aeronautics and Space Administration will continue in 1969 with programs to improve our ability to operate in the space environment, advance man's knowledge of the universe and use the experience gained for man's benefit."

In defending your FY 1967 budget before the Congress, I emphasized that it was "an austere budget," a description that was "also characteristic of the entire Federal budget." I stated that"along with austerity, the NASA authorization request reflects the President's determination to hold over for another year the major decisions on future programs..."

While pointing out that "with the full authorization and appropriation of the $5.102 billion requested by the President" we could still meet main priorities, I warned that "there will be no margins and no back-up hardware" and "any failure on tests or other setback will mean that one or another of these priorities will suffer."

In defending your FY 1968 budget, I explained to the Congress the situation we faced in these terms:

> "I cannot say that this budget or this program will give us preeminence in all major aspects of space and aeronautics.... The fiscal year 1968 budget before you leaves our margins thin for the work to be accomplished. It does not permit us to move toward important goals as fast as we could or with as much assurance as we would like. But it is a budget which clearly establishes a forward-looking course for the future. It will enable us to do the most important things, and will provide a strong base on which the country can decide at some future time to build additional strength should it be required."

At the same time, I stressed that we "have no reason to believe that the Soviets have abandoned their stated goals of preeminence in space or the strong views they have expressed as to its importance in building Communist power." Later I testified that "the budget proposed would not give us preeminence in all major aspects of space and aeronautics since an annual budget level of 5½ to 6 billion would be required for this. Also, the FY 68 budget leaves thin margins for work to be accomplished and does not permit the U.S. to move forward toward important goals as fast as would be preferred or with as much assurance."

In FY 1969, I again stressed to the Congress the harsh realities that faced us, describing the President's budget request as one that

> "does not meet all of our Nation's needs in aeronautics and space. It is a compromise -- one which I fully support -- between needed work toward advances in aeronautics and space which we can and should make and other overriding requirements. The President was forced, in spite of his convictions as to the importance of a larger effort in aeronautics and space research, to accept reductions in NASA's budget as submitted for Fiscal Year 1968 and to recommend in this 1969 budget an even lower level."

In making these statements, I wanted the Congress to understand the extremes to which you had already gone in adjusting the space program to the changing requirements that faced our Nation, and to recognize the serious risks that would follow from further reductions. The Congress nevertheless in each of the three years in question again severely cut the amounts you had requested (by $44 million in FY 1967; $511 million in FY 1968; and $375 million in FY 1969). In 1967 and 1968 the developing fiscal situation made it necessary for you to agree to these reductions after they had been reported to the House by the Appropriations Committee.

Certain consequences of these years of successive reductions in the NASA budget are plain:

1. After deducting the 40,000 construction workers who were released as our facilities were completed, the work force now engaged in our program is about two-thirds the level reached in the peak year 1966. This means that a number of key design and engineering teams have already been broken up.

2. Our rate of successful space launchings has fallen off sharply since the peak year 1966: we launched a total of 30 in 1966; 26 in 1967; and 11 to date in 1968. For 1969 the projection is higher because of a concentration of launches in support of the Apollo program.

3. As things now stand we are terminating production of both the Saturn IB and Saturn V boosters as soon as the Apollo requirements are clearly met.

4. Similarly, we are marking time in the development of a nuclear rocket engine pending your 1970 budget decisions.

5. We have had to limit our planetary programs. We will fly two probes to Mars in 1969, are beginning work on two Mars orbiters for 1971, and will urge that the 1970 budget permit us to develop two Mars landers for 1973.

In contract: (1) The Soviets show every indication of continuing to build upon their capabilities to demonstrate their power in aeronautics and to master space. In the process, they are propelling the total base of their technological competence forward. (2) The Soviet space program continues to expand in size and scope as indicated by the steady increase in successful space launches. (3) We have the best of reasons to believe that the Soviets are nearing the end of a long developmental period in aerospace technology which will give them the ability to advance significantly ahead of us in space and challenge us in important areas of aeronautics.

As I have presented your budgets, I have repeatedly expressed your deep concern about the need to utilize the capabilities that were coming on stream. I have stressed the divergency in trends in the U.S. and the Soviet space programs and the implications of this divergence for our total position as a nation. While I am proud indeed of our numerous and varied accomplishments in space, I believe I would be remiss if I did not make clear our need for concern about the future. I have stressed, on the one hand, that overall requirements on our government have made necessary reductions in our space efforts. On the other hand, I have tried to dispel any illusions that we can with the reduced efforts prevent Soviet superiority in key areas. Available evidence is convincing that the USSR is continuing a major aeronautical and space effort that looks toward lasting preeminence in space and a major position in aeronautics.

In an address before the American Astronautical Society Symposium in Denver on July 15 of this year, I said that the reduced space budget "will have many serious effects on the U.S. position in aeronautics and space." I noted, however, that

> "The totality of the problems our nation faces reaches far beyond NASA. As responsible government officials, we in NASA accept the result of our nation's decision-making processes. We must now direct our leadership and our managerial abilities toward the successful run-out of the programs approved in past years and now nearing completion. We must at the same time adjust our organization, programs, contracts, university grants, and facilities to meet the reductions that have been decided on, and in the process, do all we can to lay a sound foundation for the future..."
>
> "The President, in submitting his budget, made it clear, as he had when he agreed to the FY 1968 reductions made by the House Appropriations Committee last year that he was doing so reluctantly, that he still believed strongly in the need for a more vigorous program in aeronautics and space, and that his actions were based entirely on the overriding financial necessities related to passage of the tax bill and to efforts to control inflation."

Sincerely yours,

James E. Webb
Administrator

MHarvey:IHalpern:Webb:ns
~~9/1~~ 10/1/68

MEMORANDUM FOR Mr. _____

I will acknowledge your memorandum of _____.

It is hard for me to believe that Jim Webb would make "unconscionable statements" or be "motivated" entirely by budgetary problems. During each of the past two budgetary preparation periods, he has carefully and responsibly arranged to have before me the intelligence estimates and data on which he based his serious concern regarding the USSR: the trend of the Soviet program upward and the US program downward could produce for the Soviets a base of competence that would provide options they could take up and use to achieve both the image and reality of power and forward motion. I know he now feels they are beginning to take up these options.

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I note with interest your statement that "a continuing vigorous Soviet program coupled with a constrained US program" could reverse the positions you believe now exist. As you know, I am always conscious of the importance of maintaining the value of the Office of Science Advisor in the functioning of the White House. It seems to me there is a danger that even if your group should sustain your views, your report might be shortly followed by some tragic occurrence in the US program or a major triumph in the Russian one. This would inevitably bring into question the judgment of your group in a way that might impair its usefulness. This raises questions as to why we should try to establish a public record of the kind you suggest. Further, I have serious doubt that the public release of a report of the Science Advisory Committee would go unquestioned in this pre-election period when both Democratic and Republican presidential candidates have urged strong space programs.

After the election, when the 1970 Budget needs are under study, I will be prepared to consider all factors related to the space budget and consider at that time whether the Science Advisory Committee should be asked for a special report.

A/Webb/eb 10/1/68

Send this to Jim Webb for his comments.

LBJ/mf
9-30-68
5:30p

THE WHITE HOUSE
WASHINGTON

October 1, 1968

MEMORANDUM FOR

Honorable James E. Webb
Administrator
National Aeronautics and
Space Administration

The President asks that the attached be sent to you for your comments.

William J. Hopkins

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

EXECUTIVE SECRETARY

September 30, 1968

Rec'd 9-30-68

Dear Mr. President:

The subject of relative leadership in space has recently been prominent in the news. Assertions that the United States is trailing the USSR in space accomplishments and space capabilities are, in my judgment, inaccurate. Moreover, they do a disservice to both the Administration and the Congress, at home and abroad.

It is true that the Soviets have a vigorous program and that their trend in space activity is moving upward. We also have a strong space program with substantial amounts being invested in both the civilian and the military efforts, but the rate of our annual investment indicates a downward trend and this is a source of real concern. If the two trends continue in their current direction, the Soviets could catch up with this country in space performance and space technology and even pass us. Hence, there is no basis for complacency but this does not mean that we should downgrade what we have already accomplished or even our capability for the future.

A look at the record is revealing:

1. To date (September 30, 1968), the U.S. has put 589 spacecraft into Earth orbit or on escape missions to the Moon and the planets, while the USSR's total is 334 or 57% of the U.S. figure.

2. The U.S. has had much greater experience in manned space flight than the Soviets; 16 manned flights compared with their 9; 1993 manned hours in space compared with their 533; 12 hours in extravehicular activity compared with their 20 minutes; and extensive rendezvous and docking experience with manned spacecraft compared with none by the USSR (the Soviets 2 rendezvous and docking exercises were both unmanned).

3. The U.S. has had more successful missions to the Moon and to the planets than has the USSR and has obtained more information about outer space in these missions.

4. The U.S. has led the way in research and development as well as operational capability with communications satellites, weather satellites, and navigation satellites.

5. The U.S. has launched the world's most powerful operational booster. While the Soviets may be building a bigger rocket, they have not yet launched it.

6. While this is less measurable, it is believed that the U.S. has obtained more scientific information regarding outer space than has the USSR.

7. The USSR has put into space a larger total of payload weights since Sputnik I than has the U.S. This has been largely because of the fact that the Soviets have had more powerful boosters than the U.S. until recently and hence we have miniaturized our payloads to a greater extent than the Soviets.

Sincerely,

E. C. Welsh

The President
The White House

EXECUTIVE
05

(1+)

ex/uc

October 5, 1968

Dear Bob:

Thank you for your telegram. I think every American can be proud of our achievements on the frontier of space. All those who have participated in this exciting adventure have made a solid investment in the future.

Sincerely,

LBJ

Mr. Robert W. Sarnoff
President
Radio Corporation of America
30 Rockefeller Plaza
New York, New York 10020

LBJ:WRS:PB:ck
cc: Juanita Roberts/Will Sparks/Charles Maguire/Peter Benchley/CF sent

The White House
Washington

1968 OCT 1 PM 10 52

WA103 PDB

RK NEW YORK NY OCT 1 519P EDT

THE PRESIDENT

THE WHITE HOUSE

I WISH TO EXTEND MY SINCERE GOOD WISHES AND CONGRATULATIONS ON THE TENTH ANNIVERSARY OF THE AMERICAN SPACE PROGRAM. UNDER YOUR LEADERSHIP, THE UNITED STATES HAS MADE HISTORIC PROGRESS IN THE EXPLORATION OF THIS IMPORTANT FRONTIER. WE OF RCA TAKE GREAT SATISFACTION IN OUR PARTICIPATION IN THE NATIONAL SPACE EFFORT AND WE SALUTE YOU ON THIS MEMORABLE OCCASION

31268

ROBERT W SARNOFF.

EXECUTIVE
OS
FG 11-4

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

EXECUTIVE SECRETARY

October 4, 1968
10:45 A.M.

Rec'd Oct 5
2pm 9a

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The Soviet Union launched Cosmos 244 on October 2 into a trajectory from which a spacecraft is normally recovered near the end of the first orbit. Cosmos 245, a research satellite, was launched October 3.

b. NASA successfully launched the ESRO-1 satellite from the Western Test Range on October 3, using a Scout vehicle. The spacecraft, designed and built by the European Space Research Organization, carries experiments from four Western European nations to measure polar ionospheric activity, including the aurora borealis and related phenomena. This is a fine example of international cooperation.

2. Pending Launch. The Apollo 7 flight, first manned mission in the U.S. manned lunar landing program, is still scheduled for October 11 at Cape Kennedy. A Saturn IB launch vehicle will place the Apollo spacecraft with its three-man crew into Earth orbit.

3. NASA Anniversary. On October 1, NASA's tenth anniversary was celebrated at a banquet. Both the President and the Vice President sent messages. Earlier in the day at the White House, officials of the National Space Club made a special award to the President for his vision and leadership in space.

4. Relative Risks. Testimony before a House Committee showed fatalities, averaged over a three year period, to be 72 times as great in general aviation as in commercial air travel. Pilot error is the primary cause.

5. NASA Plans. The Senate Aeronautical and Space Sciences Committee held a closed session on October 3 to hear testimony from top NASA officials on the agency's FY 1969 $3.854 billion NOA and $4.225 expenditures plan.

6. SNAP-19 Search. A two-man contractor-operated submersible located the SNAP-19 nuclear generators lost off the California coast when the Nimbus-B

weather satellite launch was aborted at the Western Test Range last May 18. An attempt by the underwater craft to recover the nuclear devices will be made on October 7.

7. New ComSat Station. A fifth U.S. commercial communications satellite Earth station became operational on September 27 when ComSat Corporation accepted the station at Etam, West Virginia. A total of 13 Earth stations are now available for operation with Atlantic INTELSAT satellites, and eight for Pacific INTELSAT satellites.

8. New Jet Transport. The first 500-passenger 747 commercial jet airliner was rolled out on schedule on September 30. First flight is scheduled for this December 17, and introduction into commercial service is expected by late 1969. Large export sales are expected.

9. Space Spinoff. Among recent space stimulated inventions is a refractory fiber-reinforced superalloy four times as strong as the strongest conventional superalloy. Another is a ferromagnetic superalloy which maintains its magnetic properties and strength at unusually high temperatures. Both materials have potential for use on Earth as well as in future space systems.

10. Tropical Storms. U.S. weather satellites tracked two typhoons in the Western Pacific, one hurricane off the coast of Mexico, and one tropical storm over the Atlantic. Warnings were issued.

11. Space Payloads Successfully Launched
(October 4)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	65	47	47	50
Escape	8	1	1	2

E. C. Welsh

CONGRESSIONAL

EXECUTIVE
FA 411/5
FA11-9
SC
OS

(4)

October 4, 1968

Dear Mr. Chairman:

I am submitting the attached statement in accordance with my letter to you of September 18, 1968, and in lieu of my appearance as a witness at the Subcommittee hearings on aeronautical research and development.

I have been closely following the progress of these hearings and believe they have developed an interesting and productive set of views on our future needs in this area. Since you have received a comprehensive discussion of possible R&D programs in a number of specific areas I have chosen to focus upon aspects of our aeronautical effort which seem to apply generally and will deserve increasing consideration in our approach to these future programs.

Sincerely yours,

(signed) DONALD HORNIG

Donald F. Hornig
Director

Attachment
a/s

Honorable Ken Hechler
Chairman
Subcommittee on Advanced
Research and Technology
Committee on Science and Astronautics
U. S. House of Representatives
Washington, D. C. 20515

RCD:of:3Oct68

S&T Files Fay Steiner/White House
S&T Chron Mr. Barlow
Dr. Hornig's File Dr. Drew's File
Dr. Hornig's Chron Dr. Drew's Chron
History Files Mr. Pagnotta

RECEIVED
OCT 10 1968
CENTRAL FILES

Refers to Contr # 1128

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EXECUTIVE
OS
FG 11-4
FG 260
CO 303

October 1, 1968

18588

MEMORANDUM FOR

Honorable James E. Webb
Administrator
National Aeronautics and
Space Administration

The President asks that the attached be

sent to you for your comments.

William J. Hopkins

(Ltr to the Pres, 9/30/68, from E. C. Welsh,
Executive Secy, Natl Aeronautics and Space Council,
re space program.)

WJH:rah

Send this to Jim Webb for his comments.

LBJ/mf
9-30-68
5:30p

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

EXECUTIVE SECRETARY

September 30, 1968

Rec'd 9-30-68

Dear Mr. President:

The subject of relative leadership in space has recently been prominent in the news. Assertions that the United States is trailing the USSR in space accomplishments and space capabilities are, in my judgment, inaccurate. Moreover, they do a disservice to both the Administration and the Congress, at home and abroad.

It is true that the Soviets have a vigorous program and that their trend in space activity is moving upward. We also have a strong space program with substantial amounts being invested in both the civilian and the military efforts, but the rate of our annual investment indicates a downward trend and this is a source of real concern. If the two trends continue in their current direction, the Soviets could catch up with this country in space performance and space technology and even pass us. Hence, there is no basis for complacency but this does not mean that we should downgrade what we have already accomplished or even our capability for the future.

A look at the record is revealing:

1. To date (September 30, 1968), the U.S. has put 589 spacecraft into Earth orbit or on escape missions to the Moon and the planets, while the USSR's total is 334 or 57% of the U.S. figure.

2. The U.S. has had much greater experience in manned space flight than the Soviets; 16 manned flights compared with their 9; 1993 manned hours in space compared with their 533; 12 hours in extravehicular activity compared with their 20 minutes; and extensive rendezvous and docking experience with manned spacecraft compared with none by the USSR (the Soviets 2 rendezvous and docking exercises were both unmanned).

3. The U.S. has had more successful missions to the Moon and to the planets than has the USSR and has obtained more information about outer space in these missions.

4. The U.S. has led the way in research and development as well as operational capability with communications satellites, weather satellites, and navigation satellites.

5. The U.S. has launched the world's most powerful operational booster. While the Soviets may be building a bigger rocket, they have not yet launched it.

6. While this is less measurable, it is believed that the U.S. has obtained more scientific information regarding outer space than has the USSR.

7. The USSR has put into space a larger total of payload weights since Sputnik I than has the U.S. This has been largely because of the fact that the Soviets have had more powerful boosters than the U.S. until recently and hence we have miniaturized our payloads to a greater extent than the Soviets.

Sincerely,

E. C. Welsh

The President
The White House

EXECUTIVE
OS
FI 4
FG 260
FG 11-4
FI 4/FG 260

(4)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

October 1, 1968

The President
The White House

Dear Mr. President:

As requested, I am preparing comments on Dr. Welsh's letter of September 30 to you. Meanwhile, I wanted to pass on these thoughts in the belief that they would help refresh your memory as to events that affect our situation in space.

In every year from Fiscal 1962 through Fiscal 1966, the President's Budget for the space program was presented by officials of NASA in terms of securing for the U.S. preeminence in space. This was in support of your policy, which was stated in your budget for 1965 as follows:

> "The space program of the U.S. is aimed at maintaining world leadership in space..."

In FY 1966 your budget stated:

> "The goal of our space program is to secure the benefits of world leadership in space exploration and in scientific knowledge and technology."

Nevertheless, in each of the years between FY 1962 and FY 1966, the Congress made substantial cuts in Presidential requests. The cuts ranged from $612 million in Fy 1964 to $85 million in Fy 1966.

Beginning in FY 1967, there was a trend away from the theme of "pre-eminence" in budget messages. Objectives of the space program were stated in more selective terms without allusion to world leadership.

For FY 1967, your budget stated:

> "Our task is to use the tools /that have been developed/ wisely, carefully choosing our priorities in space in the context of overall national policy priorities."

In FY 1968:

> "The primary objectives of the programs of the National Aeronautics and Space Administration are to extend our ability to operate in space and to use that capability for the benefit of mankind."

Finally, in FY 1969:

> "The National Aeronautics and Space Administration will continue in 1969 with programs to improve our ability to operate in the space environment, advance man's knowledge of the universe and use the experience gained for man's benefit."

In defending your FY 1967 budget before the Congress, I emphasized that it was "an austere budget," a description that was "also characteristic of the entire Federal budget." I stated that"along with austerity, the NASA authorization request reflects the President's determination to hold over for another year the major decisions on future programs..."

While pointing out that "with the full authorization and appropriation of the $5.102 billion requested by the President" we could still meet main priorities, I warned that "there will be no margins and no back-up hardware" and "any failure on tests or other setback will mean that one or another of these priorities will suffer."

In defending your FY 1968 budget, I explained to the Congress the situation we faced in these terms:

> "I cannot say that this budget or this program will give us preeminence in all major aspects of space and aeronautics.... The fiscal year 1968 budget before you leaves our margins thin for the work to be accomplished. It does not permit us to move toward important goals as fast as we could or with as much assurance as we would like. But it is a budget which clearly establishes a forward-looking course for the future. It will enable us to do the most important things, and will provide a strong base on which the country can decide at some future time to build additional strength should it be required."

At the same time, I stressed that we "have no reason to believe that the Soviets have abandoned their stated goals of preeminence in space or the strong views they have expressed as to its importance in building Communist power." Later I testified that "the budget proposed would not give us preeminence in all major aspects of space and aeronautics since an annual budget level of 5½ to 6 billion would be required for this. Also, the FY 68 budget leaves thin margins for work to be accomplished and does not permit the U. S. to move forward toward important goals as fast as would be preferred or with as much assurance."

In FY 1969, I again stressed to the Congress the harsh realities that faced us, describing the President's budget request as one that

> "does not meet all of our Nation's needs in aeronautics and space. It is a compromise -- one which I fully support -- between needed work toward advances in aeronautics and space which we can and should make and other overriding requirements. The President was forced, in spite of his convictions as to the importance of a larger effort in aeronautics and space research, to accept reductions in NASA's budget as submitted for Fiscal Year 1968 and to recommend in this 1969 budget an even lower level."

In making these statements, I wanted the Congress to understand the extremes to which you had already gone in adjusting the space program to the changing requirements that faced our Nation, and to recognize the serious risks that would follow from further reductions. The Congress nevertheless in each of the three years in question again severely cut the amounts you had requested (by $44 million in FY 1967; $511 million in FY 1968; and $375 million in FY 1969). In 1967 and 1968 the developing fiscal situation made it necessary for you to agree to these reductions after they had been reported to the House by the Appropriations Committee.

Certain consequences of these years of successive reductions in the NASA budget are plain:

1. After deducting the 40,000 construction workers who were released as our facilities were completed, the work force now engaged in our program is about two-thirds the level reached in the peak year 1966. This means that a number of key design and engineering teams have already been broken up.

2. Our rate of successful space launchings has fallen off sharply since the peak year 1966: we launched a total of 30 in 1966; 26 in 1967; and 11 to date in 1968. For 1969 the projection is higher because of a concentration of launches in support of the Apollo program.

3. As things now stand we are terminating production of both the Saturn IB and Saturn V boosters as soon as the Apollo requirements are clearly met.

4. Similarly, we are marking time in the development of a nuclear rocket engine pending your 1970 budget decisions.

5. We have had to limit our planetary programs. We will fly two probes to Mars in 1969, are beginning work on two Mars orbiters for 1971, and will urge that the 1970 budget permit us to develop two Mars landers for 1973.

In contrast: (1) The Soviets show every indication of continuing to build upon their capabilities to demonstrate their power in aeronautics and to master space. In the process, they are propelling the total base of their technological competence forward. (2) The Soviet space program continues to expand in size and scope as indicated by the steady increase in successful space launches. (3) We have the best of reasons to believe that the Soviets are nearing the end of a long developmental period in aerospace technology which will give them the ability to advance significantly ahead of us in space and challenge us in important areas of aeronautics.

As I have presented your budgets, I have repeatedly expressed your deep concern about the need to utilize the capabilities that were coming on stream. I have stressed the divergency in trends in the U.S. and the Soviet space programs and the implications of this divergence for our total position as a nation. While I am proud indeed of our numerous and varied accomplishments in space, I believe I would be remiss if I did not make clear our need for concern about the future. I have stressed, on the one hand, that overall requirements on our government have made necessary reductions in our space efforts. On the other hand, I have tried to dispel any illusions that we can with the reduced efforts prevent Soviet superiority in key areas. Available evidence is convincing that the USSR is continuing a major aeronautical and space effort that looks toward lasting preeminence in space and a major position in aeronautics.

In an address before the American Astronautical Society Symposium in Denver on July 15 of this year, I said that the reduced space budget "will have many serious effects on the U.S. position in aeronautics and space." I noted, however, that

> "The totality of the problems our nation faces reaches far beyond NASA. As responsible government officials, we in NASA accept the result of our nation's decision-making processes. We must now direct our leadership and our managerial abilities toward the successful run-out of the programs approved in past years and now nearing completion. We must at the same time adjust our organization, programs, contracts, university grants, and facilities to meet the reductions that have been decided on, and in the process, do all we can to lay a sound foundation for the future...
>
> "The President, in submitting his budget, made it clear, as he had when he agreed to the FY 1968 reductions made by the House Appropriations Committee last year that he was doing so reluctantly, that he still believed strongly in the need for a more vigorous program in aeronautics and space, and that his actions were based entirely on the overriding financial necessities related to passage of the tax bill and to efforts to control inflation."

Sincerely yours,

James E. Webb

James E. Webb
Administrator

NATIONAL AERONAUTICS and SPACE COUNCIL

September 28, 1968

Rec'd 2:25P

TO THE PRESIDENT

For general information and balanced perspective regarding the Soviet's Zond 5, I have prepared the attached. I realize that you have classified information regarding this matter but I thought it might be helpful to have that portion which can be unclassified put into this brief form.

E. C. Welsh

Attachment

Joe -------

You might like to connect this
with the Dr. Hornig piece I gave
you Sat afternoon (the one you
are getting a reply to from Dr. Webb)

mjdr

EXECUTIVE

OS
CO303
FG260
FG11-4

September 28, 1968 OS4

(6)

ZOND 5

Considerable attention has been given by the press, both here and in the USSR, to the Soviet's Zond 5 trip around the Moon and its return to Earth. Some have minimized this space accomplishment while others have called it the greatest Soviet space feat since Sputnik I. In my opinion, neither of those extremes is correct. Let's look at the record.

1. On September 14, 1968, the USSR launched Zond 5. It flew around the Moon, came within about 1200 miles at its nearest point to the lunar surface, and returned to Earth on September 21.

2. There is little question that the booster used for this launch was one which has been previously tested and that it was substantially less powerful than our Saturn V.

3. The significant accomplishments of Zond 5 were in communications, guidance, intact re-entry, and safe recovery.

4. Zond 5's re-entry into the Earth's atmosphere was on a ballistic trajectory. The spacecraft seems to have come in at an angle and speed well beyond the tolerance of man, had there been a man on board, which there was not.

5. If Zond 5 was intended as a precursor for a manned lunar flight, it would seem that the Soviets have much work to do to make such a flight possible. Otherwise, this type of mission could be used for unmanned exploration of the Moon and the planets.

6. As far as preparation for manned flight at lunar re-entry speed is concerned, the U.S. is somewhat ahead of the Soviets. For example, on November 9, 1967, almost a year earlier than Zond 5, NASA flew Apollo 4 on a real precursor trip for future manned flight from the Moon. Our spacecraft, while it did not go out as far

as the Moon, was pushed into an elliptical orbit of almost 12,000 miles from Earth and then driven back into Earth's atmosphere at a speed in excess of 25,000 miles per hour. This is approximately the same speed as that developed by Zond 5 in its return to Earth. The Apollo 4 flight was that of an actual man-intended flight vehicle as compared with the apparently much smaller spacecraft used by the Soviets in the Zond 5 flight.

7. In evaluating this record, credit should be given the Soviets for their additional evidence of a vigorous space program, their having accomplished the first recovery of a space object after having gone to the vicinity of the Moon, and for their steady progress in space technology. However, it would seem that there have been those who have exaggerated the Zond 5 accomplishment and minimized the relative status of the U.S. space program. The purpose of my remarks is simply to keep this record straight.

ET

BROUGHT FORWARD

EXECUTIVE

OS — 9-28-68

Previously filed — Date

NAME Welch, E. C. (NASC)

ORGANIZATION Re: Space Program

Same — 10-1-68

New File Symbol — Date

FINAL ACTION Memo to the President
from Mr. Welch
National Aeronautics and Space Adm.

EXECUTIVE
OS
FG 11-4

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

EXECUTIVE SECRETARY

September 27, 1968
10:45 A.M.

Rec'd Sat. Sep 28 9a

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The DOD successfully launched four spacecraft on a Titan IIIC launch vehicle from the Eastern Test Range on September 26. Two spacecraft will make radiation measurements; one will be used for UHF tactical communications experiments; and the fourth spacecraft will conduct a liquid heat transfer experiment.

b. The Soviet Union launched Cosmos 242 on September 20 into an orbit normally associated with scientific measurements, and Cosmos 243 on September 23 into an orbit from which the spacecraft is normally recovered after eight days.

c. The Soviet Zond 5 spacecraft launched on September 14 passed behind the Moon on September 18 and, following a ballistic re-entry path, splashed down in the South Indian Ocean on September 21. The Soviets announced recovery of the spacecraft on September 22. The spacecraft re-entered at too great a rate for a man to have survived had there been one on board. Almost a year earlier, on November 9, 1967, the U.S. successfully flew an unmanned Apollo spacecraft in excess of 25,000 miles an hour from a 12,000 mile altitude which re-entered at a manned tolerance rate and landed right on the target area. Zond 5 showed a capability in guidance, lunar-speed, re-entry, water recovery, and shows a vigorous effort to catch up with the U.S. It was not, however, the "fantastic" accomplishment claimed by some here and in the USSR.

2. Pending Launches.

a. A European designed and built satellite (ESRO I) is scheduled to be launched October 2, 1968, from the Western Test Range. The satellite will measure the aurora borealis and other related phenomena of the polar ionosphere and will carry experiments from Denmark, Norway, Sweden, and the United Kingdom. ESRO II was successfully launched from the Western Test Range on May 16, 1968, and is still returning useful data.

b. The Apollo 7 manned flight using a Saturn IB launch vehicle is scheduled for October 11.

c. The NASA launch of the second OAO (Orbiting Astronomical Observatory) scheduled for launch on September 23, has been re-scheduled for no earlier than October 30 to allow additional time for spacecraft checkout.

3. Congress.

a. Treaty. The Senate Foreign Relations Committee, on September 24, approved the treaty providing for the rescue and recovery of astronauts. No schedule for the floor vote on ratification has been established. The Soviet Union gave its final approval to the agreement last week.

b. Space Funds. On September 25, the Senate approved the Conference Report on the Independent Offices appropriation and sent the bill to the White House. It calls for a total of $3,995,273,000 for NASA and $500,000 for the National Aeronautics and Space Council.

c. Aeronautics Hearings. The House Committee on Science and Astronautics is holding hearings on the future aeronautical research and development needs of the Nation. This week witnesses from NASA and FAA were heard. Officials of the Departments of Transportation and Defense as well as informed public witnesses have been called for next week.

4. Olympic Coverage. ComSat has made arrangements with NASA to use the ATS-3 synchronous satellite, currently positioned over the equator north of Brazil, to provide television coverage for the Mexico City Olympic Games in October.

5. Visits.

a. His Excellency Francois Tombalaye, President of the Republic of Chad, and party will visit Kennedy Space Center on October 6, 1968, for a general tour.

b. The White House Fellows visited Cape Kennedy this week and were briefed on our space program.

6. Weather. U.S. weather satellites tracked one tropical storm and two typhoons in the Pacific during the past week. Warnings were issued.

7. Aeronautics.

a. STOL. Demonstrations of short take-off and landing aircraft (STOL) are being held, using French and German-built aircraft. This type of aircraft may alleviate traffic jams that have lately been hampering air travel. Since such craft can use runways and air space closed to regular airliners, they could pull flights away from overcrowded major airports.

b. F-111. On September 23, the Air Force grounded all of its F-111A fighter-bombers while investigators sought the cause of the ninth crash of the swing-wing plane in less than two years. This action affects some 90 operational aircraft, and the loss of the nine planes is estimated at approximately $60 million.

8. Comparison. To date, the U.S. has put 589 spacecraft into Earth orbit or on escape missions, while the USSR's total is 334 or about 57% of the U.S. figure.

9. Space Payloads Successfully Launched
(September 27)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	65	46	46	48
Escape	8	1	1	2

E. C. Welsh

EXECUTIVE

OS
CO303
FG260
OS4
FG726

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

Thursday, September 26, 1968
3:00 PM

Rec'd
6P

MEMORANDUM FOR

THE PRESIDENT

SUBJECT: NASA Distortion of Where the U. S. Stands in Space

Recent press reports of the Soviet Zond-5 circumlunar flight have grossly exaggerated the importance and significance of this event. This view has been fueled by a series of unconscionable statements by Mr. Webb, Mr. Paine and other NASA officials which have unnecessarily inflated the Soviet accomplishment and were undoubtedly motivated by their budgetary problems.

In these statements, it was variously suggested that the Soviets have demonstrated a "capability that could change the basic structure and balance of power in the world," that the U. S. was clearly second in space and that a Soviet manned lunar landing could be achieved in the next year -- a time scale that is competitive with, or ahead of Apollo. I believe the best evidence we have available refutes these points and that a brief survey of the two programs clearly supports conclusions contrary to these statements.

In the manned lunar landing program, for example, we have successfully flown the Saturn V launch vehicle twice, the first flight in November 1967, while the equivalent Soviet vehicle has yet to fly. We expect the first Soviet launch in the next few months. Our best estimate of their capability indicates that before a manned lunar landing can be attempted it will be necessary to rendezvous and dock the payloads from two vehicles of the type they have not yet launched.

I conclude from this and other supporting evidence that we are at least one year ahead of the Soviets in this area -- and not behind.

In the demonstration of our general space capability the U. S. achievements have been impressive. We have pursued a course of solid progress toward a multitude of scientific and technological goals. In weather and communications satellites the U. S. has demonstrated a clear technological lead and both are in routine use. The U. S. is the only nation to have placed a satellite in synchronous earth orbit. We have an overwhelming lead in the exploration of near earth and interplanetary space. Our scientific payloads are typically more productive and longer lived than their Soviet counterparts

Drop it! That is my feeling, but get Jim Webb
to get me a prompt reply ---- all his scientists
---all his private ones --- to support him and me.

and almost all of the scientific discoveries in space have come from the U. S. In planetary exploration, the Soviets have launched 19 probes to Venus and Mars since 1960 but only one succeeded in returning data from a planet (the recent Venera-4 mission). The more modest U. S. program has enjoyed three out of five successes, including the first close-up look at a planet other than our own, taken of Mars by Mariner 4. In the manned flight programs, the U. S. has had more time in orbit, more EVA experience and more launches.

On balance, therefore, the U. S. appears first in space and not second. On the other hand, a continuing vigorous Soviet program coupled with a constrained U. S. program could reverse these relative positions. There is every indication that Soviet investments in space will continue at a high level while the future level of support for our own program is being reduced for reasons that are well known to you. Nevertheless, these circumstances do not justify the response that NASA has fostered in recent statements to the press.

I intend to discuss this with Mr. Webb and Mr. Paine and will try to get them to set the record straight and place our position relative to the Soviet Union in better perspective.

In view of the public concern which has been generated by the Webb-Paine-Philips statements I think we want an independent judgment. Since your Science Advisory Committee has been close to this question for years, I will, if you agree, ask them to give me promptly their considered judgment on the position of the U. S. vis-a-vis the Soviet Union in space and the implications of Zond-5. We can then make use of their paper in any way you see fit. For instance, you might consider it for public release.

Donald Hornig

Donald Hornig

_____ Proceed as suggested

✓ Drop the matter

_____ Call me

EF

BROUGHT FORWARD

EXECUTIVE

OS — 9/26/68
Previously filed — Date

NAME Memo for the President from Donald Harris

ORGANIZATION

Same — 10-11-68
New File Symbol — Date

FINAL ACTION Memo for Dr. Harris from ? (unsigned)

EXECUTIVE

PP14
I-VI/1969/ST43/Houston
OS
PR19
FG260
Institute of Navigation

September 17, 1968

Dear Dr. Draper:

I well recall our previous contacts and appreciate highly your observations about my role in the aerospace programs. I have for some time held the view that one of the several major accomplishments of this era has been our performance in the development and use of space technology. It is very easy to underestimate the impact of our National Space Program on education, on science, on national security, and on our standard of living.

It is thoughtful of you and your associates to invite me to participate in a Symposium on "Space Navigation -- Present and Future", to be held during early March, 1969 at the Manned Spacecraft Center in Houston, Texas. As you can readily understand, it is too early for me to firm a schedule for next year, but I assure you that I will give your invitation thoughtful attention just as soon as I can begin to lay out my plans for 1969. Consequently, it might be most helpful if you wished to get in touch with me on this matter in late December or early January.

Sincerely,

Mr. C. S. Draper
Massachusetts Institute of Technology
Department of Aeronautics and Astronautics
Instrumentation Laboratory
68 Albany Street
Cambridge, Massachusetts 02139

RECEIVED
SEP 23 1968
CENTRAL FILES

LBJ/Ed Welsh draft/WTJ/cg

Rec'd 9-21-68 9:00a

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

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

September 20, 1968
10:30 A.M.

Rec'd 9-20-68 10:50a

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The DOD launched two classified spacecraft into orbit from the Western Test Range on September 18, using a Thor Agena launch vehicle.

b. NASA's attempt to launch INTELSAT III on September 18 for ComSat ended in failure as the first stage of the launch vehicle encountered control system difficulties shortly after take-off and was destroyed by the Range Safety Officer.

c. The Soviet Union launched Zond 5 on September 14 on a trajectory toward the Moon. The Soviets have stated that the spacecraft is functioning normally and has passed around the Moon about 1200 miles above the surface at its closest point. Recovery back on Earth on about September 21 is a possibility.

d. The Soviet Union launched Cosmos 240 on September 14 and Cosmos 241 on September 16, both into orbits from which the spacecraft is recovered after eight days.

2. Pending Launches.

a. NASA has scheduled for launch from Cape Kennedy the second Orbiting Astronomical Observatory satellite, OAO-2, using an Atlas Centaur launch vehicle, on September 23.

b. The DOD plans to launch a Titan IIIC on September 24 from the Eastern Test Range carrying four spacecraft. One spacecraft will be used to conduct communications experiments from a near synchronous orbit while the other three will make environmental measurements.

c. The next manned launch in the Apollo Lunar Program is still scheduled for October 11. On September 16, a "dress rehearsal" countdown on the Apollo 7 spacecraft began, and was completed on the morning of the 17th.

3. Webb Resignation. The NASA Administrator resigned effective October 7, with an erroneous announcement that the Soviets are and have been for some time ahead of the U.S. in space achievements. The President named Dr. Thomas O. Paine to become the Acting Administrator.

4. Space Funds. The Senate-House conferees on the Independent Offices appropriation, which includes NASA and the Space Council, approved NASA funds totaling $3,995.2 million, or $375 million less than NASA requested. The conferees also suggested that NASA consider reprogramming funds to fund the nuclear rocket development program. The House approved the conference action on September 19 with Senate review expected on September 23.

5. Japan. The Japanese Space Activities Commission has proposed a $39.4 million space budget for 1969. This is 2.3 times the amount requested last year.

6. Concorde. The English prototype of the Anglo-French SST Concorde was rolled out on September 12, coinciding with the opening of the Farnborough Air Show. The French prototype, which should be ready for first flight within the next two months, was rolled out last December.

7. Storm Activity. A U.S. weather satellite tracked one tropical storm in the Atlantic and three tropical storms in the Pacific during the past week. Warnings were issued.

8. Spin-off. A Boston medical laboratory has developed an electronically operated artificial limb which can be flexed by an amputee simply by "thinking" the action just as is done with a natural arm. The device uses the latest electronic circuits originally developed for aerospace use.

9. Space Payloads Successfully Launched
(September 20)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	63	42	44	46
Escape	8	1	1	2

E. C. Welsh

EXECUTIVE
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FG 11-4

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

EXECUTIVE SECRETARY

(27)

September 13, 1968
10:45 A.M.

Rec'd 4:40 P

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launch. The Department of Defense successfully launched a classified spacecraft into orbit from the Western Test Range on September 11, using a Titan IIIB-Agena vehicle.

2. Apollo Preparations. The first manned launch in the Apollo lunar program is still scheduled for October 11. An unmanned countdown demonstration test of the assembled Apollo/Saturn IB was begun on September 11 and is planned to be completed on September 15. It will be followed immediately by a simulated post-launch exercise with the prime Apollo 7 crew, headed by Captain Walter Schirra, aboard the spacecraft.

3. NASA Funds. Senate-House conferees on the NASA FY 1969 Appropriation are now scheduled to meet on September 18. Although the Senate and House versions of the Appropriation bill are identical in total ($4.008 billion), the allocation by programs is different.

4. Pending Launches.

a. On September 18, NASA is scheduled to launch the INTELSAT III communications satellite from the Eastern Test Range, using a Thor-Delta vehicle. The spacecraft, launched for the ComSat Corporation, will be positioned in a synchronous orbit over the Atlantic. The second INTELSAT III, tentatively planned to be launched in mid-November, will be positioned over the Pacific, and the third, planned for launch in early 1969, will be stabilized over the Indian Ocean. This would complete the global coverage outlined in the original INTELSAT consortium agreement.

b. NASA plans to launch the European Space Research Organization's ESRO 1A satellite from the Western Test Range aboard a Scout vehicle on October 2. The spacecraft will study the actions of solar particles entering the Earth's environment at high latitudes.

5. Storm Activity. U.S. weather satellites tracked four major storms in the Pacific during the week. Warnings were issued to the affected areas -- Vietnam, the Philippines, and Mexico.

6. Aeronautics.

a. SST. Although no announcement is expected before next week, it appears that Boeing will propose a fixed wing instead of a variable sweep wing for its redesigned SST. The DOT will check out the design carefully to see if it meets the requirements.

b. Conference. A world-wide aeronautics conference, scheduled for Prague this month, has been shifted to London for November. The change was caused by the invasion of Czechoslovakia.

c. Hearings. The House Science and Astronautics Committee plans to begin hearings on September 24 on the national aeronautics research needs for the coming decade. Witnesses have been scheduled from the Department of Transportation, Office of Science and Technology, NASA, Defense, the Air Transport Association, and the Airline Pilots Association.

7. Space Payloads Successfully Launched
(September 13)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	61	40	42	44
Escape	8	1	1	1

E. C. Welsh

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Aerojet General Corporation

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON, D.C. 20503

OFFICE OF
THE DIRECTOR

September 13, 1968

MEMORANDUM FOR THE PRESIDENT

Subject: Telephone conversation with Admiral Raborn re NERVA rocket engine program

As you requested, I called Admiral Raborn and listened to his argument for additional funding of the NERVA program. Basically, he wants the Government to announce that we are going to start development of the light-weight rocket engine, rather than to keep the program in its predevelopment design phase.

He would like to see us spend more money in fiscal '69, but his main objective is the commitment to development which would effectively lock the Government into this program.

He argues that this is a high-priority program in which we have a lead over the Russians, and that it therefore should be protected from the $6 billion cutback.

I told him thatI concurred in Jim Webb's decision. Given the actions NASA had to take, including, for example, shutting down the production lines for the Saturn rockets, it was appropriate to continue at a lower level of expenditure.

We believe that the AEC and NASA efforts are keyed so that a decision could be made to go ahead in fiscal '70 on a development program, if you so desire. Both NASA and we believe that Aerojet General will be able, under current NASA plans, to retain a cadre of personnel to preserve this option. Admiral Raborn does not agree.

I told him that I would communicate to you the essence of his comments, and that we would be taking a further look at

the total cutback exercise, but that I personally had deep reservations about starting a new development effort in the current budgetary environment.

Charles J. Zwick
Director

(f)

September 13, 1968

TO: JIM JONES

Admiral Rayborn called to tell you he had a pleasant but rather inconclusive talk with Charles Zwick. The conversation went something like this?

The White House has asked me to talk to you about your views on the NERVA Program. Rayborn responded that he understood the objective of the cutback in the program was to delay the start of the flight-weight NERVA engine by one year. If this were so, then the amount of monies being made available -- some $48 million dollars for the next 14 months -- was totally inadquate to keep the residual team together.

This differed from the total of $60 million AEC monies and $55 million NASA monies for this program, the later figure now pending before the Joint Senate-House conferees.

Under the present funding program, the program would be delayed some three to four years. The reasoning behind this is as follows: With the new Administration coming in, it is reasonable to believe that the new NASA Administrator would require lengthy and exhaustive review of the whole program and it would take at least a year to get approval to start a new large program such as the flight-weight NERVA engine. The skilled team would be disbursed and it would take at least two years to get them together again and train them to the present comprehensive level.

We are now actually ahead of the Soviets in this much-needed propolusion program, but I seriously question that we could take a three-year delay and be in the same ball park with them. The heart of the future space program lies in the propulsion advance system such as NERVA.

In response to Zwick's question, should we go on with the NERVA Program when we have to stop the Saturn 5 production, Admiral responded that this was comparing apples and oranges for the Saturn 5 booster is a fully developed item and in production whereas the NERVA flight -weight machine is not developed. It would take three to five years fully funded to bring it into a man-rated booster.

Therefore, it was plausible to him that production boosters be tailored to meet the actual space flight program.

Mr. Zwick then said what kind of monies would you recommend which would permit you to carry on the program at an accepted low level? Rayborn said he was not really the one to give this figure but would guess in his opinion that it would be something in order of twice the amount which the NERVA Program is now proceeding on for 12 and not 14 months. This would be roughly one-half of what it seems like the Congress is going to vote for this program ($60 plus 55 million dollars.).

At least this could be the starting point to expand the program. It would permit retention of highly-skilled people who would otherwise drift away and seek more active and higher-paid jobs and would permit us to retain a skeleton crew. As of now, we plan to fire some 985 people in the near future [redacted] which will really hurt.

Admiral Rayborn really appreciated the opportunity to talk to Charles Zwick. But Nell Yates can tell you she didn't appreciate the opportunity to talk to Admiral Rayborn. The nerva him.

SALLY SNYDER

EXECUTIVE

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THE WHITE HOUSE

WASHINGTON

August 19, 1968
6:25 p.m.

MR. PRESIDENT:

Admiral Red Raborn called today to say that Senator Clinton Anderson talked to him about the proposed NASA reduction in the NERVA program and urged Raborn to talk to the President about it.

Raborn asked for an appointment with the President. I asked him to put the information on paper, which is attached.

Will the President want to see Raborn to discuss this or other matters?

YES _____ NO _____

JimJ

Read & get what & out of Pres. ✓
see R

9-6-68
Welch - said Pres. been against this for 3 yrs. Pres. may want to talk to Anderson & Sen. Stennis. Pretty sure he wants to have his mind changed. J.

AEROJET-GENERAL CORPORATION
1120 CONNECTICUT AVENUE, N. W.
WASHINGTON, D. C. 20036

W. F. RABORN
VICE PRESIDENT-GENERAL REPRESENTATIVE

August 19, 1968

The Honorable James R. Jones
Special Assistant to the President
The White House
1600 Pennsylvania Avenue, N. W.
Washington, D. C. 20500

Dear Jim:

The President once said to me that he appreciates a guy who comes busting into his office and says "Boss, there's a big mistake being made and I would like to tell you about it."

The President, when I left his service, invited me to come see him at any time that I felt a serious mistake was being made. There is such a mistake being made right now, and that is the 50% cut back in the NERVA program for the next fourteen months, just directed by NASA.

As you know, Congressional FY'69 budget action on the AEC portion of the NERVA resulted in $60.3 million being made available. There is currently pending a joint Senate-House conference on a program which would provide about $50 million for the NASA side of NERVA. The purpose of these funds would be to proceed in an orderly fashion with a program that has been highly successful and commence the development of the flight weight type engine.

This past Thursday, August 15, instructions from NASA directed immediate reduction of the program for the next fourteen months to less than half of the above figures.

This, in my opinion, will be disastrous to orderly progression of this extremely important program, and is directly counter to the President's comments to the effect that NERVA is one of the two most important space programs! I am quite

.....Continued

sensitive to the necessity for budget reductions caused by the $6 billion expenditure ceiling placed by the Congress and by other problems. But in this case there is no question that the future of America's space program lies in advanced propulsion systems and that NERVA is the key and most important of all the propulsion systems which we have going.

I further recognize that NASA has many funding problems and this is not to be construed as adverse criticism of their handling of this program. But I do feel that if some relief in the expenditure ceiling of NASA could be obtained for NERVA, so that it would take a cut no greater (percentage wise) than NASA's overall expenditure reduction, the country would be well served by proceeding now with the flight weight NERVA engine even on this reduced scale.

I will be most happy to make myself available at the time and place the President would desire should he care to discuss this matter with me.

Highest respects and warmest personal regards.

Sincerely,

"Red"

W. F. Raborn

WFR/fme

BB/EF

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EXECUTIVE

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FG11-4

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

EXECUTIVE SECRETARY

September 5, 1968
11:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Paris Air Show. The Secretary of Commerce announced on September 3 that the United States will participate in the 1969 Paris Air Show, May 29-June 8, on a scale comparable to that of the 1967 U.S. exhibition. The Interagency Exhibits Committee has assumed coordination of exhibit plans, which include a flight line of both military and commercial aircraft, a National Pavilion containing aircraft components and ground support equipment, an industry area dramatizing U.S. aeronautical achievements, and a Government exhibit tracing progress of the U.S. space program.

2. Apollo. The Apollo/Saturn IB vehicle for the first manned Apollo flight is proceeding essentially on schedule toward its October launch. The vehicle was tested on the pad with the astronaut team headed by Schirra on board.

3. Candidate Visit. At the request of the Republican Presidential nominee, he will tour NASA's Manned Spacecraft Center in Houston on September 6. The Vice President has previously toured the facility.

4. Olympics. ComSat Corporation is installing a transportable Earth station in California, connected by microwave link to Mexico City, to transmit coverage of the October Olympic games via satellite to the Pacific. Japan alone has asked for more than 80 hours of TV time utilizing the Pacific INTELSAT II spacecraft. Similar coverage will be transmitted to Europe via the Atlantic INTELSAT II.

5. Congressional Hearings.

a. The Senate-House Appropriations Committee conferees are tentatively scheduled to meet on September 11 to take up NASA funding. The Senate and House have both appropriated $4.008 billion for NASA in FY 1969, but the allocation of funds within the over-all total differs in the respective bills.

b. Both the Senate Aeronautical and Space Sciences Committee and the House Committee on Science and Astronautics will probably hold hearings this month on the program changes planned by NASA as a result of budget cuts. No hearing dates have been set.

6. Weather. Technical difficulties continue to plague the newest U.S. weather satellite, ESSA 7, which was launched into a nearly perfect orbit on August 16. In addition to a defunct tape recorder, one of the two camera systems failed this week. Plans are being developed for an early launch of a back-up spacecraft, to be designated ESSA 8.

7. Tropical Storms. U.S. weather satellites tracked four major storms during the week -- Wendy and Agnes near the Philippines, Bess off the east coast of Vietnam, and Liza off the west coast of Mexico. Warnings were issued.

8. SST Costs. The FAA announced on August 30 that the Government now expects to pay $1.2395 billion, or 78 percent, of the total $1.5867 billion cost of designing and developing the two prototype U.S. supersonic transport aircraft. Contractors will pay $287.8 million, or 18 percent, and airlines that have reserved delivery position will pay $59.5 million, the remaining 4 percent. The figures cover expenditures from the inception of the SST program in 1963 through 1972. The Government's investment is expected to be recovered from royalties through later sales of production aircraft.

9. Air Traffic Control. FAA issued an order limiting the number of aircraft take-offs and landings at LaGuardia, Kennedy, Newark, O'Hare, and National airports. FAA also imposed new limits on the operations of general aviation craft.

10. Soviet Launch. The USSR launched a spacecraft today, Cosmos 239, whose mission has not been identified but is one of the type which is recovered in about 8 days.

11. Space Payloads Successfully Launched
(September 5)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	61	39	40	44
Escape	8	1	1	1

E. C. Welsh

BBC

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Sept. 1968

AEROSPACE
SYSTEMS
SERIES

SOME MAJOR IMPACTS OF THE NATIONAL SPACE PROGRAM

DRAFT OF SUMMARY*

Prepared for

JOSEPH CALIFANO

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* A final report of a NASA-sponsored study is in preparation, of which the present report is a hastily prepared summary

STANFORD
RESEARCH
INSTITUTE

MENLO PARK
CALIFORNIA

AEROSPACE
SYSTEMS
SERIES

SOME MAJOR IMPACTS OF THE NATIONAL SPACE PROGRAM

Final Report of Pilot Study

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September 1968

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Prepared for:

I.P. HALPERN
NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
WASHINGTON, D.C.

SRI Project MU-7227
NASA Contract NASW-1722

FOREWORD

This is the final report describing a brief pilot study entitled "Some Major Impacts of the National Space Program."

Within this investigation, many candidate impacts were first screened and those that appeared (a) minor or (b) not likely to yield to sufficient study within the short time available were eliminated. The remaining impacts were subjected to a complete review of related prior investigations and to further study at SRI, and each impact topic was separately described in a series of informal reports.*

The results of this study are the first concrete assays within a welter of conflicting, incomplete, exaggerated, and frequently unsupported information. Stanford Research Institute considers its objective study an important task and is looking forward to extending the scope of this study in the future by application of the background, methodologies, and initial results obtained to date.

John G. Meitner
Project Manager

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* The titles are: 1. "Identification of New Occupations," 2. "Impacts Upon Aviation and Aeronautics," 3. "The Impact of the Space Program Upon Science--1. Astronomy," 4. "Impacts of New Materials Technology," 5. "Economic Impacts," and 6. "Impacts Upon Health, Biology, and Medicine."

CONTENTS

SUMMARY

Summary of Study Background

Summary of Study Results

SUMMARY OF STUDY BACKGROUND

Our national space program is now entering its second decade, and it appears pertinent to subject some of its major impacts upon the nation to an impartial analysis.

There is little doubt that the primary objective of our space program--the exploration of space and the early installation of earth-oriented orbital application programs--have been spectacularly successful. Contrarywise, much division of opinion exists in regard to the value of undertaking this effort altogether, of its impacts and returns to the American public, and similarly, as to the value of committing future resources to the continuation of our space program--particularly in the light of grave pressures upon our resources at home and abroad.

Much debate and discussion along these lines has been heard in support of the space program and its benefits to the public, as well as in opposition. Unfortunately, much enthusiasm in the former quarters has led to unsupported claims by those who favor the program, and similarly, many opinions of concern were exaggerated to bring about a substantial reduction of our national space program, or perhaps its total discontinuation. Although the truth may not necessarily be somewhere between these extremes, it is obviously important to study in considerable detail the evidence supporting the continuation or the discontinuation of this substantial national program.

Controversy exists, however, even in support of this proposition: on the one hand, it is claimed that many such studies have already been conducted, on the other hand it is claimed that such prior work is not conclusive; middle-of-the-roaders have also suggested that it may not even be possible to study impacts quantitatively, to define them simply, or to measure them.

In the light of this background, Stanford Research Institute has undertaken a pilot study particularly oriented toward the resolution of the problem of definability and measurability of some impacts of the national space program, while simultaneously pursuing the goal of establishing <u>some</u> of these impacts--both positive and negative--if they could indeed be defined and measured in the first place. Some guidelines and circumstances that directed as well as constrained the study include the following:

1. In many of its elements, the study was to be a review of prior work, and it attempted to sort and reconcile results of such prior work, check the documentation, or, dismiss unsubstantiated claims.

2. Any material subjected to analysis in the course of the study was thus based on substantive evidence and appropriate references and bibliographies document each of the SRI study topics. (See Bibliography)

3. New impact selection criteria and measurement criteria were to be established as an ultimate objective if possible; some of these criteria had already been established in prior work by Stanford Research Institute.*

4. The modest amount of funds and time available to pursue the study necessitated a somewhat arbitrary selection of some impact areas among the many topics available for study.

5. It was one of the purposes of the study to provide for NASA management some visibility of the impacts--both, positive and negative--that the space program has made upon the nation, so that they could include this information in their future planning.

In the initial phase of this investigation, the senior members of the crossdisciplinary study team accordingly reviewed several potential study areas, and, in the light of some of the constraints discussed above, they selected five study topics for further investigation. These are:

- Some Impacts Upon Aviation and Aeronautics
- Some Impacts Upon Science ≠
- Some Impacts Upon New Materials Technology
- Some Economic Impacts
- Some Impacts Upon Public Health, Medicine, and Biological Research

In addition, another area was subjected to initial examination for later study:

- New (Space-Derived) Occupations

Some of these topics tended to yield pertinent and quantitative information immediately, while other topics could not be reduced to simple conclusions during the available study period. All study topics were separately described in informal reports (see FOREWORD), and the present report summarizes these. Accordingly, this report provides first, a broad summary of the

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* The Benefits of the National Space Program and Their Appreciation and Understanding by the American Public; Volume I: Study Report, Volume II: Literature Review. Stanford Research Institute, Menlo Park, California, March 1968.

≠ Exemplified by Astronomy

major study results, and subsequently provides more detailed summaries, conclusions, and recommendations of the individual study topics; references to each of these are collected in a master bibliography in the appendix of the present report.

SUMMARY OF STUDY RESULTS

1. In the light of considerable expenditure over a period of 10 years in the novel area of space exploration, the question of new occupations is obvious. While we only expended a few days in addressing ourselves to this particular problem we found (1) some preliminary results significant in their own right and (2) a series of interesting background items that strongly confuse the identification of new occupations; accordingly we also feel strongly about the importance of continuing that particular study topic. Results in line with point (1) above indicate that some new occupations --under the particular ground rules of the study these must be (a) specifically related to the space program and (b) clearly and officially identified by job title--do exist; these range from Space Vehicle Test Mechanics to Spacecraft Managers, through Life Support Research Managers to Space Systems Assemblers and so forth. In line with point (2) above, we are struck by the sparsity of such new occupations, particularly in the light of the fact that a force of several hundred thousand workers supports the space program; our tentative conclusion indicates that many more new occupations do indeed exist but are not specifically so identified. Instead, we find that the workers in these new occupations are titled within very general categories--e.g., Mechanical Engineer, Welder, Test Support Mechanic.

2. In line with the continuing theme of the advanced technology effort sustained by NASA, a portion is directed toward aviation and aeronautics; this effort has been eminently successful through the years.

Our study indicates that this fact is not positively presented to the general public, nor appropriately or completely presented to the technical community.

On the other hand we find that direct economic benefits have resulted from the aeronautics-directed advanced technology effort, particularly in the area of variable sweep wings, subsonic jet transports, and high thrust engines. Contrarywise, we find that some of the past excellence in establishing advanced projects is now lagging; the V/STOL work is late and the leadership in space vehicles is similarly slipping from NASA. Because direct benefits from this work are accruing to military as well as civilian aviation, this effort may require augmentation. The study also indicates that the anticipated expansion in civilian aeronautics may permit an application of past and present advanced technology efforts to the expansion of the economy of depressed areas, by locating the future manufacturing facilities there. Similarly, the expectations of economic benefits from the advanced technology work leading to the SST application are also high.

3. In reviewing several economic and social impacts of the space effort, our study examined the topic of science via the example of astronomy. In this

particular phase we examined both the impact of space exploration upon astronomy and the impacts of astronomy upon society. In the former area, the benefits range from better observation of celestial objects from space (by eliminating atmospheric refraction and systematic errors) to a large number of new discoveries in geophysics, planetary physics, and the chemical and physical properties of the solar system and the galaxies beyond. In the latter case, we find that the impact of astronomy upon society has historically included the very cornerstone of man's civilization (agriculture), a series of geophysical and science applications (including geography and navigation), and a welter of discoveries in the physical sciences and their experimental tools (including spectroscopy, telescopy, optics, specialized photography, and infrared techniques).

Traditionally, astronomy has also served as the spawning point for the broad world of mathematics and philosophy, with derivations upon man's reflection upon his universe and himself, as well as the sparking of the young and the continuation of searching investigation throughout recorded history.

4. As an example of spin-off, or technical fallout, we have studied some major civilian application areas in which space-derived materials technology is now in commercial development. In general, because the time cycles of orthodox American industry--from invention at the laboratory level to the appearance of the product on the market--range usually from 10 to 25 years, only a few items of technology transfer can as yet be observed. In particular, we find that such divergent areas as electroforming and unconventional electrical power sources (e.g. fuel cells and solar cells), as well as new refractory alloys and titanium alloys, are now in commercial development toward applications in such consumer areas as power generation, communications, transportation, and health care.

5. It is an obvious question to ask in this connection what the economic impacts of the space program are. While traditional economists have considered growth of the GNP to be related to that of land, labor, or capital, newer economic schools have reviewed the GNP growth as a result of technical innovation. We find that this is only true of technical innovations related to consumer products; conversely, this is not the case when applied to the space program--at least in its present phase of exploration, and at a time when consumer applications of space are only now beginning to become apparent.

Economic impacts that <u>have</u> resulted from the space program <u>do</u> exist, and these are derivatives of primarily social impacts, particularly in the southern US, i.e., in proximity to four major space base installations. These installations have according to our study results improved the quality of education in the areas adjacent to them, introduced new and progressive elements into the political structure of all levels, and provided new and progressive business opportunities. Aside from the social returns, the economic benefits of these consequences consist in an improvement of the productivity of workers and in an improvement of per capita income--two

major areas in which the US South has lagged behind other areas of the country.

6. Our pilot study attempted to assess some of the derived benefits in the medical and public health area. We find that one such direct item is the first and only extensive collection of performance data on healthy adults. We similarly find the initial introduction of new R&D techniques in medical fields (ranging from diagnostic instruments to sterilization techniques) and associated with other fallout, and perhaps new management techniques that have provided these and other improvements in the public health spectrum. Among individual equipment transfer items that deserve mention we find a particularly impressive improvement in X-ray diagnostics (resulting from the application of a technique designed for the enhancement of remotely relayed lunar pictures), special equipment for handicapped persons (wheelless wheelchairs, glance-directed switches, etc.) and widening applications of remote monitoring of hospital patients.

7. Associated with these and other findings in the six study topics abstracted above, our study also included initial findings for the identification, documentation, and measurement of some of these impacts that are more quantitative than previously possible, and by application of these methods, perhaps developing a tool toward the deliberate enhancement of the positive impacts of the space program upon the nation.

Noting once more that the study reported here is a pilot experiment, we feel encouraged about these study methods which will facilitate future studies of this type, as well as about the initial results abstracted above. Future study seems indicated to remove increasingly this important subject from the realm of opinion and move it into the dispassionate area of information, and thus to provide an important guide for the decision-makers of this country in regard to the future of our nation's space effort.

DISCUSSION

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BIBLIOGRAPHY

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

EXECUTIVE SECRETARY

7

August 30, 1968
10:00 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities.

1. Launches.

a. The Soviet Union launched Cosmos 236 and Cosmos 237 on August 27. The former has an unknown mission and the latter is a type which is normally recovered after eight days.

b. The USSR on August 28 launched what may be a Soyuz-type craft, Cosmos 238.

2. Pegasus. NASA on August 29 silenced its three Pegasus meteoroid technology satellites, primarily because of the very substantial amount of data already obtained. Launched more than three years ago, the satellites had been expected to have lifetimes of only about 18 months. They made contributions to knowledge of meteoroid intensity in the near-Earth environment, indicating that the Apollo manned vehicle would have adequate protection against meteoroids during the planned lunar missions, but that additional protection might be needed for longer duration flights.

3. Balance of Payments. The U.S. aircraft commercial exports exceeded in terms of dollars during the first six months of 1968 those of the preceding full calendar year of 1967. The comparative figures were $640 million as against $611 million. On the same subject, the Department of Commerce reported that exports of aircraft and parts played a large part in bringing the U.S. trade balance into a surplus position in July, after suffering a deficit in June.

4. ESSA 7. The National Environmental Satellite Center plans to take over from NASA the operational control on September 3 of the ESSA 7 weather satellite. One of the tape recorders aboard the spacecraft, launched August 16, has failed, but a second recorder is working well and storing data from both camera systems.

5. Tropical Storms. U.S. weather satellites sighted and tracked one typhoon, four tropical storms, and one hurricane in the Pacific during August 21-26. Warnings were issued. A newly formed tropical storm was also detected near northern Florida on August 28.

6. Apollo Tracking Net. NASA's Manned Space Flight Network was completed on August 20, after nearly ten years of effort and expenditure of $515 million. This global network of radio links between 14 huge radio antennas, 8 operating jet liners, and 4 ships, with display boards and control rooms located in the United States, will connect NASA officials with the Apollo lunar spacecraft during its lunar flight.

7. Space Conference. At a joint meeting in Washington of the American Institute of Aeronautics and Astronautics and the American Bar Association, emphasis was placed upon space law and international cooperation in space relationships. Drs. Welsh and Eckman of the "Space Council" staff participated in the sessions.

8. Space Payloads Successfully Launched
(August 30)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	60	39	40	43
Escape	7	1	1	1

E. C. Welsh

EXECUTIVE
PP2-1/9-K
PR 4
40
OS.

August 30, 1968

Dear Jim:

The greatest joy of our passing years is that friendships, too, grow older. And nothing could give me more satisfaction than to look back over the long years of our association in the Congress.

I am deeply grateful for your birthday wishes - and for the assurance of your staunch support on the Foreign Affairs Committee and elsewhere.

Please know how highly I value your warm goodwill, and how much I appreciate your thoughtfulness.

Sincerely,

LBJ

Honorable James G. Fulton
House of Representatives
Washington, D. C.

MAILED FROM
SEP 1 1968
JOHNSON CITY, TEXAS

LBJ:WRS:EH:ck
cc: Juanita Roberts/Will Sparks/Eliska Hasek/Fay Steiner/CF

RECEIVED
SEP 4 1968
CENTRAL FILES

BBI

EXECUTIVE

OS
FG 11-4

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

EXECUTIVE SECRETARY

Rec'd 12:35 P

August 23, 1968
10:05 A. M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities.

1. Failure. The Department of Defense Atlas-Burner II launch from the Western Test Range on August 16 failed to achieve orbit when a protective shield covering the spacecraft assembly did not separate as designed. The shot was to have placed 12 military experiments into orbit.

2. Success. The ESSA 7 weather satellite, launched from the Western Test Range on a Thor-Delta vehicle on August 16, has achieved a near perfect Sun-synchronous orbit with a drift rate of only four minutes per year. This precise orbit will assure proper illumination for picture taking throughout the year. Picture quality from both cameras is excellent.

3. Apollo Mission. The first manned Apollo flight is scheduled for October on a Saturn IB launch vehicle. The Lunar Module test will be dropped from the first manned Saturn V Apollo flight scheduled for December because of technical problems in the Lunar Module. Whether the December flight will be Earth-orbited only or will go out as far as the Moon has not been determined and will not be until after the October flight has been evaluated.

4. Supersonic Transports.

a. The U.K.-French SST, built for commercial airline use, was subjected to its first ground tests in France this week as it taxied at 40 miles per hour. The delta-wing Concorde jet is presently scheduled for production delivery in 1971.

b. Moscow Radio reported that the Soviet Union's TU-144 SST has been completed and is being prepared for flight testing "soon."

c. The U.S. transport (SST) has been experiencing delays and may have more. While the engine development is progressing reasonably well, the airframe design is still unsettled and will be at least until January 1969.

5. Weather. U.S. weather satellites tracked Hurricane Dolly in the Atlantic August 12-16. This storm hit France and Spain with high winds, strong tides and heavy rains. Warnings were issued. Four tropical storms were also tracked in the Pacific August 12-20.

6. Pending Launch. ComSat Corporation and NASA are planning for the first launch of the new INTELSAT III satellite on September 18. This spacecraft, which will provide 1,200 equivalent voice circuits, will be positioned at a point above the eastern tip of Brazil. It is expected that the satellite will be available to carry the Olympic Games from Mexico City in October.

7. ComSat. The Soviets' proposal of an international satellite communications system has stimulated some interest and may be used as a bargaining point by members of INTELSAT to increase their control relative to that of the U.S. ComSat Corporation. The likelihood of members leaving INTELSAT to join the Soviet system seems remote at this time.

8. Air Flight Control. FAA has extended airspace protection to the Vice President and to other candidates for the nation's two highest offices, in the immediate vicinity of the Chicago convention site. A flight restriction area has been designated and will be in effect from August 25 to August 30, inclusive.

9. Space Payloads Successfully Launched
(August 23)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	60	39	39	40
Escape	7	1	1	1

E. C. Welsh

E/C

BROUGHT FORWARD

EXECUTIVE

OS 8-19-68

Previously filed Date

NAME Memo for the President from Jim Jones

ORGANIZATION Re: NERVA Rocket Engine Program

EXECUTIVE

OS 9-13-68

New File Symbol Date

FINAL ACTION Memo for the President from Bureau of the Budget

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

EXECUTIVE
OS
FG 11-4

EXECUTIVE SECRETARY

August 16, 1968
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. NASA launched the ATS-4 satellite from Cape Kennedy on August 11, using an Atlas-Centaur vehicle. The upper (Centaur) stage failed to re-ignite in the initial orbit, and the spacecraft and Centaur drifted into an elliptical orbit far from the intended synchronous position. The rocket and satellite are now tumbling. NASA is still investigating to determine the cause of the failure, first for the Centaur in more than two years.

b. The seventh TIROS weather satellite, TOSS-E, was successfully launched from the Western Test Range aboard a Thor-Delta vehicle on August 16. Preliminary indications are that the spacecraft is functioning normally.

2. Pending Launch. The Department of Defense has scheduled an Atlas-Burner II launch from the Western Test Range on August 16. The project includes a variety of separate experiments.

3. Soviet ComSat Proposal. The Soviet Union and seven other Communist nations are proposing a global international organization for space communications. It is to be called Intersputnik. Membership would be open to all nations. The proposed system was formally announced by the Soviet Premier in Vienna on August 14 at the opening session of the United Nations Conference on Exploration and Peaceful Uses of Outer Space. The United States has repeatedly invited the USSR and other Eastern European countries to join the Intelsat consortium.

4. Aeronautical ComSat. The Interim Committee of Intelsat has directed the Communications Satellite Corporation, Intelsat manager, to invite proposals from industry for a satellite to provide two-way voice communications between transoceanic aircraft and fixed ground stations.

5. Space Traffic. Russia's Cosmos 222 satellite re-entered the Earth's atmosphere over the Atlantic Ocean on August 13, to become the 2,000th man-made object to return to Earth since the Space Age began with the launch

of Sputnik 1 on October 4, 1957. The DOD said 1,292 objects were still in orbit as of August 13, of which 949 were classified as space "junk" and 343 as spacecraft. Of the orbiting spacecraft, 270 are U.S., 63 USSR, 5 France, and 2 each for United Kingdom and Canada, and one the European Space Research Organization.

6. New Flight Program Urged. The National Academy of Sciences has recommended that NASA embark on a seven-year program of unmanned interplanetary flights. In a report issued August 14, the Academy called for a greatly expanded effort which would include flights not only to Mars, as presently provided in NASA's schedule, but also to Venus, Mercury, and Jupiter. Noting the heavy cuts already made in the FY 1969 NASA budget, the report urged that a substantially greater part of the remaining funds be devoted to unmanned planetary exploration. News accounts regarding the report were misleading as they indicated NASA should abandon manned planetary projects, when in fact it has none.

7. Aeronautics Hearings. The House Science and Astronautics Committee plans to hold hearings in September on aeronautics research.

8. SNAP 29 Safety Review. The National Aeronautics and Space Council staff has begun a review of safety aspects of the 400-watt SNAP 29 nuclear space power unit.

9. Space Payloads Successfully Launched
(August 16)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	59	39	38	40
Escape	7	1	1	1

E. C. Welsh

Sat Aug 10 - (7)

EXECUTIVE
OS
FG11-4

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

EXECUTIVE SECRETARY

August 9, 1968
10:30 A.M.

Rec'd 8-10-68 9a

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Five U.S. Spacecraft.

a. The DOD successfully launched three classified spacecraft into orbit on two successive days. An Atlas-Agena took a single satellite into orbit from Cape Kennedy on August 6; a Titan IIIB-Agena was used to orbit one satellite from the Western Test Range on the same day; and a Thor-Agena placed one spacecraft in orbit from the Western Test Range on August 7.

b. NASA successfully launched two spacecraft from the Western Test Range on August 8, using a Scout launch vehicle. One of the satellites, named the INJUN Explorer, will measure charged particles reaching the upper atmosphere and investigate those trapped in the Earth's magnetic field. The second, called the Air Density Explorer, will measure density and temperature at altitudes between 500 and 1,500 miles.

2. Soviet Spacecraft. The USSR orbited a classified spacecraft on August 9. It is the type usually recovered in 8 days.

3. NASA Retrenchment. Plans have been announced by NASA to effect reductions in Apollo Applications, planetary exploration, and nuclear propulsion. One part of the economy plan is stoppage of work on four Saturn launch vehicles -- two Saturn IB's and two Saturn V's -- that had been scheduled for use in manned missions in the 1970's. This is the way NASA proposes to handle direct Congressional cuts in its budget request as well as indirect Congressional cuts forced by the Revenue and Expenditure Act.

4. Pending Launches.

a. Launch of the fourth Advanced Technology Satellite (ATS-4) is scheduled for late on August 10 aboard an Atlas-Centaur vehicle at Cape Kennedy. The spacecraft will be used to provide for the first time the capability of immediate observation of the effect of "seeding" hurricanes and tropical storms.

b. On August 14, NASA will launch on behalf of ESSA a new TOSS-E weather satellite out of the Western Test Range, using a Delta launch vehicle.

5. International Cooperation.

a. A telecast from Washington to Chile via the Atlantic INTELSAT II satellite will be part of the formal dedication today of Chile's new Earth station for commercial satellite communications.

b. The Pope's visit to the Eucharistic Congress in Bogota, Colombia, between August 18 and 25 is scheduled to be televised in color to viewers in the U.S. and Europe. Communications Satellite Corporation will provide the Earth stations and NASA will make available its ATS-3 synchronous orbit satellite.

c. NASA has signed four agreements for cooperative space projects with Brazil, Norway, Spain, and Sweden. The agreements involve launching sounding rockets from each of these countries.

6. Soviet Comsat System. The Soviet Union is inviting various UN and International Telecommunications Union members to join an international communications satellite system based on that of the USSR.

7. Space Payloads Successfully Launched
(August 9)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	58	37	38	40
Escape	7	1	1	1

E. C. Welsh

Ranch
8-4-68
4:45P

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EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

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August 2, 1968
10:00 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Apollo. The spacecraft scheduled to be used in the first manned Apollo flight this fall has successfully completed the final two eight-hour manned tests in the vacuum chamber at Cape Kennedy. The first altitude simulation test involved the prime three-man crew for the first mission; the second was conducted with the back-up crew.

2. Launch. The Soviet Union on July 30 launched Cosmos 234 into an orbit from which a spacecraft is usually recovered after eight days.

3. Pending Launches.

a. NASA's launch of a fourth Applications Technology Satellite (ATS-4) has been postponed until August 7 because of the need to re-qualify the guidance system in the upper stage (Centaur) of the launch vehicle.

b. Two NASA satellites are scheduled to be launched from the Western Test Range by a Scout rocket on August 8. Their mission is to study the density and radiation characteristics of Earth's upper atmosphere at a time of high solar activity.

4. New Aerospace Company. Some 600 Negroes in Philadelphia have formed a new aerospace company with their own funds and with technical assistance and a $2,675,000 contract from the General Electric Company. The Department of Labor gave the company a half-million dollar training contract.

GEO. comment on this

5. Nuclear Rocket Funds. The Senate approved the conference report on the AEC FY 1969 Appropriation on July 30, thus completing Congressional action on AEC funds, including $53 million for the AEC portion of the nuclear rocket program.

6. UFO Symposium. A House Science and Astronautics Committee symposium on July 29 reviewed the status of sightings of unidentified flying objects (UFO's). Six scientists from universities and industry testified.

7. X-15 Crash Findings. A lengthy NASA investigation of the crash of an X-15 rocket research plane last November 15 concluded that the cause was a combination of pilot vertigo and unexpected difficulty with a new type of automatic pilot. During the flight over California, the pilot lost his orientation and made a wrong correction, causing the aircraft to go into a spin. This was the first fatality in 191 flights of the X-15.

8. ComSat Corporation. Two Senators have introduced a bill that would vary the ratio of general public to common carrier members on the Communications Satellite Corporation Board of Directors to reflect the decline in percentage of stock ownership by the carriers.

9. Weather. U.S. weather satellites tracked two typhoons in the Western Pacific on July 21-29, and two tropical storms off the northwest continental United States during the same period. Warnings were issued.

10. Space Payloads Successfully Launched
(August 2)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	57	32	36	39
Escape	7	1	1	1

E. C. Welsh

7/26/68
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EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

July 26, 1968
10:15 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. AEC Space Funds. In the July 24 Senate-House conference, the AEC nuclear rocket program received $53 million. The President's request was $72 million; the House vote $31 million; and the Senate vote $68 million. The compromise will keep this important program going.

2. Conference. The Senate and House appropriations committees plan a conference on the Independent Offices Appropriations for either the week of July 29 or after the nominating convention recess. Although the $4.008 billion figure for NASA is the same for both houses, the allocation of funds within that figure differs somewhat.

3. Apollo Tests Progress.

a. NASA has successfully completed unmanned altitude chamber testing of the Apollo spacecraft for the first manned flight scheduled for launch this autumn at Cape Kennedy. Manned testing in the same chamber began at the Cape this morning and involved the mission crew, commanded by Captain Walter M. Schirra. The cabin atmosphere will be a mixture of oxygen and nitrogen initially, then will be changed to 100% oxygen.

b. NASA announced that it has solved the critical Saturn V launch vehicle problems discovered in the last flight.

4. Pending Launches.

a. NASA's next Applications Technology Satellite (ATS-4) launch, previously scheduled for July 24, is now expected about August 1. Difficulty with the upper-stage (Centaur) guidance gyro has caused the delay.

b. An Air Density Experiment Satellite is to be launched from the Western Test Range aboard a Scout vehicle on August 8.

c. Launch of the ESSA 7 weather satellite from the Western Test Range on a Thor-Delta vehicle has been scheduled for August 14.

5. Astronomy Satellite. The radio astronomy satellite Explorer 38, launched from the Western Test Range on a Thor-Delta, July 4, began extending its giant X-shaped antenna booms on July 22. The antennas have been extended to 455 feet, and will be held at that distance for approximately two weeks while the first radio astronomy experiments are conducted.

6. Weather.

a. U.S. and Soviet representatives meeting in Moscow have reached agreement on improvements in the existing meteorological communications link between the two nations. The agreement is expected to enhance the quality, quantity, and timeliness of the reciprocal weather information exchange.

b. NASA and ESSA will relay processed weather data in facsimile format to most of North and South America and Western Europe, and part of Eastern Europe, starting in September. The system will utilize NASA's ATS-3 satellite, in synchronous orbit over Brazil, and more than 150 automatic picture transmission (APT) ground stations in some 30 countries.

7. Navigation. A commercial version of the military navigation satellite receiver has been developed by an industrial laboratory. This simplified device will be marketable for commercial shipping and will provide a one-tenth-mile navigational accuracy.

8. South American Station. The first South American station for use with INTELSAT communication satellites has become operational. Located 70 miles south of Santiago, Chile, the station has a 97-foot-diameter dish antenna.

9. Space Payloads Successfully Launched
(July 26)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	57	32	35	38
Escape	6	1	1	1

E. C. Welsh

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE
OS
FG11-4

EXECUTIVE SECRETARY

July 19, 1968
10:30 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The USSR launched Cosmos 232 on July 16 into an orbit from which a USSR observation spacecraft is usually recovered after eight days.

b. The USSR launched Cosmos 233 on July 19 into an elliptical orbit. It was identified as a "scientific satellite."

2. Pending Launches.

a. NASA is scheduled to launch its fourth Applications Technology Satellite (ATS-D) into synchronous orbit from Cape Kennedy on July 24, using an Atlas-Centaur vehicle. Mission equipment includes an attitude stabilizing experiment; a TV camera system providing black and white photographs of the Earth's surface during both the day and night; and an ion engine which could be used to maneuver a spacecraft in flight.

b. The U.S. weather satellite ESSA 7 is scheduled for an August 7 launch from the Western Test Range aboard a Delta vehicle. The launch is timed to strengthen our weather surveillance at the beginning of the hurricane season.

3. Largest Aircraft. The world's largest airplane, the Air Force C-5A jet transport, was successfully test-flown for the second time on July 13. This time the giant aircraft flew with a gross weight of 520,000 pounds.

4. NASA Contract Criticism. A House Government Operations subcommittee held a one-day hearing on July 15 on a NASA contract for Apollo systems integration. The subcommittee chairman was critical of the cost increase and large employment involved.

5. New York-Moscow Flights. This week, two Pan American Airways jet liners landed at Moscow and one Soviet plane landed in New York, inaugurating the first air service between the two countries following the recent completion of arrangements for regular U.S.-USSR flights.

6. International Discussions.

a. The Japanese Minister for Science and Technology and associates met with U. S. officials in Washington during the week of July 15 dealing with bilateral cooperation in space, marine science, and atomic energy projects.

b. A mission of West European government representatives on July 19 began a visit to the U. S. to discuss possibilities for further U. S. -European space cooperation.

7. Space Appropriation. The Senate approved funds of $4,008.2 million for NASA and $500,000 for the National Aeronautics and Space Council in passing the Independent Offices Appropriation Bill by a vote of 73-0 on July 18. The Senate first turned down amendments to cut NASA research funds a further $300 million by a vote of 52-34 and another to cut NASA construction funds $12.9 million by a vote of 42-34.

8. Nuclear Reactor. A Phoebus reactor was successfully tested on July 18. This was the second test, with the power level reaching 3600 megawatts.

9. International Agreement. The "Assistance and Return Agreement" to retrieve space pilots and equipment and return them to their country after landing on foreign soil, was sent to the Senate for ratification on July 15 by President Johnson. This agreement will become effective after ratification by the three principal signers, plus two other nations.

10. Space Payloads Successfully Launched
(July 19)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	53	32	35	38
Escape	6	1	1	1

E. C. Welsh

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(27)

EXECUTIVE

OS
FG11-4

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE SECRETARY

July 12, 1968
10:15 A.M.

Rec'd 2:30p

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Launches.

a. The Soviet Union launched its ninth Molniya I communications satellite into an elliptical 12-hour orbit on July 5. This spacecraft will operate on the domestic network linking all regions of the nation with Moscow.

b. The USSR launched Cosmos 230 on July 5 into an orbit normally used for research spacecraft, and Cosmos 231 on July 11 into an orbit from which the spacecraft is normally recovered after eight days.

c. Defense successfully launched two spacecraft into orbit from the Western Test Range on July 11, using an Atlas vehicle. One satellite is a high-density 23-inch sphere weighing approximately 600 pounds that will make drag measurements as it slowly decays. The second spacecraft will monitor solar activity for correlation with the drag measurements.

2. Astronomy. NASA on July 8 successfully stabilized a radio astronomy satellite in a 3,700-mile-high circular Earth orbit. Its antenna booms will be extended 450-feet next week and then, after a minimum of two weeks of data gathering, the booms will be extended to their full 750-foot length. Primary purpose of the satellite is to monitor low-frequency radio emissions from space and the Earth environment.

3. Moscow-New York Service. Once-per-week commercial jet aircraft flights between New York and Moscow are scheduled to begin July 15. An Aeroflot airliner will take off from Moscow and stop at Montreal en route to New York. A Pan American aircraft will take off the same day from New York and fly to Moscow via Copenhagen. The basic agreement on the service was signed in November 1966; Presidential approval of the CAB award of the route to the Soviet airline came this June 21.

4. XB-70 Program Continued. NASA has awarded contract extensions for continuing maintenance and minimum flight support of the XB-70 supersonic research aircraft through Fiscal Year 1969. The contract will allow several hours of flight operations each month.

5. Nuclear Powered Satellite. The radioisotopic power supply is still powering a navigation spacecraft after its seventh year in space.

6. Apollo Tests at Cape. The Apollo spacecraft which will carry three astronauts on the first manned Apollo flight -- an 11-day Earth-orbital mission due late this summer -- is undergoing unmanned tests in an altitude chamber at Cape Kennedy. Similar tests with the spacecraft's three-man crew aboard may begin on July 15.

7. Defense Communications. Initial tests have been successfully completed on the eight DOD communication satellites launched on June 13 into near-synchronous orbits. These, along with previously launched DOD satellites, are carrying significant military communications traffic between 31 ground stations distributed globally in areas of U.S. military interest.

8. NASA Appropriation. The Senate is expected to vote July 16 on a NASA FY 1969 Appropriation bill. Reported out this week by the Senate Appropriations Committee, the bill would provide $4.008 billion, the same total voted earlier by the House.

9. Search. Search for the SNAP nuclear power unit, lost when the Nimbus weather spacecraft was destroyed, will be renewed on July 15. The Navy will undertake an intensive one-week effort using sonars close to the 300-foot sea depth. Cameras and divers will also be utilized.

10. Space Payloads Successfully Launched
(July 12)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	53	32	34	36
Escape	5	1	1	1

E. C. Welsh

BB1

EXECUTIVE

OS
FG11-4

EXECUTIVE OFFICE OF THE PRESIDENT
NATIONAL AERONAUTICS AND SPACE COUNCIL
WASHINGTON

EXECUTIVE SECRETARY

July 5, 1968
10:00 A.M.

MEMORANDUM FOR THE PRESIDENT

Subject: Space and Aeronautics Activities

1. Largest Aircraft Flies. The Air Force's C-5A cargo plane, the world's largest aircraft, passed its first flight test on June 30. The 246-foot long jet flew a 94-minute mission and made a smooth landing. Although it weighed 500,000 pounds, the huge aircraft used only 4,500 feet of runway.

2. Launch. NASA successfully launched a radio astronomy satellite from the Western Test Range on July 4, using a Thor-Delta vehicle. Four 750-foot long antennas, when deployed about two weeks after launch, will form an "X" configuration measuring nearly 1,500 feet from tip to tip, with the spacecraft main body at the center. The satellite is designed to perform the first detailed measurements of low frequency radio waves from space.

3. Pending Launch. DOD plans to launch an Atlas carrying two engineering payloads into orbit on July 10 from the Western Test Range. These engineering payloads are to improve our knowledge of the density profile of the upper atmosphere. One of these payloads will have a record minimum altitude of approximately 80 miles.

4. U.S.-USSR Weather Talks. The Soviet Union has agreed to meet with U.S. representatives in Moscow July 9-11 to discuss possible improvements in the existing U.S.-USSR meteorological communications link. The conference will seek to recommend changes in the 1963 U.S.-USSR agreement on exchange of weather data, as well as to discuss technical problems connected with scheduling and operating the link.

5. Nuclear Space Funds. The Senate AEC Appropriations Subcommittee on June 28 heard the AEC request that its FY 1969 Appropriation funding for space nuclear rockets be set at $53 million. This amounted to a reclama of $22 million over the House figure of $31 million but was less than the President's request of $72 million. The AEC Chairman agreed under questioning that even with the requested reclama the Agency's nuclear rocket activities would be severely curtailed. The full Senate Appropriations Committee markup is expected during the week of July 8.

6. Communications. Early Bird, the first commercial communications satellite, completed three years of successful operation on June 28. With a reliability record of 100%, it has doubled its anticipated lifetime and is continuing to provide voice-grade circuits between the United States and Europe.

7. Tracking from Satellite. Scientists at Goddard Space Flight Center report they recently used the ATS-3 satellite, in synchronous orbit 22,300 miles over Brazil, to locate a specially equipped automobile traveling between Washington, D. C. and Baltimore at 60 miles per hour. Signals from the spacecraft showed that the satellite located the auto within 1,000 feet of its precise position. Similar tests were made with a boat on the Chesapeake Bay, a ship in the Caribbean, and an aircraft in flight.

8. Aircraft Safety. The National Transportation Safety Board on July 2 recommended to the FAA that airline pilots be forbidden to fly into areas of severe thunderstorms or tornadoes. The recommendation, which would place commercial aviators under the same constraint now applied to military transport pilots, was brought on by investigations showing that a number of fatal accidents have been caused by pilots attempting to use on-board radar to find their way through thunderheads.

9. Space Payloads Successfully Launched
(July 5)

	U.S.		USSR	
	1967	1968	1967	1968
Earth Orbit	53	30	34	33
Escape	4	1	1	1

E. C. Welsh