Fib - Space
A

A. Suggested Approach

1. Draft Report--Should be rewritten with following changes:

   a. Highlight specific items for Presidential decision, and discuss the advantages and disadvantages of each.

   b. Identify some specific lower cost program options and evaluate them in terms of returns to the nation instead of in relation to the single set of specified goals.

   c. Alternative national strategies toward the space program should be included--such as those identified in Tab G.

   d. Other changes in substance may be required after STG discussion of substantive issues.

2. Next Steps

   a. Rewrite report as above by September 17.

   b. Report should be submitted to President with evaluation and recommendation of each principal.

   c. Report and evaluation should be reviewed by the Cabinet and NSC before Presidential decision is made.

   d. Recommend no Presidential statement on space until after 1971 budget decisions. Perhaps State of the Union or Budget Message is best vehicle for setting recommendations before Congress and people.

B. Summary of Draft STG Report

- A single set of goals and objectives is identified for the period 1975-1990.
- Programs consistent with the goals and objectives are defined.
- Three budget options are identified and their effect on the rate of program progress toward goals and objectives is estimated.
- The President is asked to endorse the goals and objectives and to select a long range budget posture for guidance on the rate of accomplishment.
- The goals and objectives are:

1. A balanced space program with vigorous manned and unmanned flight components.
2. Manned planetary exploration, beginning with Mars.
3. Specific program objectives as follows:

   a. Application of space technology to the direct benefit of mankind.

   b. Use space systems to enhance national security.

   c. Explore the solar system and beyond.

   d. Develop new capabilities for manned space operation.

   e. International participation and cooperation.

- The budget options are:

Program Options	Annual funding during peak periods $ billion NASA	DOD	Total
A	10.0	3.5	13.5
B	9.0	2.5	11.5
C	6.0-8.0	2.0	8.0-10.0

PRESIDENT'S SPACE TASK GROUP REPORT

Summary of Recommendations

ITEM	SUPPORTING LOGIC OR DESCRIPTIVE CHARACTERISTICS
A. Endorse a Balanced Space Program including (a) automated spacecraft (b) remotely controlled spacecraft (c) vigorous manned flight program	1. Provides a vision of the future that includes (a) substantive values easily characterized and understood; (b) long term goal to serve as a guide to future decisions (1) sufficiently distant to stimulate progress (2) sufficiently close to be attainable; (c) challenge to (1) spirit of adventure and exploration (2) technical capability; (d) foster use of space for (1) welfare (2) security (3) enlightenment; 2. Is based upon a framework involving U. S. (a) acceptance of the challenge of exploring the solar system b (1) manned means (2) unmanned means; (b) development of integrated efficient, economical space transportation system; (c) maintenance of return on investments in space applications science, and technology; (d) extension of benefits of space to other nations; (e) increased international participation. 3. Key characteristics are (a) flexibility (b) challenge (c) opportunity

B. Establish the goal of manned planetary exploration, beginning with Mars.

1. Constitutes a goal - not an immediate program commitment.
2. Is understanding we will accomplish before the end of the century.
3. Acts as focus for precursor activities such as
   (a) study of biomedical aspects of the 500-600 day flights
   (b) unmanned reconnaissance of planets
   (c) development of life support systems
   (d) development of power supplies
   (e) development of propulsion capabilities.
4. Rate determined by budget decisions.
5. Can be accomplished every two years after about 1981.

C. Endorse program objectives and subobjectives as follows:

1. Long term goals and objectives are imperative to guide planning and execution of program.
2. New applications to improve quality of life would be developed.
3. Provides non-provocative enhancement of national security.
4. Augments returns from investment of past decade.
5. Produces low-cost, flexible, reuseable operational space systems.
6. Encourage international involvement and participation in space.

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1. Application of space technology to direct benefit of mankind
   -Increase use of space capabilities for services to man.

1. Significant economic and social benefits have been forecast.
2. Major contributions to management of domestic problems.
3. Greater opportunities for international cooperation.

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2. Operation of space systems to enhance national security
   -Enhance Defense posture of US in interest of world peace and security.

1. Space activity is means for supporting existing forces, missions, and functions.
2. Each space mission selected in competition with ground, sea, and airborne system.

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3. Exploration of the Solar System and beyond
   -Increase man's knowledge of the universe.

1. Many unanswered scientific questions exist.
2. Space platforms provide some unique advantages
   (a) freedom to observe in all wavelengths
   (b) freedom from local environmental conditions
   (c) continuous observations
   (d) ability to approach extra-terrestrial bodies.
3. Space platforms have disadvantages
   (a) high comparative cost
   (b) inaccessability for repair or servicing
   (c) long lead times
4. Includes:
   (a) Unmanned Planetary Exploration
   (b) Astronomy
   (c) Physics
   (d) Earth Sciences
   (e) Life Sciences

(f) Lunar Exploration, including

* - Extended Apollo type mission
* - Manned Lunar Orbiting Station
* - Manned Lunar Base

4. Development of new capabilities for operating in Space.
   -Develop new operational systems emphasizing
   (a) commonality
   (b) reusability
   (c) economy

1. Cost of multiple revisit and resupply missions too high without such systems.
2. Capabilities included are:
   (a) Space Station Module (future combination into space base?)
   (b) A Space Transportation System involving
      (1) chemically fueled earth-to-orbit shuttle
      (2) chemically fueled orbit-to-orbit space tug
      (3) nuclear stage for earth-orbit to lunar-orbit, to geosynchronous orbit and to planetary trajectories
   (c) advanced technology development.

5. International Participation and Cooperation
   -Promote sense of world community
   -Apply space technology to mankind's needs.

1. Select projects offering maximum opportunities for foreign participation.
2. Select projects offering economic and social benefits for others.
3. Emphasize activities that lend themselves to international agreement and coordination.
4. Examples are:
   (a) foreign astronauts
   (b) foreign sources of launch services
   (c) division of labor in specific program areas
   (d) international sponsorship of planetary exploration - like IGY
   (e) applications of space technology to serve economic and social needs of other countries
      (1) Satellite surveys of earth resources
      (2) Direct broadcast TV
      (3) expand arrangements to use meteorological data
      (4) training opportunities in space disciplines.
   (f) specific efforts to cooperate with USSR in almost all areas of space activity.

B.4.

D. Select (by implication(?) a long range budget posture consistent with recommended goals and objectives.

1. Three program-budget options are presented for each NASA and DOD demonstrating funding effect on rate of program accomplishment.(A 4th NASA option omits manned planetary exploration.)
2. No option requires '71 funding in excess of '69-'70 level.
3. All options require large increases after '71.

APPROXIMATE ANNUAL FUNDING LEVELS

$ Billion

Time Period	NASA	DOD	TOTAL
FY 69-70	4.0	2.0	6.0
FY 76-80			
Option:A	10.0	3.5	13.5
Option:B	9.0	2.5	11.5
Option:C	6.0 - 8.0	2.0	8.0 - 10.0

APPROXIMATE TOTAL FUNDING FOR A 10 YEAR PERIOD

Time Period	NASA	DOD	TOTAL
1960-1970	38	16	54
1970-1980			
Option: A	86	33	119
Option: B	79	25	104
Option: C	56	21	77

C. Staff Evaluation of Report

1. Report is inadequate as

- a basis for Presidential decision,
- a published justification of Administration decision, for reasons described below.

2. What are we asking the President to decide? This is not clear from reading the report. For example, does Presidential acceptance of the objective "Developing new capabilities for operating in space" amount to go-ahead decisions on a large earth-orbiting manned Space Station and a Space Transportation System involving three major new systems development for manned and automated systems with both chemical and nuclear engines? The report is susceptible to both "yes" and "no" interpretations.

3. The central issue - "What is the future of civilian manned space flight activities" is not directly addressed.

4. A good catalogue of technical possibilities for the future is provided. However, in our view these are very optimistic possibilities. For example, ESTP Division staff believe it highly unlikely that a manned Mars mission could in fact be undertaken in 1981 or that a space shuttle meeting the specifications described to the Staff Director's committee could in fact be developed in five years. We believe that NASA research engineers would generally agree with our view.

5. The report is lacking in identified outputs for the large-scale manned programs recommended. There is therefore little on which to base value judgements.

6. Justification for large-scale manned space effort is only loosely derived. It is based on

- challenge to our spirit of adventure
- challenge to our national competence in engineering

The view then is that a space program supported by national acceptance of these challenges can be used to enhance our national

- welfare
- security
- enlightenment

In our view, an unmanned flight program, because of its demonstrated output and lower costs, can be justified directly on the basis of returns to our security, economy, and advancement of science.

It is the costly, large-scale manned flight program that requires some overriding decisive force to keep it going.

The report should therefore address the manned flight program and the unmanned flight programs separately.

7. No low-cost options. The report does not contain any program options with annual costs less than current levels. In our view, such options should be identified in the report, and evaluated in terms of returns to the nation - not in terms of entrancing opportunities passed up.

8. Different national strategies toward the space program might also be identified in the report, instead of concentrating on a single set of recommended goals and objectives. Strategies that might be considered include:

   - conservative strategy based on reducing to a minimum the annual cost of our space program while continuing low-rate manned operations with our present generation of flight equipment. This strategy is probably most in keeping with an expectation of long-range budget stringency. It is further elaborated under Tab G.

   - an international joint effort strategy based on providing some baseline funds to our national space effort while offering to participate in some internationally funded major effort such as a lunar exploration program, space station, or manned Mars expedition.

D. Issue - Should President decide and announce new directions in space now?

Discussion: There is considerable expectation in the aerospace community that the President will announce a new space policy in September. This arises from the published Presidential directive establishing the Space Task Group and the September 1 target date for completing its report. The trade press has followed progress of the STG and encouraged expectation of an early announcement. Dr. Paine has alluded to a comment by the President on the Hornet to the effect that the President expected to issue a message on the future of the space program in mid-September. Rep. Fulton, the ranking minority member of the House Science and Astronautics Committee, announced during debates on the NASA 1970 appropriations that he fully expected an upward budget amendment for NASA in September.

Such a Presidential announcement would be timely from the perspective of NASA and of the aerospace industry. It would set the direction early in FY 1970 for the future course of the program - ending speculation, uncertainty, and the morale problems associated with completion of Apollo without clear knowledge of the future. It would enable NASA to reprogram 1970 funds early in the year to get a running start on the new direction, and serve as a clear signal for preparation of the agency's 1971 budget request.

The principal disadvantages of announcement now are:

(1) the lack of opportunity for the President to review the Space program in the context of the total 1971 budget problem.

(2) the President's range of decision would be narrowed because of the necessity in a single-purpose message to set very clear directions - No option-keeping or program delaying decisions should be highlighted in a message issued purely at the President's initiative.

(3) The effect on other agencies' 1971 budget requests if the President were to announce plans for a radically expanded space program. Most other agencies could be expected to take a hard-sell position for major increases of their own if the President were to support expansion of a program most other agency heads consider of low priority.

Recommendation: On balance we recommend against Presidential announcement of new space plans until after FY 1971 budget decisions are made.

E. Areas of Agreement with Draft Report

We believe the Bureau should support the specific goals and objectives listed below, subject only to reservations on the manned space flight programs supporting those objectives. Our reservations are discussed in tabs F.1 to F.5.

- A balanced Space Program including automated spacecraft, remotely controlled spacecraft and vigorous manned space flight program. (We have some reservations on degree of vigor.)

- Application of space technology to the direct benefit of mankind.

- Operation of space systems to enhance national security (subject to decision on a case-by-case basis in competition with other land, sea and airborne systems).

- Exploration of the solar system and beyond (subject to reservation on Manned Lunar Orbiting Station and Manned Lunar Base, discussed under tab F.3.

- International participation and cooperation. — "COOPERATION" IS NOT NECESSARILY SAME AS COST-SHARING

Issue: What should be the scope of future civil manned space flight programs?

Discussion: In our view, this is the central issue of this report because:

a. Unmanned space science programs have a series of scientific challenges ahead to support them for the foreseeable future.

b. Experiments with unmanned applications satellites can be justified by potential returns to both military and civil pursuits.

c. The annual cost of a very vigorous unmanned flight program of space sciences and applications is half the current annual outlays for space.

d. Manned space flight has reached a crucial decision point with completion of the national goal of lunar landing.

The crucial problem with manned space flight is that no one is really prepared to stop manned space flight activity, and yet no defined manned project can compete on a cost-return basis with unmanned space flight systems. In addition, missions that are designed around man's unique capabilities appear to have little demonstrable economic or social return to atone for their high cost. Their principal contribution is that each manned flight paves the way for more manned flight. It is quite true, however, that manned flight attracts much more public attention than unmanned flight.

A second problem is that NASA equates progress in manned space capability with increased time in space, increased size of spacecraft, and increased rate of activity. The agency also insists upon continuity of operational flight programs, which means we must continue producing and using current equipment concurrently with development of next generation systems. Therefore, by definition, there can be no progress in manned space flight without significantly increased annual cost. The program budget options defined in the report all involve increases for manned flight from the 1970 level of $2 B to future levels of $6 B to $8 B per year. Can public support continue for manned space flight when it becomes routine, costly, and without significant return?

The following issues concern the specific manned space flight projects whose initiation is recommended or implied in the STG Staff Director's Committee report.

Issue: Should the President endorse the goal of Manned Planetary Exploration, starting with a Mars mission?

Discussion: This issue must be addressed in two parts--(1) what are the advantages and disadvantages of the goal itself and (2) should the President endorse the goal without a target date?

1. Manned planetary exploration (Mars) as a goal.

   (a) Advantages:

      (1) Poses challenge to people's spirit of adventure.

      (2) Poses challenge to people's engineering capability.

      (3) Perpetuates the image of the U.S. as a world leader in technology.

      (4) Stimulates national pride in our own accomplishments.

      (5) Serves as a focus for and stimulant to advanced research and technology and of unmanned planetary exploration.

      (6) Pushes ahead the development of larger scale, long duration manned space flight capabilities which might be more difficult to justify without the identified contribution to a national goal.

      (7) Serves as a clearly understandable unifying theme for the space program of the 70's and 80's.

   (b) Disadvantages:

      (1) Attainment of the goal involves a 12 to 20-year commitment to a very costly high-risk program whose potential returns to the nation must be accepted largely on faith.

      (2) We do not now know that man can survive, physically and psychologically, a two-year space flight to another planet.

      (3) We have not demonstrated ability to keep man alive for long periods on extraterrestrial bodies.

(4) Mars and other bodies in the solar system can be explored by unmanned or remote control means at much less cost than by manned missions.

(5) The technical approach to implementation has not yet been defined. All we know is that certain types of precursor programs will be required.

(6) Other means exist for stimulating technological advancement and preserving our image as technological leader. These means may be other intermediate goals in space, our weapons program, ocean technology, transportation technology, or other technology more directly concerned with our way of life.

(7) It is extremely difficult to define the relevance of such an expedition to either our national security or our national welfare.

2. Presidential endorsement as a goal without a target date:

(a) Advantages:

(1) This approach could achieve the beneficial effects of the goal and minimize the risk associated with the disadvantages of the goal.

(2) Announcement does not have to be followed immediately with commensurate budget requests.

(b) Disadvantages:

(1) Unless President moves immediately to implement such an announcement (by project initiations and budget increases) he risks loss of credibility.

(2) Endorsement does commit to major NASA budget increases, involving rise from present $4 billion/year level to $10 billion/year level four years after go-ahead--thereby limiting budget flexibility in NASA and Government-wide (estimates of total costs of a Mars mission vary from $24 to $100 B).

(3) Congressional leadership appear opposed to announcement of Mars goal now. The Chairman of the House and Senate Space Committees, the Chairman of the House Appropriations Committee, and others have spoken in opposition to the manned Mars goal.

Recommendation: We recommend against endorsement of the manned planetary exploration (Mars) goal either with or without a target date. In summary, we believe the Mars goal to be much more beneficial to the space program than to the nation as a whole. The technical risks, the implied program and funding commitments, and the political risks all outweigh the possible advantages of such an endorsement.

Issue: Should extended manned lunar exploration be endorsed (as part of the objective "exploration of the solar system and beyond")?

Discussion: The FY 1970 budget includes funds to provide limited extensions of lunar staytime and astronaut mobility plus scientific equipment for additional Apollo-type missions. We believe continuation of such missions at low rates can be justified by additional scientific knowledge gained about the moon and the earth-moon system.

The Lunar Orbiting Station and Lunar Base, however, have not been justified by their potential contribution to lunar science. The principal supporting arguments advanced for these systems is that they will advance the technology of planetary exploration. A corallary argument for Lunar Orbiting Station is that it would reduce the cost of high-rate repeated missions to many points on the lunar surface. These arguments raise two questions:

(1) Can the lunar base and the Lunar Orbiting Station be justified if manned planetary exploration is not anticipated?

(2) Is there a need for high-rate repeated manned missions to the lunar surface; and if so, how many missions are needed to amortize the cost of developing and operating the Lunar Orbiting Station and the Lunar Transfer Stage?

To date these questions have not been addressed in the Staff Director's Committee. We anticipate that, if they were addressed, the case for going ahead on these two projects (at an open-ended annual cost of $1.2 - $2.0 B) cannot be made.

Recommendation: We support extended Apollo missions, but recommend against endorsement now of Lunar Base or Lunar Orbiting Station.

Issue: Should development of a Manned Space Station be endorsed (as part of the "new capabilities" objective)?

Discussion: NASA has an on-going Apollo Applications Program whose objective is to develop and operate intermittently for up to one year an "orbital workshop" which is in effect a baby space station. This workshop will be flown in 1972 - 1973.

The Staff Director's Committee report advocates early development of a 12-man Space Station Module. This module would be capable of assembly into a Space Base accomodating up to 50 crewmen for two years or more, and would be a basic element of Lunar Orbiting Station and of a manned Mars mission.

Such a module can be viewed as an intermediate goal in itself or as a step toward manned planetary exploration.

If manned planetary exploration were endorsed, such a module would be prerequisite to a Mars mission. Without that end use, however, the space station cannot be justified by its own outputs. (NASA description of the primary output can be summarized as learning how to build and use a manned space station). Experiments in science and applications can be done at less cost in an unmanned mode. Experiments in space biomedicine and engineering can be justified only if there is some agreed-upon need for long-duration manned flight. In the absence of a Mars mission goal, there is no agreed-upon need.

Viewed in another light, the space station could be adopted as the central theme of the next decade, and would serve all the purposes a manned planetary goal would serve, except the "spirit of adventure" theme. It would still amount to technological achievement for its own sake.

One other supporting argument for Space Station is that we think the USSR is developing a space station capability. However, evidence is slim and we know even less about the USSR reasons for such a development than we know about our own.

Recommendation: We recommend against endorsement of a space station now--at least until the orbital workshop is further along in development--perhaps until it has been flown.

Issue: Should development of a manned Space Transportation System be endorsed (as part of the "new capabilities" objective)?

Discussion: The draft report recommends Presidential endorsement of the development of new capabilities for operating in space, enphasizing commonability, reusability, and economy. Development of an integrated Space Transportation System is urged under this objective. The system consists of:

(1) A chemically fueled, earth-to-orbit fully reusable manned space shuttle;

(2) A chemically fueled orbit-to-orbit unmanned space tug;

(3) A nuclear stage for low earth-orbit to lunar-orbit, to geosynchronous orbit and to planetary trajectories.

In concept, the space tugs and the nuclear stages would be stored in orbit between missions, and refueled by the space shuttle when necessary. The space shuttle would be a manned system launched like a rocket and recovered by flying to airports. Its turn-around cost would approximate that of civil jet aircraft today. It would be about the size and weight of Saturn V and deliver up to 50,000 lbs to earth orbit each mission.

The principal rationale advanced for these three major new developments is that the cost of multiple revisit and resupply missions (to a space station or to the moon) would be too high without such systems.

Three basic presumptions underly this recommendation:

(1) The volume of traffic into space will increase markedly in future years. (This will materialize if the President endorses manned planetary exploration.)

(2) The integrated system will replace all existing launch vehicles between Scout class and Saturn 5. (NASA would want to keep Delta and probably Centaur in production.)

(3) The system is technically feasible.

There is general agreement in NASA, DOD and Staff Director's Committee that, for a high-density space program such a concept would be desirable. Differences of view occur as soon as discussion moves beyond this generality. The shuttle is the critical element.

- Mission Use:

  NASA would use it for space station supply, saying that is its only justification. DOD would use it to launch and retrieve unmanned satellites. Both agencies assume significant traffic increases over present rates.

- Economy - There is wide disagreement as to whether the shuttle's claimed economy could be achieved in a real system. Launch cost, refurbishment cost, maintenance and repair cost, operating life and loss rate are all subject to dispute.

- Technical feasibility - The system presents formidable technical challenges. Reentry heating, wing deployment, subsonic handling characteristics, engine performance, airframe configuration and total system configuration all present problems on which engineering views differ as to the time and cost required for workable solution. A more detailed set of comments on Space Shuttle prepared by NSPD and OPE are attached.

Additional advanced technical development and preliminary design would normally be undertaken before either NASA or DOD would commit such a system to development. Such work can be approved in the normal budget process.

Recommendation: We recommend against Presidential endorsement of the Space Transportation System at this time.

(See attachment for additional details.)

ATTACHMENT

8-22-69

SPACE TRANSPORTATION SYSTEM

The Space Transportation System is proposed as a single NASA/DOD man related booster for all payloads up to 50,000 pounds. A variety of booster and payload configurations including expendable, partially reusable and fully reusable are still under consideration. Development costs of $5-7 billion plus an initial hardware investment of $2-3 billion can be expected in achieving a booster and payload which can be recovered and reused on some 100 consecutive missions. Existing boosters which would be replaced by the STS would include Thor Delta, Atlas-Agena, Centaur, the Titan III family and Saturn IB. Adoption of the STS would provide the National Space Program with a stable of three boosters in the 1975-85 period:

Scout - for very small payloads up to 350 pounds

STS - for payloads up to 50,000 pounds on low earth orbit or 10,000 pounds in synchronous orbit

Saturn V - for large payloads up to 250,000 in low earth orbit

The financial development plan for a reusable STS system calls for an initial operating capability in 1977 and the following funding levels:

($ millions)

	1970	1971	1972	1973	1974	1975-77	Total
STS Development	$50	$230	$700	$900	$1040	$1820	$4750
STS Investment			20	40	90	1700	1850
Total	$50	$230	$720	$940	$1130	$3520	$6600

Arguments for and against the STS

Pro.

1. The STS, with its promise of cheaper means for delivering both manned and unmanned payloads into space, offers for the first time an

opportunity to initiate a truly national space effort, serving the needs of both NASA and DOD. The combined workloads of both agencies are required to support the initial investment in such a program. Neither DOD nor NASA, acting independently, could justify this program. Joint resource and configuration management would be required to successfully achieve an STS capable of meeting the unmanned and manned demands of both agencies.

2. Titan III which is the next most logical alternative to STS will have been in the inventory about 15 years by the late 1970's and will have reached its design capability limits. STS is a new class of vehicle based on technology of the 1970's and capable of further growth in the 1980's.

3. STS will have a favorable impact in the area of payload design for future space missions. The STS concept calls for the transportation of payloads within the vehicle itself, protected from the rigors of ascent through the earth's atmosphere which affect the size and characteristics of today's payloads. Designers of future mission payloads will not be constrained by launch survivability, but will have greater flexibility to optimize mission module for the operational environment in space.

4. STS offers the future potential of performing on a substitute basis selected missions in lieu of Saturn V with considerable cost reductions. In equivalent payload terms, 5 STS reusable missions costing a total of $15-25 million compares favorably with each Saturn V launch costing $250 million.

5. Initiation of a new space booster program provides an opportunity to take maximum advantage of prototype competition at the overall program and pacing component level in achieving more economic means of delivery

payloads into orbit. The expectation that STS is the ultimate replacement for a large existing stable of vehicles will spur a highly competitive contractor environment. The government can take full advantage of this situation by prescribing areas of contractor prototype competition in the program. Areas of high technological risk such as the propulsion system and a new thermal re-radiation system for the reusable booster are prime candidates for a design and prototype competition aimed at achieving highest technical performance at minimum cost.

6. STS offers the opportunity to recover and repair malfunctioning satellites and has a design capability to perform emergency space rescue missions.

7. At projected DOD and NASA activity levels, in the 1976-85 period, STS offers considerable economies in undiscounted gross outlays over alternative methods to place required payloads into low earth and synchronous orbit.

Con.

1. Space mission workloads much higher than current NASA and DOD levels will be required. A minimum of 25-30 STS flights per year or one every two weeks sustained over a ten year period is required to justify even the undiscounted STS development outlays. This firing rate would annually place into orbit two-three times the payloads currently being delivered.

2. The risks to successful attainment of the STS design specifications are substantial. Both dollar estimates and performance characteristics are highly susceptible to upward change. Incremental additions to the proven

Titan III (e.g. man rating) would hold a much lower risk level than are envisioned for STS. Particularly critical and vulnerable assumptions include overall development costs, and specific performance characteristics of reusable vehicles such as refurbishment cycle time and costs.

3. Upon the application of discounting factors, the STS loses much of its economic replacement attractiveness when compared with the uprated Titan III. The following table compares the STS and uprated Titan III at several activity levels in terms of gross outlays, present value (1970) dollars, and expected investment rates of return (STS over Titan III):

STS vs. TITAN III
Outlays 1970-1985 ($ billions)

Requirements[1/]		Gross Outlays	Cash Outlays Discounted to 1970 Present Value (5% rate)	Cash Outlays Discounted to 1970 Present Value (10% rate)	STS Investment Rate of Return*
1. NASA High, DOD High (Average 55 flights per year)	STS	$ 9.0	$6.8	$5.2	9%
	Titan III	15.0	8.0	5.0	
	Benefits	6.0	1.2	-.2	
2. NASA 'High", DOD 'Medium' (Average 45 flights per year)	STS	7.9	5.9	4.5	8%
	Titan III	13.0	7.1	4.1	
	Benefits	5.0	1.2	-.4	
3. NASA 'Medium', DOD 'Medium' (Average 40 flights per year)	STS	8.6	6.5	5.1	5%
	Titan III	10.6	6.5	4.2	
	Benefits	2.0	0	-.9	
4. NASA 'Medium', DOD 'Low' (Average 36 flights per year)	STS	8.0	6.1	4.8	4%
	Titan III	9.5	5.8	3.7	
	Benefits	1.5	-.3	-1.1	
5. NASA 'Low', DOD 'Low' (Average 28 flights per year)	STS	7.2	5.6	4.4	1.5%
	Titan III	7.7	4.8	3.1	
	Benefits	.5	-.8	-1.3	

1/ Optional DOD/NASA STS Flight Mission Levels in the:

DOD High - 30 STS flights per year - Double current mission level.
DOD Medium - 20 STS flights per year.
DOD Low - 15 STS flights per year - Approximates current level.

NASA High - 25 STS flights per year - Includes 20 manned flights.
NASA Medium - 20 STS flights per year - Includes 15 manned flights.
NASA Low - 15 STS flights per year - Includes 10 manned flights. (could be lower)

* Correcting the timing of Titan III R+D would further reduce rate of return ½% to 1%. These figures are based on NASA's optimistic estimates of STS R+D costs and technical characteristics; more realistic numbers would mean a yet lower rate of return.

The table clearly demonstrates that, while gross undiscounted outlays show large potential savings for STS over the Titan III, the application of discount factors clearly narrows the dollar gap between the two alternatives. This is caused primarily by the fact that anticipated STS savings do not occur until the later years of the program, and result in heavily discounted dollars in present value terms. When a 5% return on investment is demanded (reflecting the interest cost of borrowed funds) an annual rate of 40 STS flights per year is required to break even with Titan III. If a higher 10% return on investment is demanded to reflect both interest costs and the inherent risks in the overall program then over 60 STS flights per year are required to justify the STS development.

4. The existence of strong vested interests and established working relationships in the existing boosters and facilities , raises the question of the ability to replace Titan III, Agena, Centaur, etc., with a single STS system for NASA and DOD use.

G. Alternative Presidential Posture on Space

The draft report of the STG Staff Director's Committee outlines a specific set of goals and objectives for Presidential endorsement, and identifies budget options which affect the rate of accomplishment. All the identified goals and objectives assume a Presidential posture favoring rapid development of new manned space flight systems.

The combination of Defense and domestic program commitments with concomitant budget demands for the next 2 to 4 years may make such a space posture untenable. In this circumstance, the President may wish to consider a posture that is more conservative on the manned space flight side, and consistent with annual NASA budgets of $2.5 B to $3.8 B in future years. The section below describes such a posture. Various budgetary implications of such a posture are set forth in Tab H.

Conservative Space Posture

The conservative space program of the next decade would be based on the following guidelines:

(1) We will explore the solar system and beyond using unmanned and remotely controlled spacecraft which alone have the ability to reach the farthest bodies in the solar system in the decade of the seventies.

(2) We will apply our space technology to the direct benefit of mankind.

(3) We will operate space systems as necessary to enhance our national security.

(4) We will seek every opportunity to encourage international cooperation and participation in space programs.

COST-SHARING?

(5) We will pursue a carefully paced manned space program aimed at:

a. Learning as much as we can with our current generation of manned space flight equipment, the Saturn V Apollo system and the Orbiting Workshop;

b. Reducing to a minimum the annual cost of operating with this equipment; and

c. During the next two to five years, concentrate on studies and advanced technical development for the purposes of:

(1) Defining the contributions that manned spacecraft flight can make to our society;

(2) Defining the manned space flight missions that can best makes those contributions;

(3) Defining the next generation of space flight systems, focusing on minimum operating cost through such concepts as:

- Reusability
- Commonality
- Flexibility
- Minimum ground support requirements

(4) Reducing to the minimum the technical risks and the cost of developing the new systems. OBTAINING AT LEAST 10% RATE OF RETURN ON

Such a posture could:

(1) Provide for a more aggressive unmanned flight program than current programs include;

(2) Provide for at least one manned flight each year through 1976;

(3) Provide leverage needed to reduce the capability base more in line with moderate flight activity plans for the future;

(4) Be undertaken at or below current funding levels (BA and B.O of $2.5 B to $3.8 B/yr.

H. Alternative Lower Budget Options

Attached are some alternative lower budget options for the decade of the 70's, developed by ESTP staff. They include NASA programs only on the assumption that Defense space program levels will continue to be dominated by national security considerations rather than space program considerations.

Four options are presented, one at $1.5 B per year, two at $2.5 B per year and one at $3.5 B per year. The $2.5 B programs and the $3.5 B program are consistent with the alternative space posture outlined in Tab G.

In using these identified programs, the following points should be kept in mind.

1. They are illustrative only and do not constitute Division recommendations.

2. They have not been reviewed by NASA.

3. The funding effects of the facility closures and other severe management actions are very loosely estimated.

4. The effects on NASA morale of several of the management actions required would be severe.

5. No evaluation has been made of the political effects or the local economic dislocations caused by contract and facility close-outs. (For example, the political impact of putting the Von Braun organization out of business and the effect of such a move on the economy of Huntsville, Alabama).

6. The programs do illustrate the actions that must be taken to reduce the capability base consistent with a low-activity space program.

Conversely they point out that a decision to reduce the budget without a companion decision to reduce the Government-industry-laboratory base will simply eliminate the flight program.

SPACE TASK GROUP

Illustrative NASA Program/Budget Options under $4.0 B per year

Major Assumptions and Ground Rules

1. NASA estimates from STG submissions, PSG exercises and current special analytical studies were used to estimate the cost of all major programs and projects. Therefore, if the NASA estimates are understated, these estimates are equivalently understated and vice versa.

2. All management actions assumed had to be feasible in the time allowed. Decision date for initiation of these actions was assumed to be January 1, 1970. Funding shown by year is phased to reflect the likely impact of these management actions.

3. In cases where NASA R&D funding curves have been stretched out, an equivalent delay in launch data is assumed. Date of launch under the revised funding curve is set by assuming that an equivalent amount of R&D dollars will buy the same product regardless of the time phasing of the obligations. For example, NASA assumes a space station module with conventional logistics system could be launched in the fifth year after the project is approved. At this point, $3,622 million would have to obligated. In alternative I of this exercise, the space module with conventional logistics system is included. Initial funding is not available until 1973. Launch is programmed in 1980 after $3,740 million has been spent.

The funding curves for unmanned science applications projects were also smoothed. The same total dollars are provided for the projects included. Each individual project was not analyzed to determine the slippage. Therefore, the launch schedules for these programs indicate the density and not the exact launch date of each flight project. Because of the tight launch windows in planetary flight projects, these curves were not smoothed. The level of support is held constant and not varied with program change.

4. All of the estimates in these alternative programs are in terms of Budget Authority. Gross outlay projections have been made for these alternatives. On the basis of the gross estimates, the following projections are realistic:

a. Outlays will exceed Budget Authority by 300-500 M during the initial periods of decline.

b. Outlays tend to approach the level of Budget Authority in the later years of the decade.

Alternative:

I. $2.5 B per year	70	71	72	73	74	75	76
Manned Space Flight:	Apollo 11-13	Apollo 14	Apollo 15	Apollo 16	AAP	Apollo 17	Apollo 18
Planetary:		Mars Orbiter (2)	Pioneer F	Pioneer G Venus-Mercury Flyby	Jupiter	Viking (2)	Venus Explr. (2)

Space Science:

Astronomy							
OAO	B		C		D		E
IR Airplane	X----------						
RAE	B			C			
Cooperatives					A	B	
Sounding Rockets	----------						
Physics							
ISIS	B				C		
AE			C				D
SSS	A		B		C		D
IMP	I			H			J
Helios					A		
Small Interplanetary			A	B	C	D	E
Gyroscope Precession						X	
Space Weather Probe							E
Relativity Redshift					X		
Cooperatives				O			
Biology							
Biopioneer			2	2	2	2	1
Bioexplorer				1	1	1	1

LAUNCH SCHEDULE

74	75	76	77	78	79	80	81	82	83	84	85
AP	Apollo 17	Apollo 18	Apollo 19	--	--	SSM 2 Titan-3 Gemini Visit	4T-3G Visits	---------->			
upi-ter	Viking (2)	Venus Explr. (2)	Viking (2) Grand Tour JSP	Venus Explor Mars Explor	Grand Tour J-U-N	Solar Escape Mars Explor	Venus Explor Mars Orbiter Venus Probe		Venus Explor	Mars Explor Mars Rover	

D		E		F		G					
		---------->									
			D								
A	B										
	---------->										
C											
		D									
C		D		E		F					
		J		KK'		LL'					
A				B							
C	D	E									
	X										
		E									
X											
			O								
2	2	1	1	1	1	1					
1	1	1									

Applications:

Earth Surveys						
TIROS				N		
SMS		A	B			
Nimbus	D		E	F	G	H
ERTS			A	B	C	D
GEOS			C			
Drag-Free			A			B
Sats			A	BC	D	
Film Recovery			A	B		
Sea Sat				A		B
Met ATS					A	B
GARP						
Sat to Sat tracking					A	
Communications and Navigation						
ATS			X		X	X
Cooperative Apl Sat	X					
Data Relay					XX	
Nav & Traffic Cont					XXX	
Data Collection					X	
Broadcasting						X
Near Earth Data Relay						

II. Gradual Reduction to $2.5 B

Changes from Alternative I:
MSF — AAP, Apollo 16

Planetary — Viking (2)

III. $3.5 B per year

Changes from Alternative I:
MSF — AAP, Apollo 16

Planetary — Viking (2)

IV. Gradual reduction to $1.5 B

Changes from Alternative I:
MSF — NONE AFTER Apollo 14

Planetary — Viking (2)

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X

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llo 16

28° SSM ----------
STS (at least 4 flights a year) ------

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Alternative I—$2.5 B per year NASA program

A. Program Description

1. Manned Flight for the decade includes:

   a. Apollo lunar missions 14 thru 19 at the rate of one per year continuing from 1971 to 1977. No Apollo mission is programmed in 1974 during the AAP activity.

   b. The Apollo Applications Dry Workshop in 1974 with 3 visits.

   c. A space station module in 28° orbit launched in 1980 with 2 Titan III--Gemini visits. Visits continuing at the rate of four per year.

2. Planetary Exploration program includes:

   a. Mars landers (4) high data rate orbiters (2) and the start of a roving lander which would be launched in the next decade.

   b. Two three-planet Grand Tour missions.

   c. Planetary Explorers, Venus Mercury and Jupiter Flyby missions and a solar escape mission.

   d. At least one planetary launch each year in the decade.

3. A relatively ambitious and evolving science and applications program with 95 launches in the decade.

4. Continued space technology and aeronautics technology programs at reduced levels.

5. No nuclear rocket development.

B. Major management actions required in 1971:

1. Stop follow-on production of Saturn V and Apollo spacecraft.

2. Reduce Apollo-Saturn in-plant sustaining capability and launch crews substantially down to a level needed to support one launch per year thru vehicle # 515.

3. Slow down procurement of lunar mission payloads.

4. Reduce AAP by $23 M in 1971 and $48 M in 1972--delays launch one year.

5. Close Marshall Space Flight Center, Electronics Research Center, Space Nuclear Propulsion Office and reduce activity at the Manned Spacecraft Center and Headquarters.

6. Postpone first Viking launch until 1975.

7. Cancel NERVA.

8. Cancel the Orbiting Solar Observatory project.

9. Reduce supporting and/or advanced space and aircraft technology programs.

10. Eliminate sustaining university program and technology utilization program.

11. Reduce level of activity on improvements of launch vehicles.

Alternative I-$2.5B per year NAS

	1971 Runout	1971	1972	1973	1974
Manned Space Flight	1961	866	750	750	750
Lunar (Apollo)	1487	415	415	415	415
Apollo Applications	474	451	335	130	55
Space Station				205	280
Planetary	346	133	238	300	310
Viking '73	213				
Runout SRT & Planetary Astronomy	133	133	83	49	34
New Starts:		(Jupiter-74)--85		(Viking-77)--22	
		(Viking-75)--70		(Grand Tour---10 JSP-77)	
				(Explorers)-4	
Ongoing (Post-71 New Starts)				251	240
Space Science	146	132	200	200	200
SRT	31	31	65	65	65
Astronomy	73	59	65	65	65
Physics	42	42	55	55	55
Bioscience	0	0	15	15	15
Applications	205	205	230	230	230
SRT	22	22	22	22	22
Earth Surveys	107	107	102	102	102
Communications and Navigation	76	76	96	96	96
Space Technology	205	94	100	100	100
Aircraft Technology	123	104	100	100	100
Support	1105	916	834	820	800
Technology Utilization	5				
University Affiars	30				
Launch Vehicle--Improvements	97	70	30	30	30
OTDA	319	319	304	290	270
R&PM	(654)	(527)	(500)	(500)	(500)
MSF Centers	300	195	175	175	175
Other Centers	354	332	325	325	325
C of F		50	50	50	50
Total NASA	4091	2500	2502	2550	2540

ve I-$2.5B per year NASA Program

72	1973	1974	1975	1976	1977	1978	1979	1980
50	750	750	750	750	750	750	750	750
15	415	415	415	415	415			
35	130	55						
	205	280	335	335	335	750	750	750
38	300	310	273	287	215	243	282	260
83	49	34	28	28	28	28	28	28
85	(Viking-77)--22		(Grand 6 Tour--JUN-79)	(Solar Escape)-18		10 (Mars Orbiter '81)		45 (Mars Rover-84)
70	(Grand Tour---10 JSP-77)			(Venus Probe)-3				
	(Explorers)-4							
	251	240	239	259	166	205	254	187
00	200	200	200	200	200	200	200	200
65	65	65	65	65	65	65	65	65
65	65	65	65	65	65	65	65	65
55	55	55	55	55	55	55	55	55
15	15	15	15	15	15	15	15	15
30	230	230	230	230	230	230	230	230
22	22	22	22	22	22	22	22	22
02	102	102	102	102	102	102	102	102
96	96	96	96	96	96	96	96	96
00	100	100	100	100	100	100	100	100
00	100	100	100	100	100	100	100	100
34	820	800	800	800	800	800	800	800
30	30	30	30	30	30	30	30	30
04	290	270	270	270	270	270	270	270
00)	(500)	(500)	(500)	(500)	(500)	(500)	(500)	(500)
75	175	175	175	175	175	175	175	175
25	325	325	325	325	325	325	325	325
50	50	50	50	50	50	50	50	50
02	2550	2540	2503	2517	2445	2473	2512	2490

LAUNCH SCHEDULE

Alternative:

I. $2.5 B per year

	70	71	72	73	74	75	76	77
Manned Space Flight:	Apollo 11-13	Apollo 14	Apollo 15	Apollo 16	AAP	Apollo 17	Apollo 18	Apoll 19
Planetary:		Mars Orbiter (2)	Pioneer F	Pioneer G Venus-Mercury Flyby	Jupi- ter	Viking (2)	Venus Explr. (2)	Viki (2) Gran Tou JSP

Space Science:

Astronomy								
OAO	B	C		D			E	
IR Airplane	X----------							D
RAE	B			C				
Cooperatives					A	B		
Sounding Rockets	----------							
Physics								
ISIS	B				C		D	
AE		C					D	
SSS	A	B			C		J	
IMP	I			H				
Helios		A		B	A C	D	E	
Small Interplanetary Gyroscope Precession						X		
Space Weather Probe							E	
Relativity Redshift					X			
Cooperatives				O				O
Biology			2	2	2	2	1	1
Biopioneer				1	1	1	1	
Bioexplorer								

LAUNCH SCHEDULE

75	76	77	78	79	80	81	82	83	84	85
Apollo 17	Apollo 18	Apollo 19	--	--	SSM 2 Titan-3 Gemini Visit	4T-3G Visits	---------->			
- Viking (2)	Venus Explr. (2)	Viking (2) Grand Tour JSP	Venus Explor Mars Explor	Grand Tour J-U-N	Solar Escape Mars Explor	Venus Explor Mars Orbiter Venus Probe		Venus Explor	Mars Explor Mars Rover	

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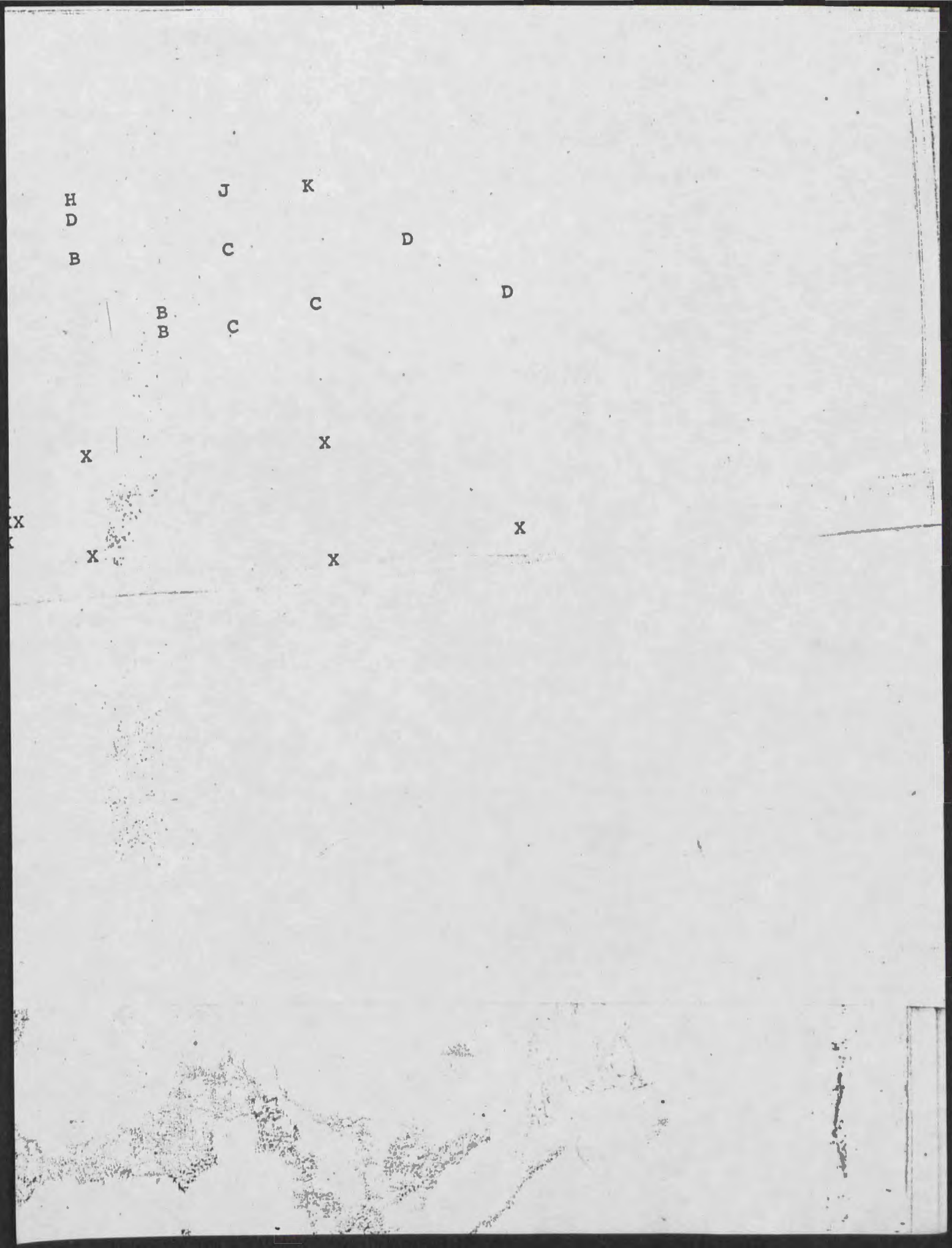
Applications:

Earth Surveys					N					
TIROS		A	B		G	H				J
SMS	D		E	F	C	D				
Nimbus			A	B						
ERTS			C			B				C
GEOS			A		D					
Drag-Free			A	BC						
Sats			A	B				B		
Film Recovery				A				B		C
Sea Sat					A					
Met ATS					A					
GARP										
Sat to Sat tracking										
Communications and Navigation					X	X				
ATS			X							
Cooperative Apl Sat	X				XX					
Data Relay					XXX					
Nav & Traffic Cont					X					
Data Collection						X				
Broadcasting										
Near Earth Data Relay										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Alternative II--Gradual Reduction of NASA Program to $2.5 B per year

A. Program Description:

1. Manned Flight for the decade includes:

   a. Apollo lunar missions 14 thru 19 at the rate of one per year continuing from 1971 to 1977. No Apollo mission is programmed in 1973 during the AAP activity.

   b. The Apollo Applications Dry Workshop in 1973 with 3 visits.

   c. A Space Station module in 28° orbit launched in 1980 with two Titan III--Gemini visits. Visits continuing at the rate of four per year.

2. Planetary Exploration program includes:

   a. Mars landers (6), high data rate orbiters (2) and the start of roving lander which would be launched in the next decade.

   b. Two three-planet Grand Tour missions.

   c. Planetary Explorers, Venus Mercury and Jupiter Flyby missions and a solar escape mission.

   d. At least one planetary launch each year in the decade.

3. A relatively ambitious and evolving science and applications program with 95 launches in the decade.

4. Continued space technology and aeronautics technology programs at reduced levels.

5. No nuclear rocket development.

B. Major management actions required in 1971:

1. Stop follow-on production of Saturn V and Apollo spacecraft.

2. Reduce Apollo-Saturn in-plant sustaining capability and launch crews substantially down to a level needed to support one launch per year thru vehicle # 515.

3. Slow down procurement of lunar mission payloads.

4. Continue AAP at programmed level--launch in 1973.

5. Close following NASA centers:

   a. Electronics Research Center

   b. Space Nuclear Propulsion Office

6. Reduce activity at the Manned Spacecraft Center, Marshall Space Flight Center, and Headquarters. Marshall Space Flight Center closed by 1972.

7. Cancel NERVA.

8. Cancel the Orbiting Solar Observatory project.

9. Phase reduction in supporting and/or advanced space and aircraft technology programs over two years.

10. Eliminate sustaining university program and technology utilization program.

11. Reduce level of activity on improvements of launch vehicles.

Alternative II--Gradual Reduction of NASA Progra

	1971 Runout	1971	1972	1973	1974
Manned Space Flight	1961	1054	990	887	750
Lunar (Apollo)	1487	505	415	415	415
Apollo Applications	474	474	360	137	
Space Station		75	215	335	335
Planetary	346	394	390	435	352
Viking '73	213	213	200	135	42
Runout SRT & Planetary Astronomy	133	133	83	49	34
New Starts:	(Jupiter-74)--18			(Viking-77)--22	
	(Viking-75)--30				
				(Grand Tour---10 JSP-77)	
				(Explorers)-4	
Ongoing (Post-71 New Starts)			107	251	240
Space Science	146	132	200	200	200
SRT	31	31	65	65	65
Astronomy	73	59	65	65	65
Physics	42	42	55	55	55
Bioscience	0	0	15	15	15
Applications	205	205	230	230	230
SRT	22	22	22	22	22
Earth Surveys	107	107	102	102	102
Communications and Navigation	76	76	96	96	96
Space Technology	205	124	100	100	100
Aircraft Technology	123	104	100	100	100
Support	1105	946	834	820	800
Technology Utilization	5				
University Affiars	30				
Launch Vehicle--Improvements	97	70	30	30	30
OTDA	319	319	304	290	270
R&PM	(654)	(557)	(500)	(500)	(500
NSF Centers	300	225	175	175	175
Other Centers	354	332	325	325	325
C of F		50	50	50	50
Total NASA	4091	3009	2894	2822	2582

Reduction of NASA Program to $2.5 B per year

1972	1973	1974	1975	1976	1977	1978	1979	1980
990	887	750	750	750	750	750	750	750
415	415	415	415	415	415			
360	137							
215	335	335	335	335	335	750	750	750
390	435	352	273	287	215	243	282	260
200	135	42						
83	49	34	28	28	28	28	28	28
	(Viking-77)--22		(Grand 6 Tour--JUN-79)	(Solar Escape)-18		10(Mars Orbiter '81)		45(Mars Rover-84)
	(Grand Tour---10 JSP-77)			(Venus Probe)-3				
	(Explorers)-4							
107	251	240	239	259	166	205	254	187
200	200	200	200	200	200	200	200	200
65	65	65	65	65	65	65	65	65
65	65	65	65	65	65	65	65	65
55	55	55	55	55	55	55	55	55
15	15	15	15	15	15	15	15	15
230	230	230	230	230	230	230	230	230
22	22	22	22	22	22	22	22	22
102	102	102	102	102	102	102	102	102
96	96	96	96	96	96	96	96	96
100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100
834	820	800	800	800	800	800	800	800
30	30	30	30	30	30	30	30	30
304	290	270	270	270	270	270	270	270
500)	(500)	(500)	(500)	(500)	(500)	(500)	(500)	(500)
175	175	175	175	175	175	175	175	175
325	325	325	325	325	325	325	325	325
50	50	50	50	50	50	50	50	50
394	2822	2582	2503	2517	2445	2473	2512	2400

LAUNCH SCHEDULE
(Alternative II - Gradual Reduction

	70	71	72	73	74	75	76	77
Manned Space Flight:	Apollo 11-13	Apollo 14	Apollo 15	AAP	Apollo 16	Apollo 17	Apollo 18	Apol 19
Planetary:		Mars Orbiter (2)	Pioneer F	Viking (2)	Jupi- ter	Viking (2)	Venus Explr. (2)	Viki (2 Gran Tou JSP
Space Science:								
Astronomy								
OAO	B	C			D		E	
IR Airplane	X----------							
RAE	B			C				D
Cooperatives					A	B		
Sounding Rockets	----------							
Physics								
ISIS	B				C			
AE		C					D	
SSS	A	B			C		D	
IMP	I			H			J	
Helios					A			
Small Interplanetary		A		B	C	D	E	
Gyroscope Precession						X		
Space Weather Probe							E	
Relativity Redshift					X			
Cooperatives				O				O
Biology			2	2	2	2	1	1
Biopioneer				1	1	1	1	
Bioexplorer								

LAUNCH SCHEDULE
I - Gradual Reduction to $2.5 B)

	75	76	77	78	79	80	81	82	83	84	85
o	Apollo 17	Apollo 18	Apollo 19	--	--	SSM 2 Titan-3 Gemini Visit	4T-3G Visits	---------->			
i-r	Viking (2)	Venus Explr. (2)	Viking (2) Grand Tour JSP	Venus Explor Mars Explor	Grand Tour J-U-N	Solar Escape Mars Explor	Venus Explor Mars Orbiter Venus Probe		Venus Explor	Mars Explor Mars Rover	

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Applications:

Earth Surveys							
TIROS					N		
SMS		A	B				
Nimbus	D		E	F	G	H	
ERTS			A	B	C	D	
GEOS			C				
Drag-Free			A			B	
Sats			A	BC	D		
Film Recovery			A	B			
Sea Sat				A			B
Met ATS					A		B
GARP							
Sat to Sat tracking					A		
Communications and Navigation							
ATS			X		X	X	
Cooperative Apl Sat	X						
Data Relay					XX		
Nav & Traffic Cont					XXX		
Data Collection					X		
Broadcasting						X	
Near Earth Data Relay							

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A

A

X X X

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XXX
X

X X

X

Alternative III--$3.5 B per year NASA program

A. Program Description

1. Manned Flight for the decade includes:

   a. Apollo lunar missions 14 thru 19 at the rate of one per year continuing from 1971 to 1977. No Apollo mission is programmed in 1973 during the AAP activity.

   b. The Apollo Applications Dry Workshop in 1973 with 3 visits.

   c. Space Transportation System and Space Station module development with launch of both in 1979.

2. Planetary Exploration program includes:

   a. Mars landers (6), high data rate orbiters (2) and the start of roving lander which would be launched in the next decade.

   b. Two three-planet Grand Tour missions.

   c. Planetary Explorers, Venus Mercury and Jupiter Flyby missions and a solar escape mission.

   d. At least one planetary launch each year in the decade.

3. A relatively ambitious and evolving science and applications program with 95 launches in the decade.

4. Continued space technology and aeronautics technology programs at reduced levels.

5. No nuclear rocket development.

B. Major management action required in 1971:

1. Stop follow-on production of Saturn V and Apollo spacecraft.

2. Reduce Apollo-Saturn in-plant sustaining capability and launch crews substantially down to a level needed to support one launch per year thru vehcile # 515.

3. Slow down procurement of launch mission payloads.

4. Continue AAP at programmed level--launch in 1973.

5. No NASA centers closed.

6. Supporting R&D activity reduced at the Manned Spacecraft Center and Headquarters.

7. Cancel NERVA.

8. Cancel the Orbiting Solar Observatory project.

9. Phase reduction in supporting and/or advanced space and aircraft technology programs over two years.

10. Eliminate sustaining university program and technology utilization program.

11. Reduce level of activity on improvements of launch vehicles.

	1971 Runout	Alternative III. $3.5 B per year 1971	1972	1973	197
Manned Space Flight	1961	1402	1446	1415	151
Lunar (Apollo)	1487	550	550	550	55
Apollo Applications	474	474	360	137	
Space Station & Space Shuttle		378	536	728	96
Planetary	346	394	390	435	35
Viking '73	213	213	200	135	42
Runout SRT & Planetary Astronomy	133	133	83	49	34
New Starts:	(Jupiter-74)--18			(Viking-77)--22	
	(Viking-75)--30				
				(Grand Tour---10	
				JSP-77)	
				(Explorers)-4	
Ongoing (Post-71 New Starts)			107	251	240
Space Science	146	132	200	200	200
SRT	31	31	65	65	65
Astronomy	73	59	65	65	65
Physics	42	42	55	55	55
Bioscience	0	0	15	15	15
Applications	205	205	230	230	230
SRT	22	22	22	22	22
Earth Surveys	107	107	102	102	102
Communications and Navigation	76	76	96	96	96
Space Technology	205	124	100	100	100
Aircraft Technology	123	104	100	100	100
Support	1105	1089	984	970	950
Technology Utilization	5				
University Affiars	30				
Launch Vehicle--Improvements	97	70	30	30	30
CTDA	319	319	304	290	270
R&PM	(654)	(650)	(650)	(650)	(65
NSF Centers	300	300	300	300	30
Other Centers	354	350	350	350	35
C of F		50	50	50	5
Total NASA	4091	3500	3500	3500	350

e III. $3.5 B per year NASA Program

1972	1973	1974	1975	1976	1977	1978	1979	1980
1446	1415	1514	1600	1600	1600	1600	1600	1600
550	550	550	550	550	550			
360	137							
536	728	964	1050	1050	1050	1600	1600	1600
390	435	352	273	287	215	243	282	260
200	135	42						
83	49	34	28	28	28	28	28	28
	(Viking-77)--22		(Grand 6 Tour--JUN-79)	(Solar Escape)-18		10(Mars Orbiter '81)		45(Mars Rover-84)
	(Grand Tour---10 JSP-77)			(Venus Probe)-3				
	(Explorers)-4							
107	251	240	239	259	166	205	254	187
200	200	200	200	200	200	200	200	200
65	65	65	65	65	65	65	65	65
65	65	65	65	65	65	65	65	65
55	55	55	55	55	55	55	55	55
15	15	15	15	15	15	15	15	15
230	230	230	230	230	230	230	230	230
22	22	22	22	22	22	22	22	22
102	102	102	102	102	102	102	102	102
96	96	96	96	96	96	96	96	96
100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100
984	970	950	950	950	950	950	950	950
30	30	30	30	30	30	30	30	30
304	290	270	270	270	270	270	270	270
(650)	(650)	(650)	(650)	(650)	(650)	(650)	(650)	(650)
300	300	300	300	300	300	300	300	300
350	350	350	350	350	350	350	350	350
50	50	50	50	50	50	50	50	50
3500	3500	3500	3503	3517	3445	3473	3512	3490

LAUNCH SCHEDULE
(Alternative III - $3.5 B p

	70	71	72	73	74	75	76	7
Manned Space Flight:	Apollo 11-13	Apollo 14	Apollo 15	AAP	Apollo 16	Apollo 17	Apollo 18	Apo 1
Planetary:		Mars Orbiter (2)	Pioneer F	Viking (2)	Jupi- ter	Viking (2)	Venus Explr. (2)	Vik (Gra To JS
Space Science:								
Astronomy								
OAO	B		C		D		E	
IR Airplane	X----------							
RAE	B			C				D
Cooperatives					A	B		
Sounding Rockets	----------							
Physics								
ISIS	B				C			
AE			C				D	
SSS	A		B		C		D	
IMP	I			H			J	
Helios					A			
Small Interplanetary			A	B	C	D	E	
Gyroscope Precession						X		
Space Weather Probe							E	
Relativity Redshift					X			
Cooperatives				O				C
Biology								
Biopioneer			2	2	2	2	1	1
Bioexplorer				1	1	1	1	

LAUNCH SCHEDULE
ative III - $3.5 B per year)

75	76	77	78	79	80	81	82	83	84	85
lo Apollo 17	Apollo 18	Apollo 19	--	28	SSM STS	(at least 4 flights a year) ---				
oi- Viking er (2)	Venus Explr. (2)	Viking (2) Grand Tour JSP	Venus Explor Mars Explor	Grand Tour J-U-N	Solar Escape Mars Explor	Venus Explor Mars Orbiter Venus Probe		Venus Explor	Mars Explor	Mars Rover

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Applications:

Earth Surveys						
TIROS				N		
SMS		A	B			
Nimbus	D		E	F	G	H
ERTS			A	B	C	D
GEOS			C			
Drag-Free			A			B
Sats			A	BC	D	
Film Recovery			A	B		
Sea Sat				A		B
Met ATS					A	B
GARP						
Sat to Sat tracking					A	
Communications and Navigation						
ATS			X		X	X
Cooperative Apl Sat	X					
Data Relay					XX	
Nav & Traffic Cont					XXX	
Data Collection					X	
Broadcasting						X
Near Earth Data Relay						

N

G H J K
C D

B C D
D

B C D
A B C

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X

X X

X

Alternative IV. Gradual Reduction of NASA Program to $1.5 B per year - probably need to decide on Oct 1

A. Program Description:

1. All manned space flight ceases with Apollo 14 in July 1970.

2. Planetary Exploration program includes:

   a. Mars landers (6), high data rate orbiters (2) and the start of roving lander which would be launched in the next decade.

   b. Two three-planet Grand Tour missions.

   c. Planetary Explorers, Venus Mercury and Jupiter Flyby missions and a solar escape mission.

   d. At least one planetary launch each year in the decade.

3. A relatively ambitious and evolving science and applications program with 95 launches in the decade.

4. Continued space technology and aeronautics technology programs at reduced levels.

5. No nuclear rocket development.

B. Major management actions needed in 1971:

1. Close down all manned space flight contractors, Marshall Space Flight Center, the Manned Spacecraft Center, manned flight launch support at Cape Kennedy and the manned space flight tracking network.

2. Cancel NERVA.

3. Cancel the Orbiting Solar Observatory project.

4. Phase reduction in supporting and/or advanced space and aircraft technology programs over two years.

5. Eliminate sustaining university program and technology utilization program.

6. Reduce level of activity on improvements of launch vehicles.

Alternative IV—Gradual Reduction of NASA Progr

	1971 Runout	1971	1972	1973	197
Manned Space Flight	1961	555			
Lunar (Apollo)	1487	415			
Apollo Applications	474	140			
Planetary	346	394	390	435	352
Viking '73	213	213	200	135	42
Runout SRT & Planetary Astronomy	133	133	83	49	3
New Starts:	(Jupiter-74)--18			(Viking-77)--22	
	(Viking-75)--30				
				(Grand Tour---10	
				JSP-77)	
				(Explorers)-4	
Ongoing (Post-71 New Starts)			107	251	240
Space Science	146	132	200	200	200
SRT	31	31	65	65	65
Astronomy	73	59	65	65	65
Physics	42	42	55	55	55
Bioscience	0	0	15	15	15
Applications	205	205	230	230	230
SRT	22	22	22	22	22
Earth Surveys	107	107	102	102	102
Communications and Navigation	76	76	96	96	96
Space Technology	205	124	100	100	100
Aircraft Technology	123	104	100	100	100
Support	1105	767	617	604	590
Technology Utilization	5				
University Affiars	30				
Launch Vehicle--Improvements	97	70	30	30	30
OTDA	319	195	187	174	16
R&PM	(654)	502	400	400	40
NSF Centers	300	130	50	50	5
Other Centers	354	372	350	350	35
C of F		50	50	50	5
Total NASA	4091	2281	1637	1719	162

Reduction of NASA Program to $1.5 B per year

1972	1973	1974	1975	1976	1977	1978	1979	1980
390	435	352	273	287	215	243	282	260
200	135	42						
83	49	34	28	28	28	28	28	28
	(Viking-77)--22		(Grand 6 Tour--JUN-79)	(Solar Escape)-18		10(Mars Orbiter '81)		45(Mars Rover-84)
	(Grand Tour---10 JSP-77)			(Venus Probe)-3				
	(Explorers)-4							
107	251	240	239	259	166	205	254	187
200	200	200	200	200	200	200	200	200
65	65	65	65	65	65	65	65	65
65	65	65	65	65	65	65	65	65
55	55	55	55	55	55	55	55	55
15	15	15	15	15	15	15	15	15
230	230	230	230	230	230	230	230	230
22	22	22	22	22	22	22	22	22
102	102	102	102	102	102	102	102	102
96	96	96	96	96	96	96	96	96
100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100
517	604	590	590	590	590	590	590	590
30	30	30	30	30	30	30	30	30
187	174	160	160	160	160	160	160	160
400	400	400	400	400	400	400	400	400
50	50	50	50	50	50	50	50	50
350	350	350	350	350	350	350	350	350
50	50	50	50	50	50	50	50	50
1637	1719	1622	1543	1557	1487	1513	1552	1530

LAUNCH SCHEDULE
(Alternative IV - Gradual reducti

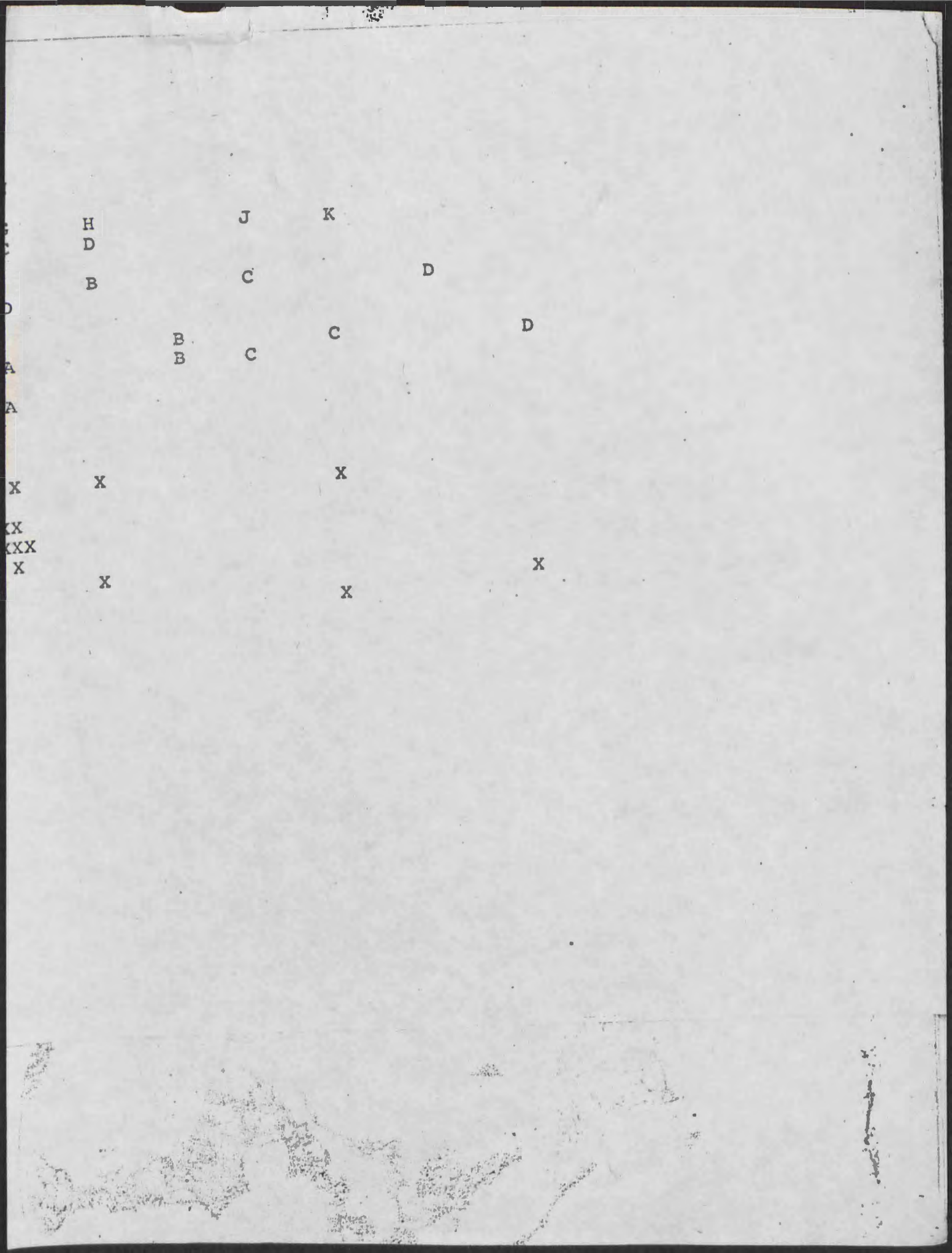
	70	71	72	73	74	75	76	
Manned Space Flight:	Apollo 11-13	Apollo 14	NONE After Apollo 14					
Planetary:		Mars Orbiter (2)	Pioneer F	Viking (2)	Jupi- ter	Viking (2)	Venus Explr. (2)	Vi Gr T J
Space Science:								
Astronomy								
OAO	B		C		D		E	
IR Airplane	X----------							
RAE	B			C				
Cooperatives					A	B		
Sounding Rockets	----------							
Physics								
ISIS	B				C			
AE			C				D	
SSS	A		B		C		D	
IMP	I			H			J	
Helios					A			
Small Interplanetary			A	B	C	D	E	
Gyroscope Precession						X		
Space Weather Probe							E	
Relativity Redshift					X			
Cooperatives				O				
Biology								
Biopioneer			2	2	2	2	1	
Bioexplorer				1	1	1	1	

LAUNCH SCHEDULE
IV - Gradual reduction to $1.5 B)

4	75	76	77	78	79	80	81	82	83	84	85
o 14											
upi- ter	Viking (2)	Venus Explr. (2)	Viking (2) Grand Tour JSP	Explor Mars Explor	Grand Tour J-U-N	Solar Escape Mars Explor	Venus Explor Mars Orbiter Venus Probe		Venus Explor	Mars Explor Mars Rover	
D		E		F			G				
A	B		D								
C		D									
C		D		E			F				
		J		KK'			LL'				
A				B							
C	D	E									
	X										
		E									
X											
			O								
2	2	1	1	1	1	1					
1	1	1									

Applications:

Earth Surveys						
. TIROS				N		
SMS		A	B			
Nimbus	D		E	F	G	H
ERTS			A	B	C	D
GEOS			C			
Drag-Free			A			B
Sats			A	BC	D	
Film Recovery			A	B		
Sea Sat				A		B
Met ATS					A	B
GARP						
Sat to Sat tracking					A	
Communications and Navigation						
ATS			X		X	X
Cooperative Apl Sat	X					
Data Relay					XX	
Nav & Traffic Cont					XXX	
Data Collection					X	
Broadcasting						X
Near Earth Data Relay						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NASA Hierarchy Reshuffle Looms

By WILLIAM HINES
World Book Science Service

HOUSTON — On the heels of Apollo 11's success, a long delayed game of musical chairs is about to begin within the National Aeronautics and Space Administration. The shifts that will result are years overdue and cannot help but improve the future effectiveness of the space agency.

A year or so ago, in the hiatus between the Apollo fire of January, 1967, and the beginning of Apollo manned flights in October, 1968, a National Academy of Sciences panel published a report on NASA's organization. It criticized the agency's structure under the then administrator, James E. Webb, and called for changes which, in the scientists' view, would sharpen the efficiency of NASA.

While the academicians' points were well taken, the report was ill timed. NASA was not about to reorganize itself in a period of adversity; success was needed to trigger any far-reaching changes.

Besides, Webb had fashioned NASA according to his own conceptions of Management (with a capital M). It was Webb's story that NASA was the finest flowering of the managerial art, and he stuck to this line until he retired last October.

By then, NASA was too deeply engaged in preparations for the Apollo moon landing that came only 9½ months later to reshuffle key people and reorganize key offices.

But now the time is ripe for reorganization—not merely the firing, promoting and transferring of officials, but the functional restructuring of the agency as well. Some educated guesses can be made about what may happen within the three or four top layers of the NASA bureaucracy in the next few months.

A big question mark overshadows the future of NASA's head, Dr. Thomas O. Paine, the scientist-administrator who succeeded Webb on an "acting" basis in October and eventually got the title as well as the job after President Nixon took office.

This surprised many people at the time because Paine was not only a Johnson-administration holdover, but a card-carrying Democrat as well. Worse, he had been a Johnson-Humphrey activist in 1964 and (one assumes) would have been openly for Humphrey in '68 had he not been a federal job holder at the time.

There is some suspicion that no place may exist in NASA's future for Tom Paine. Although he was on the U.S.S. Hornet when the Apollo 11 astronauts returned, it was not Paine whom Nixon invited front stage center in the televised charade by the quarantine trailer, but Astronaut Frank Borman.

Some observers believe Borman, the President's current darling and space confidant, may become the next NASA administrator, just as Borman's Apollo 8 teammate, William Anders, has already been named executive secretary of the National Aeronautics and Space Council.

The idea of putting astronauts in charge of the space program may seem incongruous, but it is clearly not beyond the realm of possibility in the image-conscious Nixon regime.

Paine's fate will determine in large measure what happens to NASA's ranking official for manned space flight, Dr. George E. Mueller. Paine and Mueller have been beyond the point of no return for several months.

Mueller's loss would be easier to take than that of his principal assistant, Lt. Gen. Samuel C. Phillips, who brought the Apollo program to fruition and, by prearrangment, is now leaving to rejoin the Air Force.

With the July moon landing, Project Apollo changed from a developmental effort to an operational one. It is likely that Christopher C. Kraft, director of flight operations at Houston, will go to Washington and take over the redefined functions of Apollo program manager.

If, as is expected, the present sharp line between manned and unmanned flight operations is blurred in the reorganization, Kraft may end up controlling all space missions for NASA.

George Hage, one of Phillips' key assistants, may move into his boss' job with new responsibilities for advanced projects, including the 1986-ish manned Mars adventure. George M. Low, Apollo chief at Houston, may replace the Houston center director, Robert R. Gilruth, if Gilruth can be prevailed upon to retire.

Gilruth is not the only center director for whom the bell tolls. There is talk about moving Wernher von Braun to Washington from Huntsville, Ala., to do what he does best: charm money out of Congress. Kurt Debus, an old landsman of Von Braun, may retire to make way for Rocco Petrone at the John F. Kennedy Space Center in Florida.

THE WHITE HOUSE
WASHINGTON

August 13, 1969

For Mr. Whitehead

Per your request.

Dr. Kissinger's Office

8-6-69

MEMORANDUM FOR: Mr. Frank Shakespeare
Director, USIA

SUBJECT: CBS-TV Report on European Reactions to Apollo 11

I appreciate your sending me the transcript of the Daniel Schorr July 21 broadcast concerning European reactions -- many of them strikingly skeptical -- to our space exploration program.

I am returning the transcript to you as you requested.

/s/
Henry A. Kissinger

Enclosure

DRLesh/hk, Aug 5, 1969

Saturday 8/9/69

2:35 Kathy O'Melia in Ken Cole's office called. Said she had a note that you wanted something when Kissinger's memo went through on Log Item 872. Told her that we had received a copy of the incoming. Apparently she sent the package on -- without sending us a copy of Kissinger's memo.

Do you want me to get a copy of it from Kissinger's office?

yes

THE WHITE HOUSE

WASHINGTON

July 28, 1969
5:30 P.M.

Action requests issued on Monday, July 28, 1969

TO:	ITEM:	DUE:
INTERNATIONAL		
Dr. Kissinger	Dr. McCracken's memo for the Pres. regarding international and domestic wheat. (Log 869)	July 30
Dr. Kissinger	Dr. McCracken's memo to the Pres. regarding Weekly Report on International Finance. (Log 871)	July 30
Dr. Kissinger	Shakespeare memo to the President regarding media reaction to Apollo 11 mission around the world. (Log 872)	July 31 Rec'd incoming
ADMINISTRATIVE		
Dr. Moynihan	President's request that you coordinate Administration effort on an upcoming Mexican-American Conference. (Log 873)	Aug. 11
	Log#	
Sec. Hardin	875	Quarterly Report -- "Inventory of Departmental Budget and Programs." Aug. 14
Sec. Stans	876	"
Sec. Laird	877	"
Sec. Finch	878	"
Sec. Romney	879	"
Sec. Hickel	880	"
AG Mitchell	881	"
Sec. Shultz	882	"
PMG Blount	883	"
Sec. Rogers	884	"
Sec. Volpe	885	"
Sec. Kennedy	886	"
Amb. Yost	887	"
Dir. Mayo	888	"
Dir. Rumsfeld	889	"

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

July 28, 1969
6:00 P.M.

Key items due on TUESDAY, JULY 29, 1969

FROM:	ITEM:	TIME DUE
INTERNATIONAL		
Dr. Kissinger	Clarence Streit letter to the President regarding the Atlantic Union resolution. (Log 853)	2:00 P.M.
DOMESTIC		
Sec. Kennedy A. Burns J. Ehrlichman P. Flanigan P. McCracken	Republican Governors' Associations letter to the President regarding the effect of proposals within the Tax Reform Message upon State and local governnment bonds. (Log 861)	2:00 P.M.

ACTION MEMORANDUM WASHINGTON LOG NO.: 872

Date: July 28, 1969 Time: 3:00 P.M.

FOR ACTION: cc (for information):

Dr. Kissinger

FROM THE STAFF SECRETARY

DUE: Date: July 31, 1969 Time: 2:00 P.M.

SUBJECT:

Shakespeare memorandum to the President re media reaction to Apollo 11 mission around the world

ACTION REQUESTED:

____ For Necessary Action ___X_ For Your Recommendations

____ Prepare Agenda and Brief ____ Draft Reply

____ For Your Comments ____ Draft Remarks

REMARKS:

Please review the attached and submit your recommendations by return memorandum.

PLEASE ATTACH THIS COPY TO MATERIAL SUBMITTED.

If you have any questions or if you anticipate a delay in submitting the required material, please telephone the Staff Secretary immediately.

K. R. COLE, JR.
For the President

July 31, 1969

Mr. Whitehead:

Dr. Kissinger's reply is not in yet. We will be glad, however, to send it to you when it arrives.

Ken Cole's Office

UNITED STATES INFORMATION AGENCY
WASHINGTON

DIRECTOR

July 22, 1969

MEMORANDUM FOR: The President

The full impact of the Apollo 11 mission around the world will not be apparent until well after the splashdown. But it is already safe to say that no past event has been seen on television or followed by radio by so large a proportion of humanity. Partly, as a result of this, partly because of the magnitude of the event itself, no comparable number of human beings has ever had as deep a sense of participation in a news story or as deep a feeling of identification with two men as they did with Neil Armstrong and "Buzz" Aldrin.

Of the currently estimated total television audience of 650 million which watched the moon walk as it happened, 500 million were abroad; 320 million in Western and Eastern Europe, 75 million in Latin America, and most of the rest in Japan and elsewhere in Asia. The Japanese audience at the time of the moon walk was estimated at 70 to 80 million. In Italy, some 40 million watched the telecast. According to our present information, of the countries of Western or Eastern Europe, only the Soviet Union, East Germany, and Iceland failed to relay the Eurovision coverage of this event. Tape coverage was, however, included in regular Soviet TV newscasts. Elsewhere in the world, all countries which had the technical capability of telecasting Apollo 11 live did so. Thanks to last-minute arrangements by NASA and COMSAT, this included all Latin American countries, with the exception of Paraguay, Ecuador, and Cuba. (Venezuela and Colombia sought USIA help and went to great expense themselves to lease a portable ground station for live TV coverage of Apollo 11.) In Africa, Moroccan, Tunisian, and Libyan television were part of the worldwide circuit. Finally, television stations in Asia--Japan, Australia, the Philippines, Thailand, and Korea--covered the event simultaneously and as fully as it was covered anywhere. All other television stations around the world (outside Communist China, Russia, and East Germany) may be assumed to be carrying taped or filmed reports as fast as they can get them.

The Voice of America, relayed by both the domestic and external services of the BBC, as well as by All-India Radio and at least 22 other national networks around the world and by well over 1400 individual radio stations in Latin America, calculates its audience during the moon landing and walk to have been over 500 million. Jamming of Russian language broadcasts in the Soviet Union continued uninterrupted but English transmissions to the USSR and two channels in Mandarin beamed to Red China were clear.

Well over 800 foreign correspondents and media men covered the mission from Cape Kennedy and the Houston Manned Space Center in a total of 33 languages. The Japanese, 120 strong, represented the largest single national contingent. There were 200 media representatives from Latin America, and some 300 from Europe.

Perhaps more important than all these figures has been the depth and seriousness of coverage in many countries. Most radio and TV stations abroad prepared their audiences for the Apollo 11 mission for weeks, by broadcasting documentaries on past space exploits, interviews with experts, and detailed explanations of the mission plan. Newspapers in many countries have devoted a page a day to the preparations for the moon landing mission, and there have been impressive special space issues of mass publication periodicals in Italy and elsewhere. They have generally drawn the bulk of their source material from our own USIA output.

As for comment on the mission, the reactions flowing in indicate that the impact was great. Apart from the Communist Chinese press in Hong Kong (and presumably in Mainland China itself)--which speaks of this exploit as the last gasp of American imperialism--reporting has been positive and enthusiastic, with of course an occasional negative comment. The Arab world, the UAR included, joined in the general mood of euphoria. Communist papers in the West, like L'Humanite in France and Unita in Italy, echoed the chorus of approval resounding around them, only gently expressing their preference for the Soviet approach of unmanned space probes. Some papers in both the industrialized and underdeveloped world (e.g., the Times of London and Addis Reporter in Ethiopia) mentioned the contrast between the billions spent for space exploration and lack of success in dealing with urgent problems facing humanity here on Earth--but many (e.g., Rheinische Post in Germany and Ittefaq in Pakistan) answered such criticism by noting that this great

undertaking of man does not hinder human progress, but in the long run helps humanity marshal its talents and resources in solving age-old problems. Most papers were simply lost in awe on this "day in our history, the like of which none of us has ever seen or will live to see again" (Daily Mail). They saw "the feat of all time...accomplished" (Figaro). They commented that "the consequences of this first step are beyond imagining" (Die Welt). They noted that "Man knew he would conquer (space) not for the sake of conquest, not for self, but for freedom of spirit and humanity." (Working People's Daily, Burma)

Evidence of the profound impact of the moon landing from all corners of the world is copious and often moving. It ranges from the Pope's hailing the astronauts as "conquerors of the moon" and Prime Minister Wilson's stating his profound admiration for them, to the Pakistani newspaperman's expressing gratitude that he belongs to the generation which has witnessed an event of this magnitude. Babies were named after Apollo in Lebanon and Scotland, a public bus in downtown Dar es Salaam. An estimated 150,000 watched the moon walk on a giant television screen in a public square in Seoul, and crowds trying to press into Apollo exhibits at the American Embassy in Warsaw, USIS Lome (Togo) and USIS Addis Ababa got temporarily out of control. People danced in the streets of Santiago (Chile), and the President of Venezuela, after watching the moon walk in the company of his cabinet through a good part of the night, made an impromptu address to his nation when the astronauts safely boarded the "Eagle" again. In spite of the modest coverage of the flight by Soviet media, Americans living there were congratulated by Russian friends and even by chance acquaintances. The Moscow Embassy received congratulatory telegrams, as well as a number of telephone calls inquiring about the progress of the mission. The President of Chile called on Ambassador Korry to say how pleased he was. He, as well as a number of other chiefs of state, declared July 21 a national holiday. School children in Bavaria and students in Mexico were excused from classes that day. Many world capitals were deserted at the time of the launch or during other daytime events, as people stayed near their television sets. Church bells rang out and fire sirens screamed to announce the moon landing in various Latin American cities. Laplanders followed the flight on their transistor radios while pasturing their reindeer.

This is, of course, a preliminary report. We are engaged in an attempt to judge the effect of the Apollo 11 story on foreign audiences in a more systematic way by a comparative opinion survey in selected countries before and after the mission. The results of this survey will be available in about four weeks.

Attached is a summary of foreign media reaction, dated July 21, relating to the moon landing. Our Media Reaction Unit will continue to follow and report on this subject.

Frank Shakespeare

WORLDWIDE TREATMENT OF CURRENT ISSUES

SPECIAL: APOLLO 11

July 21, 1969

No. 10

FOREIGN MEDIA REACTION: APOLLO 11

Monday Report

LONDON

Today's papers devoted their entire front pages to the historic feat, with headlines proclaiming man's first steps on the moon and editorials lauding the achievement.

The pro-Labor Daily Mirror, which has a circulation of five million, commented:

> "Astronaut Neil Armstrong launched a new era for mankind when he stepped from the lunar module today. America, a land of frontiersmen, had opened a new frontier."

The conservative Daily Mail said:

> "This is a day in our history the like of which none of us has ever seen or will live to see again. Whatever happens we shall not stop now. For it is a measure of man's restless spirit, of his greatness, that he should take on the universe."

The conservative Daily Sketch declared that "America's moon triumph offers this old earth's bickering and jealous peoples a parable of hope.

> "This mighty and unsecretive nation, with its brave astronauts and its towering lead in computer technology, has shown a wondering world just what twentieth century man is capable of."

The independent Times of London noted that this was "the first event of such historic significance to be shared so widely and known so immediately." It said of the meaning of the flight:

> "Obviously it is an epic of human bravery, similar to the conquest of Everest or the great voyages of discovery.

> Obviously it is a great feat of scientific and professional skill, of particular appeal to so professional an age.
>
> "Obviously, also, it is a reproach; the nation which personifies this and other advances is unable to solve social problems which should perhaps be simple but are more difficult."

The paper theorized that the moon landing could be "a step that leads little further than itself or it could lead to a whole series of further explorations, to a new way of life for man and not merely to the satisfaction of his curiosity or the extension of psychological boundaries.

> "For the present we have the fact itself, and the fact is so remarkable that it is enough. The American astronauts have landed on the moon and we have heard their conversation from the moon and seen their progress. Their achievement will always be one of the wonders of the world."

The liberal Guardian said "no other great adventure was as great as this," adding that July 20 marks "a watershed in human history." It asserted that to divert vast sums of money and the energies of the best engineers and pilots "may be counted serious mismanagement of the world's resources, but the diversion was inevitable. Kennedy's motives may have been questionable. But someone was going to the moon and was surely going to get there long before hunger had been conquered in Asia or civil rights had been restored in Alabama."

PARIS

Today's papers ran large headlines announcing the landing but most had gone to press before Astronaut Armstrong stepped onto the lunar surface. TV and radio thoroughly covered all operations until both astronauts reentered the LEM.

Moderately conservative Figaro commented:

> "The ancient dream of earth-dwellers has come true. The feat of all time has just been accomplished.... A new era has begun, expanding the limits of science and further widening the gap between the space era and all that came before.

> "The entire world, thrilled and fascinated, celebrates a triumph both of man and technology. It in no way diminishes the significance of this tremendous feat to hope that scientists and technicians will also strive to improve the fate of men on earth in the future."

Pro-Gaullist Parisien-Libere said a new era had begun as "our eyes marveled in watching the first human contact between our world and another planet. It is the end of the age of the wheel, the beginning of an unknown number of scientific benefits aimed at freeing man from his physical bonds. Who could ever possibly believe that when such exploration became possible it should not be tried?"

Financial Les Echos wrote:

> "The fact that the first men to reach the moon are Americans and not Soviets represents a psychological and technical trump of the first magnitude for the U.S., and this is only right....
>
> "It seems that the American-Soviet rivalry of the Sixties is disappearing.... One has the impression that from now on cooperation will replace competition, at least in space."

Independent-left Combat contended that the "trumps" that both the U.S. and the Soviet Union will draw from space exploration "are likely to tighten the vice of power in which they keep the world....

> "It is in this sense that the phenomenon we are watching today marks an important date for the Old World, and for Europe in particular. Since the Old World cannot seek distinction in space, let it at least try to turn progress to the best account on earth. Since it does not own the dream instruments, let it at least make itself the conscience of the mighty.
>
> "It is only at the price of such an effort that it will be able to maintain relative independence from the two big countries, whose will for power from now on will have fewer and fewer limits."

Gaullist La Nation contrasted the conquest of the moon to all that remains to be done on earth:

> "How can we forget that perhaps millions of human beings are going to starve to death... that the war in Viet-Nam drags on, that the fratricidal conflict in the Middle East is becoming a sort of trench warfare of which no one foresees the outcome....
>
> "How many victories over war or triumphs of justice appear to be clearly more urgent than the conquest of space? .... How much misery could be alleviated and tragedy avoided if as many dollars or rubles, as much imagination or ingenuity, were devoted to such deeds rather than to space?"

ROME

An estimated 21 million viewers watched Italian television's 25-hour broadcast, "Man on the Moon." This morning's papers carried these banner headlines:

> "JULY 20, 1969 -- 22:18 HOURS. MAN IS ON THE MOON"
> (Conservative Resto del Carlino, Bologna)
>
> "MAN IS ON THE MOON. THE WHOLE WORLD LIVED THIS HISTORIC EVENT..."
> (Independent Corriere della Sera, Milan)

Rome's independent-conservative Messaggero declared that "the victory of Americans Armstrong, Aldrin, and Collins is not only a victory for three men or a victory for one country, but it is a victory for all mankind because man rather than machine has won."

Right-center Tempo of Rome wrote:

> "It is entirely an American triumph. The triumph is of this great people, this great country...an America which has not only proved itself a leader in science and industry, but one which carried all this out before the eyes of the world..."

Christian Democratic Popolo remarked that the feat showed the U.S. to be "the most civilized country in the world, even if it is full of contradictions and domestic disputes."

WEST GERMANY

Influential, right-center Frankfurter Allgemeine observed that "never before has so large a segment of the world population watched the same pictures with the same suspense at the same time....

> "Our correspondent in America reports the justified pride of the American nation... and its hope that it will master its urgent social and political tasks as well....
>
> "Our congratulations are deeply felt, and the Americans will allow us to view the trip to the moon as a project of mankind instead of a solely national one. This does not diminish our admiration for the achievement of our great ally, and it stimulates a unifying impulse..."

The paper reflected that "not all TV-viewers the world over will be willing and able to suppress envy. The Europeans can do so because they know that what prevents them from competing with the great powers is only the splintering of forces for which they themselves are responsible. But many a developing country may view the widening gap in technology and power with different feelings. The common experience should strengthen the will to solidarity."

Nationally circulated independent Die Welt of Hamburg declared:

> "The consequences of this first step are beyond imagining. We will be furnished a wide spectrum of information, and will see the moon in various aspects -- as the moon of rock samples, as the strategic moon, as the TV moon, as the moon of a new emotional appeal. The samples will be distributed internationally and the study of them delegated. The adventure will be converted into small coin, with many individual scientists holding the moon in their hands..."

Duesseldorf's pro-Christian Democratic Rheinische Post argued that the energies the space program "consumes would otherwise have found their outlet in foreign policy.... What has been achieved at Houston and Cape Kennedy justifies the highest hopes if similar methods are applied to such problems as hunger, urban rehabilitation, and education..."

The Luna 15 probe figured in some comment. The independent Koelner Stadt-Anzeiger said the "tensions" of the remainder of the operations on the lunar surface would be "increased by the proximity of Luna 15. The East likes secrecy..."

Bonn's center-oriented General Anzeiger asserted that "the somewhat small-minded Luna 15 project reflects the extent of Soviet disappointment. Has the Moscow leadership failed to grasp how poorly Soviet secrecy compares with America's unrestricted frankness?"

Independent Bild Zeitung of Hamburg, holding that "a new millenium has begun," remarked that "regardless of Wernher von Braun and several other Germans, Apollo 11 is no joint undertaking. It is a U.S. victory following stiff competition with the Soviets .... We have due respect for the Sputniks and Luna 15 ... but it is first and foremost the U.S. which will lead mankind toward a new technological and scientific future."

VIENNA

Man's first lunar landing filled page after page in all morning papers. Independent Kurier put out several extras. A headline in its fifth edition read,"THEY HAVE ALREADY TAKEN A WALK!"

Independent Kronen-Zeitung devoted its whole front page to a picture of the module with the one-word caption, "Landed!"

Socialist Express carried a giant headline: "'WE HAVE LANDED' -- EAGLE."

Television broke its records for non-stop broadcasting, and this morning repeated the report of Armstrong and Aldrin's lunar walk for viewers who had missed it because of rescheduling.

OSLO

Norway's two top TV space commentators, one in Oslo and the other in Houston, gave running accounts of the touchdown and walk on the moon. Television broke precedent with continuous coverage. Press impact is suggested by these headlines:

"MOON CONQUERED; APOLLO 11 SAFELY DOWN"
(Conservative Aftenposten)

"MAN ON TWO GLOBES ... NEIL'S FIRST STEP -- THE GREAT LEAP"

(Labor Party Arbeiderbladet)

"IT DID WORK! MAN HAS CONQUERED THE MOON"

(Christian Peoples' Party Vaart Land)

Conservative Morgenbladet observed that "for the first time in the world's 100,000-year-old history -- about the period for which science estimates homo sapiens has embarrassed the earth with his presence -- man has put his foot on a foreign celestial body."

Center Party Nationen said "the perspective of mankind has gained a new dimension. The limit set by space has been shattered by a glowing combination of technology and human courage."

Vaart Land thought "it may be too early to express any opinion about the scope of the moon trip. What is certain is that it opens the gates to an entirely new epoch in the history of man. We believe that from now on history books will refer to time before and after the moon landing in July, 1969."

SEOUL

The Republic of Korea declared a national holiday and President Park issued a statement carried by all morning papers calling the moon landing "a turning point toward the materialization of peace and prosperity on earth." Headlines spoke of "an age-old dream come true," and "a most brilliant moment in history." All evening papers carried editorials lauding the accomplishment.

Leading conservative Donga Ilbo said "the triumphant victory of man in his challenge of the unknown and unexplored ... means a victory of democratic institutions in good-willed competition," and expressed the hope that it "may serve in the betterment of all mankind."

Pro-government Seoul Shinmun contended that "unless the success of Apollo's mission on the moon is intended for peace on earth and promotes reflection upon the prevailing realities here on earth, the whole achievement will end in just a waste of the earth's resources."

TOKYO

All morning papers gave top play to the imminent landing but deadlines restricted coverage to the moment of transfer to the landing craft.

Audience estimates indicated that one-half of Japan's population heard the announcement, "The Eagle has landed." Non-commercial NHK-TV and commercial TBS-TV broadcast through the night for the first time in their history. In an early morning televised press conference, Prime Minister Sato lauded the achievement and voiced hopes for the peaceful development of space. He termed the landing feat "epochal in the history of mankind," and remarked that he had not thought that the first major steps of the space age could be taken so quickly.

On Okinawa, Apollo 11's success dominated newspaper pages, which carried photos of rapt crowds before outdoor television screens set up in Naha. One paper said the moon landing gave man "a boundless dream."

MANILA

Crowds watching television screens in public places burst into applause as the astronauts planted the American flag. Papers published extra editions headlining the moon walk.

The press carried the statement of President Marcos that "the Filipino people join the world in congratulating the United States of America for putting the first men on the moon, a triumphant milestone in the conquest of space which augurs greater achievements in the broadening of man's vision and the fulfillment of a larger destiny within the framework of true human brotherhood and an enduring peace."

VIENTIANE

Laotian radio listeners for the first time followed a world event at the moment it was actually taking place, as the national radio network tied into live Voice of America coverage of the lunar walk. Dependent on relay via Thailand, television is subject to a one-day lag.

TEL AVIV

Independent Maariv declared:

> "All of a sudden everything looks different, changed.... The moment man has set foot on the moon, it is no longer the same...
>
> "This is the first global scientific and social revolution in which the entire human race is participating by the most sophisticated means of communication.... It is a revolution whose depth we have yet to grasp, even though we have given it much thought...
>
> "This is a solemn day for mankind and especially for the Americans, who were the first to learn how to harness the spirit of man to such an unprecedented enterprise."

Independent Haaretz stated that manned flight to the moon "underscores the ever-widening gap between the two superpowers and other countries.

> "Theoretically we have no interest in the outcome of the race between the two powers, but rather in the universal significance of the project.
>
> "In reality, we hope in our hearts for the success of the American project. Our education, our outlook and our values cause us to feel a deep sympathy for those who act openly..."

Semi-official Davar said that "future historians will be able to ignore many great events and developments, but not that dramatic and epoch-making event last night.

> "Last night the first men set foot on the moon. Last night all mankind breathlessly followed Neil Armstrong and Edwin Aldrin, who were privileged to be the first to realize an age-old dream. Last night was a moment of supreme elation for the great American nation. Last night we witnessed a moment in history whose significance is yet unclear."

Independent Yediot Aharonot felt "bound to say" that "the achievement entitles America to lead the world, even morally."

BEIRUT

Independent an-Nahar headlined:

"MOON AGE -- FIRST DAY"

Several Beirut papers printed special supplements and color photographs. Pro-UAR al-Kifah stated that "jubilation spread throughout the world at man's ability to overcome the impossible and reach another celestial body for the first time since the universe has existed." Pro-UAR al-Anwar published statements of praise from Lebanese leaders.

Radio and TV interrupted regular programs to announce progress of the landing.

DAMASCUS

Radio Damascus gave extensive coverage of the landing maneuvers.

CAIRO

Cairo radio described the landing as "the greatest human achievement ever."

Cairo's Middle East News Agency carried a statement by a government spokesman who accused Israel of attacking in the Suez area for "military gain while the world was busy with the moon flight."

KUWAIT

The major Arabic paper, al-Rai al-Am, headlined:

"FIRST TIME IN HISTORY: TWO MEN ON MOON'S SURFACE -- EAGLE LANDING, HUMANITY'S DREAM REALIZED"

The paper said that the U.S. had "achieved one of the greatest victories of the human mind in recent history...

"For the U.S., the reward comes not only from the feeling that it has taken an unprecedented step in technological progress. It comes also from the great acclaim of the

> nations of the world.... And we, as part of this world, wholeheartedly share in acclaiming human accomplishments everywhere."

The paper urged Americans "who properly rejoice at their moon victory to think of millions of Arabs who have been evicted from their homeland, and to find the courage to alleviate such human misery..."

RAWALPINDI

Pakistanis heard live VOA and BBC broadcasts of the landing. Papers in both East and West Pakistan held editions late to bannerline man's conquest of the moon.

ACCRA

The government-controlled Daily Graphic stated today that "the landing brings to reality a centuries-old dream of mankind to establish personal contact with the dead and unknown moon...

> "Whatever end awaits the venture, America has scored a 'first' to boost the morale of the free world."

LUSAKA

The independent Times of Zambia datelined its story "Sea of Tranquility, the Moon --" The government-owned Zambia Mail headlined:

> "THEY ARE THERE"

Radio Zambia relayed VOA coverage of the landing.

KAMPALA

The government-controlled Uganda Argus termed Armstrong and Aldrin "ambassadors of the planet Earth" who had brought their "frail 14-ton lunar module 'Eagle' to a flawless landing," so that mankind had "completed an astounding, incredible, phenomenal and splendid adventure."

NIAMEY

Niger's daily Le Temps du Niger and Radio Niger excluded virtually all other news. The paper headlined:

"TWO MEN ON THE MOON"

The radio carried VOA coverage live.

LOME

Togo-Presse said today that "man has at last satisfied one of his ancient dreams.

"He has become an inhabitant of a celestial body other than the one on which God placed him. Human intelligence gives further proof of its potential, but we must now turn our attention to the earth.

"Man has conquered the moon, but he will for a long time still be subjected to sickness, hunger, ignorance, and all the miseries which keep him from being completely happy.

"The solidarity men feel with the three American astronauts should be devoted also to solving the problems of the human condition on earth."

NIGERIA

The Daily Sketch of Ibadan declared:

"The world burst into a rapture of joy last night as two of the U.S. astronauts ... landed on the virgin moon."

Benin's Sunday Observer reported:

"Many people just refuse to believe the venture is true. Most educated people who have followed earlier space probes ... show a strange apathy to the climactic landing.

"One thing is certain, though. In spite of all the incredulity, the current journey to the moon is the most talked about event in the whole of this state."

RABAT

The French-language Opinion declared that "a new dimension has been added tonight to all international political conceptions with the immense victory won by the U.S. in putting man on the moon....

> "The flight of Luna 15... had the objective of easing in the Communist world the blow of the success of the American astronauts...
>
> "Will the space race, led by the U.S. and the USSR, now give way to international technical and financial cooperation, the political implications of which would be immense? This is the desire expressed by American leaders....All mankind is involved."

LIBYA

Tripoli's English-language Libyan Mail hailed the landing and asked what should come next. It proposed exploration and development of the seas, which "could produce untold wealth in food and minerals that would be of much greater benefit to the population of the earth than further conquest of space."

Independent al-Hakika of Benghazi atated:

> "All we seek from the moon is evidence that the earth is the best place for man if he lives in justice and legitimate competition with his fellow men in sharing the blessings of our earth."

COMMUNIST COUNTRIES

Soviet and East European media followed the "Eagle" from undocking through the moon walk to re-entry of the astronauts into the lunar module.

Live television brought the drama to audiences in Poland, Czechoslovakia, Rumania, Hungary, Bulgaria and Yugoslavia. Other capitals replayed video tapes recorded from satellite relay. Available comment so far is scanty.

The "political observer" of the Soviet All-Union Radio and Central Television referred this afternoon to the successful Apollo moon landing and commented:

> "Everybody knows that scientific discoveries and achievements involve the participation of large numbers of people; that scientific-technical progress is not something peculiar to one nation but is achieved by scientists and practical workers of different countries who devote their efforts and inspiration to those problems which advance man's knowledge and his technical and scientific possibilities in production and various spheres of the life of man."

As evidence that the Soviet Union "marches in the vanguard of scientific-technical progress," thanks to the activities of the Communist Party, the commentator cited progress in coal output, irrigation, crop yields and hydroelectric installations, enumerating "research in the space around the moon" by Luna 15 last as only one of the many benefits of advanced science and technology.

Moscow Radio's domestic service this afternoon noted:

"Millions of television viewers watched the reportage from the moon, broadcast this morning via central Moscow Television. Those who missed it we advise to switch on their television sets at 1700 Moscow time."

The broadcast said the Apollo 11 crew had "carried out the most important experiments in their program -- a landing and walk on the moon's surface," and reported Neil Armstrong's first words. The Luna 15 flight was not mentioned.

Warsaw's Trybuna Ludu asserted this morning that "on the moon, the astronauts do not represent... a nation, a race or a continent. They are the ambassadors of the whole of mankind.... With Armstrong and Aldrin, we are experiencing a triumph that can only be compared to the triumph of Columbus."

The paper said further:

> "Let them know the way we identify ourselves with them, the way we admire their conscious bravery and sober valor

> and the way we respect them for the fact that they nobly represent us, the people -- thinking, enterprising and penetrating creatures eager to explore the universe, inhabitants of the third planet of the solar system."

The Warsaw youth paper, Sztandar Mlodych, sounded a sour note:

"The feeling of excitement and joy at the cosmic spectacle and the great victory of science must be spoiled, however, by a feeling of deep sorrow. How is it possible, many of us ask, that 'people from earth' reach the moon while earthly issues much closer to us are neglected? How is it possible that the state which could afford such a gigantic technological venture is waging a barbarous and dirty war in Viet-Nam?"

NASA

August 12, 1969

Dear Mr. Schooley:

The President has asked me to reply to your letter of August 2, 1969, and to thank you for your kind words.

I feel as you do that NASA's role should be for the benefit of the whole country and for that reason I was delighted that Dr. Paine, an eminently qualified scientist accepted the difficult task of leading NASA in these exciting times. I am certain that he will strengthen the entire staff and will exert a forceful role in shaping the future of the agency to insure maximum responsiveness to the needs of the country.

Again many thanks for your thoughts.

Sincerely yours,

(signed)

Peter M. Flanigan
Assistant to the President

Mr. C. Herschel Schooley, Manager
Independent Bankers Association of America
Suite 530 Bowen Building
815 - 15th Street, N. W.
Washington, D. C. 20005

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:ed

Independent BANKERS ASSOCIATION OF AMERICA

WASHINGTON OFFICE

EXECUTIVE DIRECTOR: HOWARD BELL • SECRETARY: GENE MOORE

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SUITE 530, BOWEN BUILDING, 815 - 15th ST., N. W., WASHINGTON, D.C. 20005

August 2, 1969

The Honorable Richard M. Nixon
President of the United States
The White House
Washington, D. C. 20500

Dear Mr. President:

Your basic judgment on the Pacific swing, your welcome to the Astronauts aboard the Hornet, and the Far East and Asian stops was good. Your execution of these successive endeavors has been superb.

All of this has added up to do more for the prestige of the United States, in general public and governmental esteem, around the world, than uncounted billions spent in AID and AID missions.

Meanwhile, while you have been away, back at the NASA ranch, assorted hardline, carryover sources, for reasons of their own, have been feeding or funneling some strictly partisan distortions, intended to harm you, per attachment.

It is easy to put in perspective a domestic scene you have not yet had time to straighten out. First of all, you were most wise in letting NASA incumbent leadership continue on through this cycle of critical space shots.

However, since your decision to retain Tom Paine through this period, Democrats have been dancing in the NASA corridors and in many instances have been busy promoting one another. Not a single Democratic face, among acres of such faces, has been replaced. The key PR and Hill staffs, strategic to your public acceptance, are still Democratic to their roots. Most importantly, Jim Webb, out of office since last fall, continued to keep

physical possession of the Administrator's office until just the other day, and Tom Paine was unable to actually move up and truly be No. One in the minds of those around him. A more absurd psychological picture could not be painted.

With all this, it was elementary for such leadership and staffs to want the JFK memory to be dominant in the moon shots, to resent that you, our President, would participate in the success on the White House phone to Neil and Buzz on the Moon, and aboard the Hornet, and have made sure that their favorite liberal columnist could portray in his inimitable slanted fashion.

A good housecleaning at NASA is in order for general and specific reasons, and it is my earnest hope, among other good wishes for you, that you can now promptly turn your attention to this subject.

Respectfully and sincerely,

Herschel Schooley

C. Herschel Schooley

Encl.

Nixon Gambled on Moon Publicity

By Drew Pearson and Jack Anderson

Members of President Nixon's staff are congratulating themselves that a very great public relations gamble paid off. They now admit that there was some doubt inside the White House as to whether the moon mission might have a mishap at the last minute and leave the President red-faced in the mid-Pacific, presented with the alternative of abandoning his trip around the world or continuing it under very embarrassing circumstances.

The men who led the argument that Nixon take the trip were Bob Haldeman, the former J. Walter Thompson advertising expert who likes to wrap policies up in Madison Avenue packages. He was supported by press secretary Ron Ziegler and aide Dwight Chapin, two other hotshots from J. Walter Thompson.

But the more cautious White House advisers checked with NASA. There they got the optimistic opinion that the moon project would succeed, that the President would not be left red-faced in mid-Pacific. NASA officials further advised that the most crucial part of the whole trip would be when Armstrong and Aldrin set their lunar module down on the moon and that, if at the last minute they did not make it, President Nixon would have time to change his plans before he started for the Pacific.

NASA officials, however, did not go along with some of the other PR ideas of the ad men around Nixon. In fact there was a definite and rather unpleasant series of clashes between them.

Hassle Over Publicity

The first came when space agency officials planned to recognize the late President Kennedy's part in fixing the American policy of reaching the moon, by having the astronauts read Kennedy's vigorous statement made on May 25, 1961. It was to be read immediately after they stepped out on the moon's surface.

But President Nixon said No. He also vetoed a NASA plan to name the lunar capsule "John F. Kennedy." Instead, he proposed the names "Eagle" and "Columbia" for the two space craft.

Both of these orders were transmitted to space officials by Bob Haldeman. He also conceived the plaque which was signed by Nixon and the three astronauts and placed on the moon. NASA officials at first resisted the idea of this plaque. Finally Haldeman brusquely advised them that the plaque was the President's wish. That was that.

It was Frank Shakespeare, the new chief of the U.S. Information Agency, who concocted the idea of having Nixon put a phone call through to the two astronauts immediately after they landed on the moon.

NASA officials grumbled privately about this, complained that it identified Nixon with the lunar landing despite the fact that he had never supported it, either in the election campaign or at any time before he became President. However, Nixon not only liked the idea but wanted to go further and narrate the moon walk. He wanted to have the astronauts give him the first description of the moon by telephone. He then would accept this on behalf of the American people.

However, space officials finally talked the President into limiting his telephone call to only two-and-one-half minutes.

This part of the ceremony, incidentally, left a bad impression overseas, even though trimmed down. Many foreigners got the impression that the President was trying to horn in on the astronauts' glory.

It has already been reported that Nixon also wanted to dine with the astronauts on the eve of their departure. Despite resistance from NASA, Nixon seriously considered going ahead with the dinner anyway, and was only dissuaded at the last minute after a firm statement by the NASA physician.

Nixon Loves Publicity

The final hassle between the White House and the space agency occurred regarding the President's proposal to fly to the Pacific to welcome the astronauts after they splashed down. Space agency officials didn't like this either. Though they had given their frank advice that the moon launch would be successful they later suggested tactfully that it would be better if the President did not fly to the carrier Hornet.

Nixon simply ignored the suggestion. He sent word that he intended to be present.

In Indonesia, diplomats are not unaccustomed to President Nixon's love of publicity.

When he came through Djakarta as Vice President, the American embassy staged a reception for him. It is normally hot in Djakarta, and this day was especially hot. And a small army of TV technicians which came out to the American embassy to set up their kleig lights to interview Nixon made it even hotter.

Mrs. Hugh Cumming, wife of the American ambassador, was concerned for the comfort of her honored guest and told the TV technicians they could not operate in the embassy.

When Vice President Nixon arrived she apologized for the heat, but added that it could have been worse.

"There were a lot of television cameras here," she said. "However, I sent them away."

The Vice President looked most unhappy. He rushed to the telephone and invited the TV men back to the embassy.

UNITED STATES GOVERNMENT

Memorandum

TO : Dr. C. T. Whitehead **DATE:** 8 August 1969

FROM : IOP/PA - William N. Lyons Bill

SUBJECT: Space - Where Do We Go?

I trust amidst the material Mr. Scheer at NASA is going to provide you is the following study by the Battelle Institute:

> Lederman, Leonard L., and Margaret L. Windus, "An Analysis of the Allocation of Federal Budget Resources As an Indication of National Goals and Priorities, (Report No. BAI-NLVP-TR-69-1 to the National Aeronautics and Space Administration), Columbus, Ohio, 10 February 1969

This we should see. In my humble opinion, budgetary trends reflect the consensus of Congress, as opposed to the whims of one solon. Congressmen are among the best as clues to public opinion.

The following digest of this study, that I unearthed, is intriguing:

> "Functional areas which have had a large research and development component - such as national security, health, and education - will have a relatively smaller part of their total budgets for R&D in the years ahead, and those which have had a relatively small R&D component - such as transportation, communications, and community development - will have a larger share for research in the future.
>
> "In comparison with the R&D funds each area has had in the recent past, the most rapid future growth can be expected for welfare, health; commerce, transportation, and communications; labor and manpower, housing and community development; and natural resources and the environment. Growth will be smaller, or negative, in funds for R&D in the area of national security, education and knowledge, space and agriculture."

Scientists are advising other scientists:

> "Budgetary trends by themselves will not suddenly change academic values, but they are important signs of a growing demand for concerted work on the big problems of society. If the universities do not move with this trend other agencies will carry out the necessary research."

The Gallup Poll

Public Cool to Manned Mars Landing

By George Gallup

PRINCETON, N. J.—A nationwide Gallup survey finds the public generally lukewarm toward the idea of setting aside money to pursue an eventual manned landing on the planet Mars. Opinions on this issue, however, depend largely on a person's age, with a majority of young adults in their twenties in favor of the idea and majority of those over 30 years of age opposed.

Taking adults of all ages together, 39 per cent favor a U.S. space push to Mars, 53 per cent express opposition and another 8 per cent have no opinion on the question. Persons with college training are far more likely to favor a Mars landing program than are those with only a high school or grade school background.

Negroes are opposed to the government setting aside money for an eventual Mars landing by the ratio of 3-to-1. The Rev. Ralph Abernathy, head of the Southern Christian Leadership Conference, has been sharply critical of federal funding for the exploration of space and has called for more federal aid for the nation's poor.

Vice President Spiro T. Agnew said recently that he was pressing for an effort to land men on Mars by the end of the century. He is on a panel named by the President last February to recommend, by September, the nation's long-term goals in space.

Last week the U.S. unmanned Mariner 6 and 7 spacecrafts traveled to within 2,100 miles of Mars to photograph linear features on the planet.

The core of the public's opposition to setting aside money for a Mars project stems from the belief that money earmarked for a Mars landing would be better spent on domestic problems here on earth.

A 59-year-old college instructor from Lansing, Michigan said: "With all the poverty, crime, urban decay that we have on this planet, I see no reason why we should use all of our resources to get to a planet where life probably does not exist."

Those in favor reason that the scientific exploration of space must be continued to "advance the knowledge of mankind" and to "stay ahead of Russia."

A 23-year old Bronx, New York printer, was excited about the prospect of a Mars landing: "The moon shot was tremendous, almost unbelievable. We can't stop now. There are so many areas of the universe we should explore. Man can learn a great deal from these adventures."

A total of 1517 adults in more than 300 randomly selected areas across the nation were asked this question between July 26-28.

There has been much discussion about attempting to land a man on the planet MARS. How would you feel about such an attempt—would you favor or oppose the United States setting aside money for such a project?

Following are the national results and the findings by age and education:

	Favor Per Cent	Oppose Per Cent	No Opin. Per Cent
NATIONAL	39	53	8
21-29 years	54	41	5
30-49 years	40	53	7
50 and over	28	60	12
College	52	45	3
High school	39	52	9
Grade school	25	63	12

The public was also lu about proposals in th 1960's to begin an extens gram designed to land a the moon.

In May, 1961, Preside F. Kennedy called on to increase expenditur space program with t goal of landing a n moon before Russia d eve of that appeal, th Poll found only one p three willing to see spend the billions n get a man on the m

UNITED STATES GOVERNMENT

Memorandum

TO : Dr. C. T. Whitehead DATE: 6 August 1969

FROM : IOP/PA - William N. Lyons Bill

SUBJECT: Space - Where Do We Go?

Here is what has been published in the last couple of months. By title, it seems to be fallow ground for what we are seeking. For objectivity, this should not be limited to items produced solely by NASA. Therefore, until such time as Mr. Sheer comes up with his material, I shall be expanding this and starting to wade through it. I send the list to you in the thought there may be something that strikes your interest.

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- -, "After Apollo 10: A Look at Space Future," 66, U.S. News and World Report, (June 2, 1969), pp. 28-29

Aggen, E. A., Jr., "Beginning of the Interplanetary Era," F-5-65, Space World, (May 1969), p. 4

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DuBridge, L. A., "Social Control of Science," 25, Bulletin of the Atomic Scientists, (May 1969), pp. 26-28 +

- -, "Eclipse on the Ground," 73, Newsweek, (June 2, 1969), pp. 75 +

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- -, "Military Use of Space: What Top Powers Are Doing and Not Doing," 66, U.S. News and World Report, (June 23, 1969), p. 10

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- -, "Say No to Mars," 86, Christian Century, (June 11, 1969), p. 797

- -, "Science and the Moon," F-5-65, Space World, (May 1969), pp. 32-35

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Sweeney, T., "If Verne Could Look at NASA: Apollo Flight," 21, National Review, (May 20, 1969), pp. 489-490

- -, "TIEing the Loose Ends in Apollo Programs: Technical Integration and Evaluation," ?, Business Week, (May 24, 1969), pp. 128-129

Wald, G., "America's My Home. Not My Business, My Home," 25, Bulletin of the Atomic Scientists, (May 1969), pp. 29-31

Watts, R. N., Jr., "Plans for Apollo Missions," 37, Sky and Telescope, (June 1969), pp. 265-266

Ways, M., "Gearing U. S. Policy to the World's Great Trends," 79, Fortune, (May 1, 1969), pp. 64-69 +

Wolfe, D., "Changing Research Emphasis," 164, Science, (May 16, 1969), p. 773

Wolfert, I., "1969: The Year of the Moon," 94, Readers' Digest, (May 1969), pp. 55-59

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

OFFICE OF THE ADMINISTRATOR

July 28, 1969

Mr Whitehead

MEMORANDUM TO: Honorable Peter Flanigan
Assistant to the President

In confirmation of the telephone call to your office today, Dr. Paine will be on travel to the West Coast July 29, 1969, through August 2, 1969. The following individuals will serve as Acting Administrator on the days indicated.

July 29	Dr. Homer E. Newell, Associate Administrator
July 30	Mr. Paul G. Dembling, General Counsel
July 31	Mr. Paul G. Dembling, General Counsel
August 1	Mr. Willis H. Shapley, Associate Deputy Administrator
August 2	Dr. Newell

Clare F. Farley
Executive Officer

Post-Apollo Focuses on Orbital Programs

Washington–National Aeronautics and Space Administration is focusing major efforts in the post-Apollo era on earth orbiting programs while faced with tight planning deadlines and a need for flexibility forced by funding uncertainties.

Studies of a proposed 50-100-man space base and its related shuttle vehicles are to be submitted with recommendations to President Nixon's advisory task force on future manned space flight by Sept. 1.

Interim briefings on the space base and the reusable shuttle vehicles have met with informal approval, according to reliable sources.

The shuttle vehicle studies, in particular, are on a tight schedule so that recommendations can meet the Sept. 1 deadline.

Both NASA and the Air Force have joined in the effort which is expected to receive White House approval initially on a small scale.

More work has to be done within a shorter period on the shuttle concept than on the space base, which has been the subject of variously detailed analyses for several years.

If design concepts can be completed and approved by Fiscal 1971, the shuttle could be brought into the same development period as the space base. Both then might be operational starting in 1975 with small, modularized vehicles capable of continued growth to the eventual large space station program of the 1980s and beyond.

But the program between Apollo and the space base—Apollo Applications, using lunar-oriented hardware modified for earth orbital use—is being refined.

Although the final funding for Fiscal 1970 has not been determined in Congress, the House already has recommended reduction of the request for Apollo Applications from $345 million to $288 million.

Apollo Applications officials realized that the program probably would have to be stretched out. As a result, they developed a significant change in the core of the program—switching from the wet workshop to the dry workshop.

The wet workshop, already several years behind schedule, involves the two-stage Saturn 1B launch vehicle. The McDonnell Douglas S-4B upper stage would be used for orbital injection.

Residual fuels then would be vented. A three-man Apollo crew, launched separately by another S-1B, would enter the stage, deploy pre-installed work/rest partitions and equipment, and use the S-4B as a workshop for 28 days.

After the first crew leaves the workshop to return to earth, a second crew would be launched on another S-1B to use the workshop for 56 days.

That crew would return to earth and a third crew would visit the workshop, their launch vehicle also orbiting an Apollo Telescope Mount for 56 days of stellar observations.

Conceiving that a reduction in funds would once more delay the proposed flight plan from late 1971 into 1972, Apollo Applications officials concluded that a dry workshop concept, previously discarded as too costly on a short-time development basis, could be produced to meet the stretched-out schedule.

The dry workshop would basically follow the same mission profiles as the wet workshop but with a significant change in hardware and the kind of payloads that could be made available.

It would use a Saturn 5 for orbiting the workshop, rather than an S-1B. The Saturn 5's first two stages, the Boeing S-1C and the North American Rockwell S-2, would be topped by an S-4B without fuel, already fully equipped as an orbital laboratory.

The first two stages would be capable of orbiting the laboratory. A three-man crew then would be orbited on an S-1B, and the Apollo Telescope Mount would be an integral part of the payload. Officials believe that the telescope, which is lagging in development, could be fitted into the proposed new schedule without serious difficulty.

The Saturn 5 to be used under the proposed change is No. 514, now assigned to the Apollo lunar program. It would be diverted to Apollo Applications.

NASA has ordered long-lead hardware items for Saturn 5s beyond No. 515, and the transfer of a single vehicle to Apollo Applications would not markedly change lunar exploration plans.

The proposed change probably will be given to NASA Administrator Thomas O. Paine before the end of July.

Paine has been advised of the proposal and, in the view of Apollo Applications officials, has indicated his approval.

Apollo 11 Checkout

Final countdown leading to the planned launch of the Apollo 11 lunar landing mission started smoothly last week.

The countdown, to last 93 hr. including several planned holds, is to end at 9:32 a.m. EDT July 16 with the liftoff of the Saturn 5 from Complex 39A at the Kennedy Space Center in Florida.

Prior to initiating the final countdown, the National Aeronautics and Space Administration completed an almost flawless preliminary checkout of the launch vehicle, the three-man Apollo command and service module and the lunar landing vehicle.

Engineers replaced an instrument unit of the primary guidance system in the Grumman lunar module after deciding that the original equipment had degraded since being accepted. They also had an area of the launch vehicle's McDonnell Douglas S-4B third stage repainted because of blistering and peeling.

The flight plan (AW&ST July 7, p. 45) calls for the crew to arrive at lunar orbit at 1:26 p.m. EDT July 19. Landing is scheduled for 4:23 p.m. EDT July 20. Apollo 11 Commander Neil A. Armstrong is to step out onto the lunar surface at 2:17 a.m. EDT July 21.

He will be joined by Astronaut Edwin E. Aldrin. The pair will remain on the surface of the moon for 2 hr. 40 min. After a rest period, they will ascend to the orbiting command module, with Astronaut Michael Collins, for the return to earth. Landing is scheduled in the Pacific Ocean at 12:51 p.m. EDT July 24.

MRCA Funding

London–Great Britain is currently committed to a funding of $9.6 million through a project definition stage of the European multi-role combat aircraft (MRCA), according to John Morris, Minister of Defense for Equipment.

Morris, in reply to an attack on the project by a leader of the Labor Party left wing, Frank Allaun, said a British survey of total costs has led the Ministry of Defense to believe the MRCA will provide better value for money than any other alternative.

Allaun complained that the House of Commons has not been given a detailed breakdown on total costs, other than press speculation, and declared:

"The extra cost of teeth and spectacles (in the British national health program) would be more than covered by going without a couple of these new airplanes. If we made the great so-called sacrifice of foregoing all of them, most of our housing pensions, education and health service difficulties would be greatly eased. . . ."

Morris countered that the present financial commitment is only through project definition and that no other defense project has been so carefully appraised at such an early stage.

July 17, 1969

MEMORANDUM FOR MR. FLANIGAN

Attached is a memorandum for Lee DuBridge requesting that we be briefed on the status of the space task group study. I think it is important that we begin to get ourselves read into this.

Clay T. Whitehead
Staff Assistant

Attachment

cc: Mr. Whitehead
Central Files

CTWhitehead:ed

July 17, 1969

MEMORANDUM FOR DR. LEE A. DuBRIDGE

Since I no doubt will be involved in the discussions about our future space program after the report of the space task group is sent to the President on September 1st, I think I should begin to familiarize myself with the issues in that area and the approach taken by the task group. Would you, as Staff Director of this space task group, please prepare an interim report briefing for myself and Tom Whitehead so that we can familiarize ourselves with the approach being taken and the issues that are being defined. It would be helpful to have this briefing in the next week or two.

Peter M. Flanigan
Assistant to the President

cc: Mr. Flanigan
Mr. Whitehead
Central Files

CTWhitehead:ed

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

OFFICE OF THE ADMINISTRATOR

July 18, 1969

MEMORANDUM FOR: Mr. Charles B. Wilkinson
Special Consultant to the President

As requested in Mr. Flanigan's memorandum of June 4, 1969, we have reviewed the boards and commissions on which NASA is represented.

Attached is a list of current active committees and boards and current representation thereon. Except in the four instances noted, there is a need to continue the committees described in this list. A complete description of the contents of this listing is contained in the preface to the attachment.

(Signed) Willis H. Shapley

Willis H. Shapley
Associate Deputy Administrator

Attachment

cc: Honorable Peter M. Flanigan
Assistant to the President

Mr. Clay T. Whitehead
Staff Assistant

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

OFFICE OF THE ADMINISTRATOR

July 18, 1969

MEMORANDUM FOR: Mr. Charles B. Wilkinson
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Attached is a list of current active committees and boards and current representation thereon. Except in the four instances noted, there is a need to continue the committees described in this list. A complete description of the contents of this listing is contained in the preface to the attachment.

[Signed] Willis H. Shapley

Willis H. Shapley
Associate Deputy Administrator

Attachment

cc: Honorable Peter M. Flanigan
Assistant to the President

Mr. Clay T. Whitehead
Staff Assistant

Thursday 7/17/69

10:15 Since I didn't find an item on Cole's action list concerning preparation of remarks for the President re the Lunar landing, I checked with Cole's office; she said there had not been an official assignment but that Keogh's office probably would prepare remarks.

Checked Keogh's office. They were assigned preparation of a short address at the Carrier at splashdown -- which were apparently due yesterday -- also remarks for the Space Dinner on August 8th -- as well as a statement of the occasion of the moon launch.

Ray Price is the person who has prepared the remarks.

NASA

FOR IMMEDIATE RELEASE JULY 17, 1969

Office of the White House Press Secretary

THE WHITE HOUSE

STATEMENT BY THE PRESIDENT
ON THE SOVIET COSMONAUTS'
MEDALS

The two men we hope will set foot on the moon represent all mankind.

Their acheivement will be the world's acheivement. It is fitting, therefore, that the first lunar explorers carry with them some recognition of the sacrifice made by other space pioneers who helped to blaze their trail.

There is no national boundary to courage. The names of Gagarin and Komorov, of Grissom, White and Chaffee, share the honor we pray will come to Armstrong, Aldrin and Collins.

In recognizing the dedication and sacrifice of brave men of different nations, we underscore an example we hope to set: that if men can reach the moon, men can reach agreement.

# # #

We'll Leave Mark on Moon Thru Eternity

By DON KIRKMAN
Scripps-Howard Science Writer

The lower half of the Apollo 11 spaceship that will remain on the moon thru eternity will bear a metal plaque with a four-line message edited by President Nixon to memorialize the "peaceful" U.S. conquest of the moon.

Unveiling the plaque will be astronaut Neil A. Armstrong's first act after he steps on the lunar surface during the early hours of July 21—about 10 hours after Apollo 11's lunar module touches down on the moon's barren Sea of Tranquility.

Attached to one of the spaceship's four legs, the plaque will bear this message:

"Here Men From the
Planet Earth
First Set Foot Upon
the Moon.
July 1969 A.D.
We Came in Peace for
all Mankind."

Centered below the message will be the signatures of President Nixon and the three Apollo 11 crewmen: Mr. Armstrong, fellow moon-walker Edwin E. (Buzz) Aldrin Jr., and command module pilot Michael L. Collins.

The President personally approved the plaque's inscription, a National Aeronautics and Space administration (NASA) official said, and the wording is considered to be his.

The top of the plaque will have an etching of the earth's Eastern and Western hemispheres with a dot in the Western hemisphere to indicate the spaceship took off from Cape Kennedy, Fla.

The lower half of the lunar module will be used as a launch pad when Mr. Armstrong and Col. Aldrin blast off from the moon after their 21 and one-half-hour lunar visit. The moon-walkers will use the lunar module's upper half to fly to a rendezvous with Col. Collins in the command module. Together, in the command module, the three spacemen will fly back to earth.

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

OFFICE OF THE ADMINISTRATOR

July 16, 1969

MEMORANDUM TO: Dr. Clay T. Whitehead
Staff Assistant, The White House

In order to keep you informed of developments following the NASA ATS briefing of June 13, 1969, I enclose a copy of Mr. Shapley's reply to Dr. Charyk's letter of July 8, a copy of which I understand you already have.

Walter A. Radius
Office of DOD and
Interagency Affairs

Enclosure

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

OFFICE OF THE ADMINISTRATOR

JUL 15 1969

Dr. Joseph V. Charyk
President
Communications Satellite Corp.
950 L'Enfant Plaza South, S.W.
Washington, D. C. 20024

Dear Dr. Charyk:

In reply to your letter of July 8, 1969, I have designated Mr. Jerome Freibaum to work with Mr. Briskman in completing the inventory of facilities that might be available to experiment with various uses of satellite communications in the period through about September 1970.

When the inventory is completed and has been reviewed in NASA and Comsat, we can jointly consider it in relation to the experiment proposals that have been submitted and discuss how to proceed promptly with individual discussions with the sponsors of these proposals and any others that may be forthcoming.

Since there may be proposals for experiments extending farther in the future, I suggest that when the initial inventory of facilities available in the 1969-1970 period has been completed, the same team be asked to carry their inventory as far into the future as current plans and programs can reasonably be projected.

Sincerely,

Willis H. Shapley
Associate Deputy Administrator

file NASA

THE WASHINGTON POST

The Harris Survey

7/14/69

Public, in Reversal, Now Backs Landing on Moon, 51 to 41 Pct.

By Louis Harris

Undoubtedly in anticipation of this week's Apollo 11 moon shot, the American people have reversed themselves and now favor landing a man on the moon by 51 to 41 per cent. Just last February, public opinion still was against putting a man on the moon by 49 to 39 per cent.

Basically, the change in public attitude can be attributed to the feeling "if we have gone this far, we ought to finish the job and actually land on the moon." However, the people still do not believe the entire space program is worth the $4 billion a year that has been spent on it.

A carefully drawn cross-section of 1607 adults were asked between June 16 and June 22:

"What was the main feeling you had as the Apollo 10 astronauts made it around the moon and back?"

	Total Public
Unbelievable, awed	36%
Relief they got back from dangerous mission	31
Proud of their accomplishment	22
Proud of America, its scientists	12
Senseless waste of money	9
Good job, well done	8
Not necessary, pointless	7
Educational, learn a lot about science	5
Made no difference to me	4
We shouldn't be there at all	3
Admired their courage	2
Made U.S. seem powerful	1

Note: Percentages add to more than 100 per cent because some people reported more than one reaction.

By a 3 to 2 margin, the reaction to the Apollo flight has been favorable. Yet there is an irony in the space flights. For the same Harris Survey which recorded 51 to 41 per cent public approval of the landing on the moon also revealed that by 56 to 37 per cent, the same American people simply do not think the space program "is worth the $4 billion a year which has been spent on it." This marks no change at all in public attitudes since February when opposition was 55 to 34 per cent.

The main argument by the proponents of continuing the space program are that "it will benefit life here on earth," "man must explore the unknown for the sake of knowledge and science," "we have to keep ahead of the Russians," and "we must explore this last frontier."

But opponents of the space program are far more numerous. The principal thrust of their opposition can be found in the reasoning that "there are more important things to do right here at home."

In the early days of the space program, the public expressed a willingness to spend the $4 billion a year that it was estimated it would cost to send a man to the moon. When President Kennedy first named the target of getting to the moon before the decade was out, the reaction was one of disbelief, but also that it was an exciting challenge, worthy of commitment of major national resources.

But much has happened since then. The racial crisis, the evident decay of the cities, the involvement in Vietnam, the explosion of education all have come to command higher priorities among the American people now than space exploration.

THE WALL STREET JOURNAL, Thursday, July 3, 1969

Next Moon Flight May Signal End to Boom In Economy for Kennedy Space Center Area

By PETER H. PRUGH
Staff Reporter of THE WALL STREET JOURNAL

COCOA BEACH, Fla. — The thunder of rocket engines hurtling three Astronauts to the moon may sound the end of an economic boom for the area surrounding the sprawling John F. Kennedy Space Center.

Right now, Astronauts Neil A. Armstrong, Edwin E. Aldrin Jr. and Michael Collins are practicing maneuvers at the center. Thousands of technicians are making final preparations on the huge Saturn V rocket and other equipment needed for the July 16 flight of Apollo 11. Civic leaders in this coastal town—and the neighboring communities of Titusville, Cape Canaveral and Cocoa—are fretting about handling the visits of President Nixon and 5,000 other dignitaries as well as 1 million tourists expected to view the historic launch.

But all the excitement and activity related to the awesome task of putting a man on the moon can't hide the down-to-earth fact that the Cape Kennedy area, after a giddy period of boom because of space activities, is faced with a time of serious retrenchment.

The signs are obvious:

—The National Aeronautics and Space Administration has announced that the pace of manned Apollo launchings will slack off to about one every four months for the next couple of years—about half the number of recent flights—and none is expected to attract the attention of Apollo 11.

—Employment at the Kennedy Space Center will be cut to 18,500 persons as of June 30, 1970, from the current 23,500, NASA has stated. With the completion of some moon launch projects, NASA employment already is down from the 26,000 peak of last fall. Many aerospace workers are attempting to find employment in other fields, even if a pay cut is involved, says Sherman Moore, owner of a local employment agency. "They've had it so good for so damn long that a lot of them are spoiled," he adds.

New Housing Off 40%

—Housing construction in Brevard County, site of the Kennedy space complex, fell some 40% to 2,080 units last year from 3,438 in 1967. So far this year, housing construction is off another 40% from the reduced 1968 pace. Vacant houses with unkempt lawns dot many subdivisions.

—The amount of money drawn against checking account deposits in the county rose only 1% from a year earlier in the first five months of 1969, compared with a 17% jump for all of Florida, according to the Federal Reserve Bank of Atlanta.

—Retail sales in the county through May increased only 6% from 1968, according to state figures. For all of Florida, retail sales rose 24%.

—More than 50% of the commercial office space in the Cape Kennedy area is vacant, according to local estimates. Some buildings including the four-story Apollo Building in Cocoa Beach, are completely empty. The building, constructed in the early 1960s on prime, ocean-front property, once housed offices of NASA and Boeing Co. These operations were moved to available Government-owned structures at the space center. Other structures, such as the modern, high-rise Cape Royal Building, also in Cocoa Beach, are less than half occupied.

—While some motels connected with national chains are doing well, many local motel, apartment and restaurant operations have been experiencing poor business. At the 117-room Koko Motel, which is in receivership, the occupancy rate is running at only about 30%; its large night club and restaurant facilities have been closed. At the Crossway Inn, a 95-room motel owned by United Investors Corp., occupancy is running at an unprofitable 50% this year. The adjacent Crossway Beach Apartments, also owned by United Investors, was only 60% rented early this year (it's currently 85% rented); the five-year-old apartment building had been 100% occupied until two years ago.

End to Growth Economy

"We're going to have some problems," concedes John E. McCauley Jr., executive director of the Brevard Economic Development Council. "Some businesses are going to fold up because they have been living on a strictly growth economy." The growth has been spectacular: Almost entirely because of rocket and space activities of the Air Force and NASA, Brevard County's population soared to 250,000 from 111,400 in 1960 and from only 23,700 in 1950.

The county and local governments also may face serious fiscal difficulties because of the slowdown, warns Huey B. Long, director of Florida State University's Urban Research Center. The center has made extensive studies of the Cocoa Beach area.

"Local government hasn't been adequately financed even during the boom," he says. "Officials in this area have continued to think in terms of an upward trend, or at least in terms of a level line." The aerospace slowdown, coupled with recent limitations put on county taxing powers—by Florida's newly adopted constitution and by expected Congressional cutbacks in Federal aid that the county's school system receives because of the high number of Federal employes in the area—may put "local government behind the eightball," he says.

Many local residents, of course, aren't accepting the prospect of a slowdown in the space program without a fight. For one thing, a nationwide drive has been started by businessmen in the area to build up political support to maintain and increase spending on U.S. space programs.

Complaints About Spending

"A lot of people are complaining about our shooting billions of dollars into space," says Dudley Jewell, executive secretary of the Cape Kennedy Area Chamber of Commerce. "We're not shooting money into space; we're shooting hardware. The money gets spent on the ground in the form of payrolls from Maine to California."

The local chamber has initiated contacts with chambers of commerce in more than a dozen cities with space-related industries to gain support for further space program funding by the Government.

The local chamber's space education committee is heading a national drive to publicize technological "spin-offs" from the space program, such as new medical devices, paints, computers, weather forecasting satellites and other items that are more relevant to people in their daily lives than space flights. General Electric Co. and other companies in the aerospace field have been cooperating with the effort. "We have to convince America that the space program is vital to our national security as well as to our economic growth," says Ray Dahl, president of First National Bank of Cape Canaveral, who is heading the national drive.

Hope for Tourist Industry

Continuation of the program is vital to the growth of Mr. Dahl's five-year-old bank, a subsidiary of U.S. Finance Co. For the first time since the bank was established, more persons are closing accounts at the bank than are opening them, although total dollar deposits haven't declined. Because of the slowdown in bank activity, it has cut employment to 35 staffers from a peak last year of 45.

Businessmen are hoping for a rapid increase in tourism to counteract the space slowdown. They note that visitors to the Kennedy Space Center are expected to reach three million in the early 1970s, up from an expected 1.2 million this year and from about 750,000 in 1968. In addition, the $600 million Disneyworld complex, an hour's drive from Brevard County's excellent beaches, is expected to bring a big jump in visitors to the area when it opens early next year.

Motels are pushing for plans to build a convention hall to attract large-scale conventions to the ocean-front towns of Cocoa Beach and Cape Canaveral.

Planners cite forecasts that Radiation Inc., a Harris Intertype Corp. subsidiary, which makes communications and information handling systems, will increase its employment in the Brevard County area to 11,000 persons by the early 1970s from the current 4,400.

In addition, efforts are underway to attract diversified industry, and the Cape Kennedy Area Chamber of Commerce is planning a campaign to attract tenants for the empty office buildings. Insurance companies needing headquarters and large companies searching for space to house accounting or drafting offices are key prospects, officials say.

A $26 million shopping center that will contain three department stores is being built, and observers hope it will capture many of the Brevard County shoppers that currently trade in Orlando in neighboring Orange County.

The future of Brevard County is particularly important, suggests Florida State's Mr. Long, because national defense, aerospace and nuclear programs have been creating "more and more Brevard counties." He notes that Federal "policy decisions wind up the economies" of such areas and then, inevitably, have to "let them wind down."

NASA

July 8, 1969

MEMORANDUM FOR

Dr. Willis Shapley
Associate Deputy Administrator
National Aeronautics and Space Administration

Attached is a rough draft of a proposed working paper to be discussed at a Thursday meeting at 2:30 in my office, with other executive branch agencies and the FCC.

May I have your comments by telephone either this afternoon or early tomorrow morning -- to be sure that the role described for NASA is not totally out of line.

Clay T. Whitehead
Staff Assistant

Attachment

cc: Mr. Whitehead
Central Files

CTWhitehead:ed

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

OFFICE OF THE ADMINISTRATOR

JUL 3 1969

MEMORANDUM TO: Dr. Clay T. Whitehead
Staff Assistant, The White House

In order to keep you informed of developments following the NASA ATS briefing of June 13, 1969, I enclose a copy of Mr. Shapley's reply to Dr. Charyk's letter of June 12 concerning COMSAT's interest in experimentation with potential users of satellite services.

Walter A. Radius
Office of DOD and
Interagency Affairs

Enclosure

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

OFFICE OF THE ADMINISTRATOR

JUL 2 1969

Dr. Joseph V. Charyk
President
Communications Satellite Corp.
950 L'Enfant Plaza South, S.W.
Washington, D. C. 20024

Dear Dr. Charyk:

We in NASA welcome the offer you made in your letter of June 12 to Dr. Naugle to work with NASA officials and potential users of satellite service to experiment with available satellite and ground station facilities. The potential scope of experimentation with ATS satellites along the lines envisaged at the NASA briefing on June 13 could be considerably augmented by the additional facilities that COMSAT could make available directly as well as through its participation in INTELSAT.

I suggest that we form a joint NASA-COMSAT team to consider how our respective facilities could be used in support of the proposals that were submitted to NASA at the June 13 meeting as well as similar proposals which may subsequently be received. We could then meet with the interested parties and consider specific projects for implementation or further study. At this stage, we can deal with the question of procedures for securing any required authorizations from the FCC on behalf of COMSAT or the experimentor or from the Director of Telecommunications Management, if necessary in the case of NASA.

If this approach meets with your approval, please call me so that we can arrange an early meeting.

Sincerely,

Willis H. Shapley
Associate Deputy Administrator

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

OFFICE OF THE ADMINISTRATOR

JUL 3 1969

MEMORANDUM TO: Dr. Clay T. Whitehead
Staff Assistant, The White House

In order to keep you informed of developments following the NASA ATS briefing of June 13, 1969, I enclose a copy of Mr. Shapley's reply to Dr. Charyk's letter of June 12 concerning COMSAT's interest in experimentation with potential users of satellite services.

Orgnal signed by
Walter A. Radius

Walter A. Radius
Office of DOD and
Interagency Affairs

Enclosure

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THE WHITE HOUSE
WASHINGTON

August 23, 1969

Memo to: John Ehrlichman
✓Peter Flanigan

Attached is a full NASA summary of the principal matters of concern to Dr. Paine now that the Apollo 11 mission has been completed. I will include highlights in the staff notes.

A. P. Toner apt

cc: John Whitaker
Ken Cole

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NASA

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NASA SUMMARY - AUGUST 22, 1969

Apollo activity reductions -- The success of Apollo 11 triggered immediate action to lay off Apollo manpower and reduce operations to a "one-shift" level through a stretched-out schedule of future launches at four rather than two-month intervals. We will have reduced NASA contractor support people by approximately 5,000 men by the end of this calendar year. The principal layoffs are at Cape Kennedy and Houston. It is a challenging management task to complete these reductions promptly as required by our budget without damaging our capability for safely flying Apollo 12 (in November) and succeeding missions.

Apollo personnel -- With the return of the Apollo Program Director, Lt. Gen. Samuel C. Phillips, to Air Force duty, and of his Deputy, George Hage, to the Boeing Company, NASA will be replacing the two top men of the Apollo program. Mr. Rocco Petrone will be the new Director. He has done an outstanding job managing Apollo activities at Cape Kennedy and is fully qualified to handle this demanding position. A new Deputy will be selected from the ranks of others who have distinguished themselves in the management of major segments of the Apollo program. A replacement will also be announced soon for Dr. Wilmot Hess, Chief Scientist at Houston, who is transferring to a higher-paying lab manager's position in ESSA in the Department of Commerce. Press reports about dissatisfaction with Apollo management on the part of scientists at Houston are exaggerated, but with the first lunar landing completed, Dr. Paine is taking steps to strengthen significantly the role of science in future lunar missions.

Astronaut appearances -- Planning is progressing, in coordination with the White House staff, for the appearance of the Apollo 11 astronauts at a joint meeting of both Houses of Congress on September 10, for an overseas trip, and for additional appearances in the U.S.

International -- As requested by the President, Dr. Paine is developing plans for new European discussions of opportunities for increasing international participation in space exploration in the next two decades. These plans are the subject of a separate memorandum to the President.

Future NASA programs -- Material for the final report of the Space Task Group to the President will be completed by September 1 in accordance with guidelines agreed to by STG members. This timing goal is to allow the President ample opportunity to consider the alternatives presented in the report and hopefully to permit selection of the desired future program in time to give NASA guidance in mid-September on which to base the 1971 budget estimates submitted to the Bureau of the Budget on October 1.

Immediate budgetary problems -- Possible further reductions in NASA expenditures and personnel in FY 1970 required by developments in the overall national fiscal picture are of grave long-range concern to NASA. In discussions with the Bureau of the Budget, Dr. Paine has taken the position that NASA should be allowed to manage its operations in FY 1970 in such a way as to effect the proposed $50 million reduction in expenditures, but be freed of an arbitrarily imposed reduction of 500 civil service personnel

which would require severe reduction-in-force actions beyond the very substantial reductions already in process, with a crippling effect on the agency's capabilities unrelated to dollar savings. These problems are currently under review with the Bureau of the Budget. Mr. Mayo has agreed with Dr. Paine that in any case, actions to further reduce NASA employees should not be taken until the President has considered the report of the Space Task Group and selected the Nixon Administration's space goals and pace.

NASA organization -- With Apollo 11 completed, Dr. Paine is reviewing NASA's present organization and planning to make some overdue changes to permit NASA to carry forth most effectively the programs for the future recommended in the report of the Space Task Group. This includes identifying the qualified individuals who will fill the top level positions in NASA which have been held open until this reorganization. Mr. Flemming's office is being kept advised of the status of these efforts.

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DRAFT

SPACE TASK GROUP REPORT

THE POST-APOLLO SPACE PROGRAM: DIRECTIONS FOR THE FUTURE

SEPTEMBER 8, 1969

PRIVILEGED

THE POST-APOLLO SPACE PROGRAM: DIRECTIONS FOR THE FUTURE

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ATTACHMENTS:

SPACE TASK GROUP REPORT

THE POST-APOLLO SPACE PROGRAM: DIRECTIONS FOR THE FUTURE

I. INTRODUCTION

With the successful flight of Apollo 11, man took his first step on a heavenly body beyond his own planet. As we look into the distant future it seems clear that this is a milestone - a beginning - and not an end to the exploration and use of space.

Success of the Apollo program has been the capstone to a series of significant accomplishments for the United States in space in a broad spectrum of manned and unmanned exploration missions and in the application of space techniques for the benefit of man. In the short span of twelve years man has suddenly opened an entirely new dimension for his activity.

In addition, the national space program has made significant contributions to our national security, has been a political instrument of international value, has produced new science and technology, and has given us not only a national pride of accomplishment, but has offered a challenge and example for other national endeavors.

The Nation now has the demonstrated capability to move on to new goals and new achievements in space in all of the areas pioneered during the decade of the sixties. In each area of space exploration what seemed impossible yesterday has become today's accomplishment. Our horizons and our competence have expanded to the point that we can consider unmanned missions to any region in our solar system; manned bases in earth orbit, lunar orbit or on the surface of the moon, manned missions to Mars; space transportation systems that carry their payloads into orbit and then return and land as a conventional jet aircraft; reusable nuclear-powered rockets for space operations; remotely controlled roving science vehicles on the moon or on Mars; and application of space capability to a variety of services of benefit to man here on earth.

Our opportunities are great and we have a broad spectrum of choices available to us. It remains only to chart the course and to set the pace of progress in this new dimension for man.

The Space Task Group, established under the chairmanship and direction of the Vice President (Attachment A), has examined the spectrum of new opportunities available in space, values and benefits from space activities, costs and resource implications of future options and international aspects of the space program. A great wealth of data has been made

available to the Task Group, both from sources within the Executive Branch, including reports from the National Aeronautics and Space Administration and the Department of Defense reflecting very extensive planning and review activities, and also from other sources, including a detailed report from the President's Science Advisory Committee, views from members of Congress, the National Academy of Sciences Space Science Board, American Institute for Aeronautics and Astronautics, and a special group of distinguished citizens who were asked for their personal recommendations on the future course of the space program.

Summaries of the views contained in the NASA, DoD and PSAC reports are included as Attachments B through D. A complete set of the inputs received by the Task Group is being submitted separately. The views expressed in this broad range of material were considered and evaluated as part of the Task Group deliberations. This report presents in summary form the coordinated views of the Space Task Group on the Nation's future directions in space.

II. BACKGROUND

Twelve years ago, when the first artificial earth satellite was placed into orbit, most of the world's population was surprised and stunned by an achievement so new and foreign to human experience. Today a broad segment of the people of all nations are familiar with satellites, orbits, the concept of zero 'g,' manned operations in space and a host of other aspects characteristic of this new age - the age of space exploration.

The United States has carried out a diversified program during these early years in space, requiring innovation in many fields of science, technology and the human and social sciences. The Nation's effort has been interdisciplinary, drawing successfully upon a synergistic combination of human knowledge, management experience, and production know-how to bring this Nation to a position of leadership in space.

Space activities have become a part of our national agenda.

We now have the benefit of twelve years of space activity and our leadership position as background for our examination of future directions in space.

National Priorities

By its very nature, the exploration and exploitation of space is a costly undertaking and must compete for funds with other national or individual enterprises. Now that the national goal of manned lunar landing has been achieved, discussion of future space goals has produced increasing pressures for reexamination of, and possible changes in, our national priorities.

Many believe that funds spent for the space program contribute less to our national economic growth and social well-being than funds allocated for other programs such as health, education, urban affairs, or revenue sharing. Others believe that funds spent for space exploration will ultimately return great economic and social benefits not now foreseen. These divergent views will persist and must be recognized in making decisions on future space activities.

The Space Task Group has not attempted to reconcile these differences. Neither have we attempted to classify the space program in a heirarchy of national priorities. The Space Task Group has concentrated on identifying major technical and scientific challenges in space in the belief that returns will accrue to the society that takes up those challenges.

Values and Benefits

The magnitude of predicted great economic and social benefits from space activities cannot be precisely determined. Nevertheless, there should be a recognition that significant direct benefits have been realized as a result of space investments; particularly from applications programs, as a long-term result of space science activities, DoD space activities and from advancing technology. These direct benefits are only part of the total set of benefits from the space program, many of which are very difficult to quantify and therefore are not often given adequate consideration when costs and benefits from space activities are weighed or assessed in relation to other national programs.

Benefits accrue in each of the following areas:

economic - directly through applications of space systems to services for man, and indirectly through potential for increased productivity resulting from advancing technology; improvements in reliability, quality control techniques, application of solid state electronics, and computer technology resulting from demands of space systems; advances in understanding and use of exotic new materials and devices with broad applicability; refinement of systems engineering and management techniques for extremely complex developments.

national security - directly through DoD space activities, and indirectly through enhancement of the national spirit and self-esteem; reinforcement of the image of the United States as a leader in advanced technology; strengthening of our international posture thru demonstration that a free and democratic society can achieve a challenging, technologically sophisticated, long-term objective; maintenance of a broad base of highly skilled aerospace workers convertible to defense needs; advancement of technology that may have relevance to defense use.

science - directly through support for ground and space research programs, indirectly through ability to open to observation new portions of the electromagnetic spectrum; opportunity to search for life on other planets, to make measurements en situ at the planets or in other regions of space, and to utilize the unique environment of space (high vacuum, zero 'g') for experiment programs in the life sciences, physical sciences and engineering.

exploration - the opening of new opportunities to investigate and acquire knowledge about man's environment - which now has expanded to include not only the earth, but potentially the entire solar system.

social - providing educational services through enhanced communications which enable improved treatment of social problems.

international relations - providing opportunities for cooperation; the identification of foreign interests with U.S. space objectives, programs and their results.

What is the value to be placed upon these benefits, and how can the space program continue to provide benefits in these areas?

The answers to these questions cannot be stated in absolute terms - there is no dollar value associated with national self-esteem and many of the other benefits listed above, and there is no fixed program of missions without which these benefits will not accrue. As with many programs, there is, however, a lower limit of activity below which the viability of the program is threatened and a reasonable upper limit, imposed by technological capability and rate of growth of the program.

These limits are a key consideration in the options discussed later in this report.

National Resource

In the eleven years since its creation, NASA has provided the Nation with a broad capability for a wide variety of space activity, and has successfully completed a series of challenging tasks culminating in the first manned lunar landing. These accomplishments have involved rapid increases to peak annual expenditures of almost $6 billion and a peak civil service and contractor work force of 420,000 people. Expenditures for NASA have subsequently dropped over the last three years from this peak to the present level of about $4 billion and supporting manpower has dropped to about 190,000 people.

In addition to NASA space activity, the DoD has developed and operated space systems satisfying unique military requirements. Spending for military space grew rapidly in the early sixties and has increased gradually during the past few years to approximately $2 billion per year.

The Nation's space program has fostered the growth of a valuable reservoir of highly trained, competent engineers, managers, skilled workmen and scientists within government, industry and university. The climactic achievement of Apollo 11 is tribute to their capability.

This resource together with supporting facilities, technology and organizational entities capable of complex management tasks grew and matured during the 1960's largely in response to the stimulation of Apollo, and if it is to be maintained, needs a new focus for its future.

Manned Space Flight

There has been universal personal identification with the astronauts and a high degree of interest in manned space activities which reached a peak both nationally and internationally with Apollo. The manned flight program permits vicarious participation by the man-in-the-street in exciting, challenging, and dangerous activity. Sustained high interest, judged in the light of current experience, however, is related to availability of new tasks and new mission activity - new challenges for man in space. The presence of man in space, in addition to its effect upon public interest in space activity, can also contribute to mission success by enabling man to exercise his unique capabilities, and thereby enhance mission reliability, flexibility, ability to react to unpredicted conditions, and potential for exploration.

While accomplishments related to man in space have prompted the greatest acclaim for our Nation's space activities, there has been increasing public reaction over the large investments required to conduct the manned flight program. Scientists have been particularly vocal about these high costs and problems encountered in performing science experiments as part of Apollo, a highly engineering oriented program in its early phases.

Much of the negative reaction to manned space flight, therefore, will diminish if costs for placing and maintaining man in space are reduced and opportunities for challenging new missions with greater emphasis upon science return are provided.

Science and Applications

Although high public interest has resided with manned space flight, the Nation has also enjoyed a successful and highly productive science and applications program.

The list of major achievements in space science is great, ranging from our first exploratory orbital flights resulting in discoveries about the earth and its environment to the most recent Mariner missions to the vicinity of Mars producing new data about our neighbor planet.

Both optical and radio astronomy have been stimulated by the opening of new regions of the electromagnetic spectrum and new fields of interest have been uncovered - notably in the high energy X-ray and gamma-ray regions. Astronomy is advancing rapidly at present, partly with the aid of observations from space, and a deeper understanding of the nature and structure of the universe is emerging. In planetary exploration, we have a unique opportunity to pursue a number of the major questions man has asked about his relation to the universe. What is the history of the formation and evolution of the solar system? Are there clues to the origin of life? Does life exist elsewhere in the solar system?

In the life sciences, questions about the effect of zero 'g' upon living systems, demands of long-duration space flight upon our understanding of man and his interaction or response to his environment, both physiologically and psychologically, promise new insights into the understanding of complex living systems.

These are only a few of the disciplines that have profited from the program of research in space. Space science is not divorced from science on the ground, but is rather an extension of science which builds and depends vitally upon a strong ground-based foundation.

Building upon the basic science on the ground and in space, and upon the growing capability in the design, construction and launch of artificial satellites , the United States pioneered in the development of space applications - notably communications, meteorology and navigation. Operational systems have been placed into service in each of these areas, and the potential for the future appears bright - not only in these areas but also in new fields such as resource surveying and oceanography.

International Aspects

Achievement of the Apollo goal resulted in a new feeling of "oneness" among men everywhere. It inspired a common sense of victory that can provide the basis for new initiatives for international cooperation.

The U.S. and the USSR have widely been portrayed as in a "race to the moon" or as vying over leadership in space. In a sense, this has been an accurate reflection of one of the several strong motivations for U.S. space program decisions over the previous decade.

Now with the successes of Apollo, of the Mariner 6 and 7 Mars flybys, of communications and meteorology applications, the U.S. is at the peak of its prestige and accomplishments in space. For the short term, the race with the Soviets has been won. In reaching our present position, one of the great strengths of the U.S. space program has been its open nature, and the broad front of solid achievement in science and applications that has accompanied the highly successful manned flight program.

The attitude of the American people has gradually been changing and public frustration over Soviet accomplishments in space, an important force in support of the Nation's acceptance of the lunar landing goal in 1961, is not now present. Today, new Soviet achievements are not likely to have the effect of those in the past. Nevertheless, the Soviets have continued development of capability for future achievements and dramatic missions of high political impact are possible. There is no sign of retrenchment or withdrawal by the Soviets from the public arena of space activity despite launch vehicle and spacecraft failures and the preemptive effect of Apollo 11.

The landing on the moon has captured the imagination of the world. It is now abundantly clear to the man in the street, as well as to the political leaders of the world, that mankind now has at his service a new technological capability, an important characteristic of which is that its applicability transcends national boundaries. If we retain the identification of the world with our space program, we have an opportunity for significant political effects on nations and peoples and on their relationships to each other, which in the long-run may be quite profound.

III. GOALS AND OBJECTIVES

Goals

An important aspect in both popular acceptance of the space program and in the spirit, dedication and performance of those who are directly involved in space activity is the conviction that such activity is worthwhile and contributes to the quality of life on earth.

Public support for the space program can be related to understanding of the values derived from space activity and to understanding and acceptance of long-term goals and objectives which establish the framework for the program.

In the National Aeronautics and Space Act of 1958, the Congress declared "...it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind." This policy statement, which served as effectively as a guide to the first decade in space, must now be translated into clearly enunciated long-range goals and program objectives for the post-Apollo space program.

We view the challenge of setting new goals, of providing a focus for our future space activities, of expanding the limits of man's reach and thereby demonstrating America's leadership in scientific and

technological undertakings while maintaining the confidence of the people in the strength and purpose of our Nation, as the key to continued space leadership by the United States.

Facing this challenge, some would urge that our efforts should be restricted to exploitation of existing capability, pointing out, quite correctly that exciting and challenging missions remain to be accomplished which can utilize the existing base. But such a course would risk loss of the foundation for future achievements - a foundation which depends largely on providing a new capability which challenges our technology.

One of the values of the lunar landing goal was that it carried a definite time for its accomplishment, which stressed our technology and served as basis for planning and for budget support. It was a national commitment, a demonstration of the will and determination of the American people and of our technological competence at a time when these attributes were being questioned by many.

The need for an expression of our strength and determination as a Nation has changed considerably since that time. Today the need is for guidance - for direction - to set before the people a vision of where we are going.

Such a vision for the future should have a number of important qualities:

- it should have substantive values that are easily characterized and understood
- it should have a long term goal, a beacon, an aim for our activities to act as a guide to both short-term and longer range decisions
- it should be sufficiently long-range that adequate opportunity exists for solid progress in a step-by-step fashion towards that long-term goal yet sufficiently within reach that each step draws measurably closer to that goal
- it should be challenging both for man's spirit of adventure and of exploration and for man's technological capability
- it should foster the simultaneous utilization of space capabilities for the welfare, security and enlightenment of all people.

The Space Task Group has concluded that a balanced space program that exploits the great potential for automated and remotely-controlled spacecraft and at the same time maintains a vigorous manned flight program, can provide such a vision.

This balanced program would be based upon a framework in which the United States would:

(1) Accept, for the long term, the challenge of exploring the solar system, using both manned and unmanned expeditions

(2) Develop an integrated and efficient space capability that will make Earth-Moon space easily and economically accessible for man and unmanned systems.

(3) Maintain a steady return on space investments in applications, science, and technology

(4) Use our space capability not only to extend the benefits of space to the rest of the world, but also to increase direct participation by the world community in both manned and unmanned exploration and use of space.

The balanced program for the future envisioned by the Task Group would possess several important characteristics:

- flexibility. The ability to see clearly the opportunities that lie ahead in this new field is limited at best. Some opportunities will fade as we approach them while others, not even discernible at this time, will blossom to the first magnitude. This program will permit the course and time scale to be flexible, to adjust to variations in funding,

to shifting national and international conditions, while preserving a guidepost for the future.

- challenge. The space program has flourished under a set of goals that have demanded the highest standards of performance, and an incentive for excellence that has become characteristic of our space efforts. A balanced program of both challenging near-term objectives and long-range goals will enhance and preserve these attributes in the future.
- opportunity. The Nation has in being significant capability for space activity. Abundant opportunities exist for further exploitation of this capability. A balanced program will permit adequate attention to applications and science through manned and unmanned flight programs utilizing our technological base while also creating new opportunities through development of new capability.

In its deliberations, the Space Task Group considered a number of challenging new mission goals which were judged both technically feasible and achievable within a reasonable time, including establishment of a lunar orbit or surface base, a large 50-100 man earth-orbiting space base, and manned exploration of the planets. The

Space Task Group believes that manned exploration of the planets is the most challenging and most comprehensive of the many long-range goals available to the Nation at this time, with manned exploration of Mars as the next step toward this goal. Manned planetary exploration would be a goal, not an immediate program commitment; it would constitute an understanding that within the context of a balanced space program, we will plan and move forward as a Nation towards the objective of a manned Mars landing before the end of this century.

The raison d'etre for a manned Mars expedition is to take the next step in exploring other parts of the solar system. Mars is chosen because it is most earth-like, is in fairly close proximity to the earth, and has the highest probability of supporting extra-terrestrial life of all of the other planets in the solar system.

What are the implications of accepting this long-range goal or option on the character of the space program in the immediate future?

In a technical sense, the selection of manned exploration of the planets as a long term option for the U. S. space program would act to focus a wide range of precursor activities and would be reflected in many decisions, large and small, where potential future applicability to long-lived manned planetary systems design will have relevance. In a broader sense such a selection would tend to reinforce

and reaffirm the basic commitment to a long-term continued leadership position by the U. S. in space.

The Space Task Group sees acceptance of the long-term goal of manned planetary exploration as an important part of the future agenda for this Nation in space. The time for decisions on the development of equipment peculiar to manned mission to Mars will depend upon the level of support, in a budget sense, that is committed to the space program.

NASA has outlined plans that would include a manned Mars mission in 1981, if the Nation were to accept this commitment, with the development decision on a Mars Excursion Module in FY 1974. Such a program would result in maximum stimulation of our technology and creation of new capability. There are many precursor activities that will be required before a manned Mars mission is attempted, such as detailed study of biomedical aspects, both physiological and psychological, of flights lasting 500-600 days, unmanned reconnaissance of the planets, creation of highly reliable life support systems, power supplies, and propulsion capability adequate for the rigors of such a voyage and reliable enough to support man. Decision to proceed with a 1981 mission would require early attention to these precursor activities.

While launch of a manned Mars exploration mission appears achievable as early as 1981, it can also be accomplished at any one of the roughly biennial launch opportunities following this date, provided essential precursor activities have been carried out.

Thus the understanding that we are ultimately going to explore the planets with man provides a shaping and focusing function for the space program while at the same time enabling sufficient flexibility in program content and permitting later decision on the specific date for this accomplishment.

The Space Task Group, in response to the President's request for a "Coordinated program and budget proposal," has therefore chosen this balanced program as that plan best calculated to meet the Nation's needs for direction of its future space activity. In reaching this conclusion we have considered international and domestic influences, weighed and placed in perspective science and engineering development, exploration and application of space, manned and unmanned approaches to space missions, and have appraised inter-agency influences. Principal objectives which describe this balanced program are discussed in the following section.

Program Objectives

Elements of the balanced program recommended by the Space Task Group can be identified within the following set of program objectives which define major emphases for future space activity:

- Application of space technology to the direct benefit of mankind
- Operation of space systems to enhance national security
- Exploration of the solar system and beyond
- Development of new capabilities for operating in space
- International participation and cooperation

1. Application of space technology to the direct benefit of mankind.

Focus: To increase utilization of space capabilities for services to man.

Programs directed toward the application of the Nation's space capabilities to a wide range of services, such as air and ocean traffic control, world-wide navigation systems, environmental monitoring and prediction (weather, pollution), resource survey (crops, water resources, geological structures, oceanography) and communications have great potential for improving the quality of life on this planet earth. Significant direct economic and social benefits from such

applications have been forecast. Major contributions to management of domestic problems and greater opportunities for international cooperation would result from an expanded space applications program.

2. Operation of space systems to enhance national security.

Focus: Enhance the defense posture of the United States thereby support the broader objective of peace and security for the world.

The Department of Defense is presently using space capabilities in the support of communications, weather forecasting, navigation, surveillance, mapping and for other functions. Such space activity has been not an end in itself, but a means for accomplishing functions in support of existing forces and missions. Military uses of space have proven effective and space systems are now contenders for specific applications and missions. Each military space mission should continue to be decided on a case-by-case basis in competition with ground, sea, and airborne systems and should reflect priority given to national defense with changing threats, arms limitation agreements, and U. S. policy reactions. Exploitation of the unique characteristics of space systems by the Department of Defense can provide increased confidence in the ability of this Nation to defend itself from any aggressor and assurance that space will be used for peaceful purposes by all nations.

3. Exploration of the solar system and beyond.

Focus: Increase man's knowledge of the universe.

Exploration of the solar system and observations beyond the solar system should be important continuing broad objectives of the Nation's space program. Many unanswered scientific questions remain about the planets, the interplanetary medium, the sun - both as a type of star and as a source of the earth's energy--and a variety of celestial objects--pulsars, quasars, x-ray and gamma ray sources and the like. Both ground-and space-based experiments and observational programs will contribute to the quest for answers to these questions. Space platforms provide several unique advantages--such as ability to observe across the range of wavelengths of the electromagnetic spectrum (rather than only through specific atmospheric "windows," which is the case from the ground), freedom from local environmental conditions, potential for continuous observations (no day-night cycle), ability to approach, orbit and land on extra-terrestrial bodies--and also disadvantages--high cost, inaccessibility for easy repair and servicing, long lead times for experiment modification; hence, careful balance between investments in space and ground experiments should be maintained.

The major elements of such a program should be:

a. Planetary exploration - unmanned planetary exploration missions continuing throughout the decade, both for science returns and, in the case of Mars and Venus--as precursors to later manned missions. The program should include progressively more sophisticated missions to the near planets as well as multiple-planet flyby missions to the outer planets taking advantage of the favorable relative positions of the outer planets in the late 1970's. Early missions to the asteriod belt and to the vicinity of a comet should be planned.

b. Astronomy, Physics, the Earth and Life Sciences - In each of these disciplines, extension of existing or planned unmanned programs promises continued high science return. There are additional significant opportunities for experiments in connection with manned earth orbital programs which should be exploited. Work in astronomy, physics and the life sciences, as well as work in the earth sciences and remote sensing, will form an essential part of the foundation for future applications benefits and will contribute to the broadening horizons of man as he acquires knowledge (and perhaps understanding) not only of his own planet but also about the rest of the universe.

c. Lunar exploration - Apollo-type manned missions to continue exploration of the moon should proceed. The launch rate should permit maximum responsiveness to new discoveries while maintaining mission safety and efficient utilization of support personnel. Early upgrading of lunar exploration capability beyond the basic Apollo level including enhanced mobility capability, and lunar rovers, is important to safe and efficient realization of significant returns over the longer term. An orbiting lunar station, followed by a surface base building upon earth orbital space station and space transportation system developments, could be deployed as early as the latter half of the decade. Extension of manned lunar activity beyond upgraded Apollo capability should include consideration of these options.

4. Development of new capabilities for operating in space.

Focus: Develop new systems for space operations with emphasis upon the critical factors of: (1) commonality, (2) reusability, and (3) economy.

Exploration and exploitation of space is costly with our current generation of expendable launch vehicles and spacecraft systems. This is particularly true for the manned flight program. Recovery and launch costs will become an even more significant factor when multiple re-visit and re-supply missions to an earth orbiting space station are contemplated. Future developments should emphasize:

- Commonality - the use of a few major systems for a wide variety of missions.
- Reusability - the use of the same system over a long period for a number of missions.
- Economy - for example, the reduction in the number of "throw away" elements in any mission; the reduction in the number of new developments required; the development of new program principles that capitalize on such capabilities as man-tending of space facilities; and the commitment to simplification of space hardware.

An integrated set of major new elements which satisfy these criteria are:

a. A space station module that would be the basic element of future manned activities in earth orbit, of continued manned exploration of the moon, and of manned expeditions to the planets. The space station will be a permanent structure, operating continuously to support 6-12 occupants who could be replaced at regular intervals. Initially, the space station would be in a low altitude, inclined orbit; later stations would be established in polar and synchronous orbits. The same space station module would also provide a permanent manned station in lunar orbit from which expeditions could be sent to the surface.

By joining together space station modules, a space base would be created. Occupied by 50-100 men, this base would be a laboratory in space where a broad range of physical and biological experiments would be performed.

Finally, the space station module would be the prototype of a mission module for manned expeditions to the planets.

Such an array of space station modules would be designed to utilize the space transportation system described below.

b. A space transportation system that will:

-- provide a major improvement over the present way of doing business in terms of cost and operational capability.

-- carry passengers, supplies, rocket fuel, other spacecraft, equipment, or additional rocket stages to and from orbit on a routine aircraft-like basis.

-- be directed toward supporting a spectrum of both DoD and NASA missions.

Although the concept of such a space transportation capability is not new, the promise of significant advances in rocket engine technology, additional experience in design for reentry conditions, and improved guidance, navigation and automated check-out systems

all appear to be achieving a state of maturity that will now enable such a development to proceed. An orderly, phased, step-by-step development program should be supported that includes as potential components:

(1) a reusable chemically fueled shuttle operating between the surface of the earth and low-earth orbit in an airline-type mode.

(2) a chemically fueled reusable space tug or vehicle for moving men and equipment to different earth orbits. This same tug could also be used as a transfer vehicle between the lunar-orbit base and the lunar surface.

(3) a reusable nuclear stage for transporting men, spacecraft and supplies between earth orbit and lunar orbit and between low earth orbit and geosynchronous orbit and other deep space activities.

c. Advanced Technology Development - In addition to the major vehicle developments listed above, a continuing program of investigation and exploration of new technology that can serve as the foundation for next generation systems is an essential component of the DoD, NASA and other agency programs. A broad and aggressive program to advance our capabilities to operate in space during the next decade and to set the stage for the decade to follow is needed. Advancements in biomedical research, nuclear power and propulsion, remotely controlled teleoperators, data management, multi-spectral sensors, communication and navigation technology, and experimental evaluation and demonstration of new concepts are examples of activity which should be emphasized.

5. International participation and cooperation.

Focus: To promote a sense of world community; to optimize international scientific, technical and economic participation; to apply space technology to mankind's needs; and to share the benefit and cost of space research and exploration.

To these ends, our international interests will be served best by (1) projects which afford maximum opportunities for direct foreign participation, (2) projects which yield economic and social benefits for other countries as well as ourselves and (3) activities in which further international agreement and coordination might usefully be employed.

The past decade has demonstrated that programs like Project Apollo are virtually unrivalled in their capacity to catch the world's imagination and interest, win extensive admiration and respect for American achievements, and generate a common human experience. The decade has demonstrated also that effective ways can be found to share the practical benefits of space with people everywhere, as in space meteorology and communications. Modest but significant levels of direct participation in space flight research and exploration have also been successfully achieved through cooperative projects. Future program plans must seek to continue and substantially extend this experience.

We should also devote special effort to meliorate, between the space powers and others, the increasing gap in technological capability and the gap in awareness and understanding of new opportunities and responsibilities evolving in the space age.

If international participation and cooperation are to be expanded in an important way, there will have to be (1) a substantial rising of sights, interest and investment in space activity by the other nations able to do so in order to establish a base for major contributions by them and (2) creation of attractive international institutional arrangements to take full advantage of new technologies and new applications for peoples in developing as well as advanced countries.

The most dramatic form of foreign participation in our program will be the inclusion of foreign astronauts. This should be approached in the context of substantive foreign contributions to the programs involved.

The form of cooperation most sought-after by advanced countries will be technical assistance to enable them to develop their own capabilities. We should move toward a liberalization of our policies affecting cooperation in space activities, should stand ready to provide launch

services and share technology wherever possible; and should make arrangements to involve foreign experts in the detailed definition of future U.S. space programs and in the conceptural and design studies required to achieve them.

We should consider three further steps:

1. The establishment of an international arrangement through which countries may be assured of launch services without being solely and directly dependent upon the U.S..

2. A division of labor between ourselves and other advanced countries or regional space organizations permitting assumptions of primary or joint responsibility for certain scientific or applications tasks in space.

3. International sponsorship and support for planetary exploration such as that which was associated with the International Geophysical Year.

The developing countries will be most attracted to (1) applications of space technology which serve their economic and social needs and (2) the development of international institutional arrangements in which they can participate along with the advanced countries. Some examples are:

1. Environmental studies and earth resource surveying via satellite;

2. Direct broadcast via satellite of TV instructional and educational programs;

3. Expanding arrangements to acquire and use meteorological data;

4. Training opportunities in space applications and space-related disciplines.

To the extent that future practical space applications are achieved there should be no significant technical obstacles to ensuring the sharing of benefits on a global basis. There will, however, be economic and political issues which require recognition and effective anticipation.

In the case of the USSR experience over the past ten years makes clear that the central problem in developing space cooperation is political rather than technical or economic. Numerous specific technical opportunities for cooperation with the Soviet Union have been identified and are available. Indeed, many of them have been put to the Soviet Union in various forms through the years with little

success. For example, we could formulate a series of graduated steps leading toward major cooperation. They would range from full and frank exchange of detailed space project results, at the lowest level, to prearranged complementary activities at the next level (e.g., mutual support of tracking requirements, coordinated satellite missions for specific tasks in space) and ultimately to fully integrated projects in which sub-systems could be provided by each side to carry out a total space mission of agreed character. The following possibilities merit serious consideration:

1. In space research -- earth orbital investigation of atmospheric dynamics and earth's magnetic field; astronomical observations from earth satellites or lunar stations; satellite observation of solar phenomena, and lunar and planetary exploration.

2. In practical applications -- coordination of a continuing network of satellites to provide data for world-wide weather prediction and early warning of natural disasters; the development of capabilities for earth resource surveying via satellites.

3. In manned flight -- bio-medical research, space rescue, coordination of experiments and flight parameters

for earth orbiting space stations, lunar exploration, and exchange of astronauts.

4. In tracking -- to supplement each others networks.

In view of the heavy commitment of the Soviets to planetary exploration and the difficulties which they have encountered in this program, this area appears to offer unusual opportunities to complement each other's capabilities.

IV. OPTIONS AND BUDGET PROPOSALS

The Space Task Group was asked to provide "definitive recommendation on the direction the U. S. space program should take in the post-Apollo period," through preparation of a "coordinated program and budget proposal." In the Section "Goals and Objectives," the Space Task Group has outlined the elements of this coordinated program.

We have also pointed out that there are upper and lower bounds to the funding which will support a viable, productive and well disciplined program. Between these bounds there are many options both in program content and in total funding required. In this section we will explore the range of these options and their resource implications.

Clearly, there are a number of factors outside the space program and the intrinsic merit of its goals and objectives that must be considered in determining the allocation of resources to the program. Demands of other domestic programs, international conditions, and state of economic health of our Nation are only a few of the major influences upon the specific budget for space in a given fiscal year.

Despite the highly variable nature of these influences, which produces a corresponding increasing uncertainty in projections of resource availability, it is important for planning purposes to look into the future and forecast the general nature of funding required to support decisions on content and pace of the program. Two basic questions arise. Is the Nation to exploit its existing capabilities, to expand those capabilities or reduce its participation in space activity? Is funding for space generally to remain at present levels, to increase dramatically or to decrease significantly below present levels?

We stand at a crossroads, with many sets of missions and new developments open to us and with three main avenues for funding to pursue these opportunities.

We shall discuss each of these general funding trends, their implications and program options within each.

For this analysis, NASA and DoD were requested to prepare a set of alternative proposals or options that would cover a range of future resource levels and be consistent with the goals and objectives recommended by the Task Group.

NASA, has presented Options A through D with annual funding requirements for each portrayed in Figure I. Timing of major mission accomplishments under the various options is indicated in Figure II. Each of these options, in order to be consistent with the full range of Task Group recommendations, result in funding trends either rapidly increasing or initially level and gradually increasing over the next few years. The Task Group determined that an additional option was needed, one that would illustrate the effect of significantly lower budget levels. An additional option, Option E, was constructed, with funding requirements plotted on Figure I for comparison with earlier options. It was concluded that, to achieve significantly lower budget levels, a manned flight program of the character described in Options A-D, with development of new capability, could not be supported, and further, if important increases in science and applications programs were to be pursued, no manned space flight program would be possible. We have chosen the latter alternative.

Options A and B are illustrative of a decision to increase funding dramatically and result in early accomplishment of the major manned and unmanned mission opportunities, including launch of a manned mission to Mars in the early 1980's, establishment of an orbiting lunar station, a 50 man earth-orbit space base and a lunar

COMPARISON OF PROGRAMS

(IN BILLIONS OF DOLLARS)

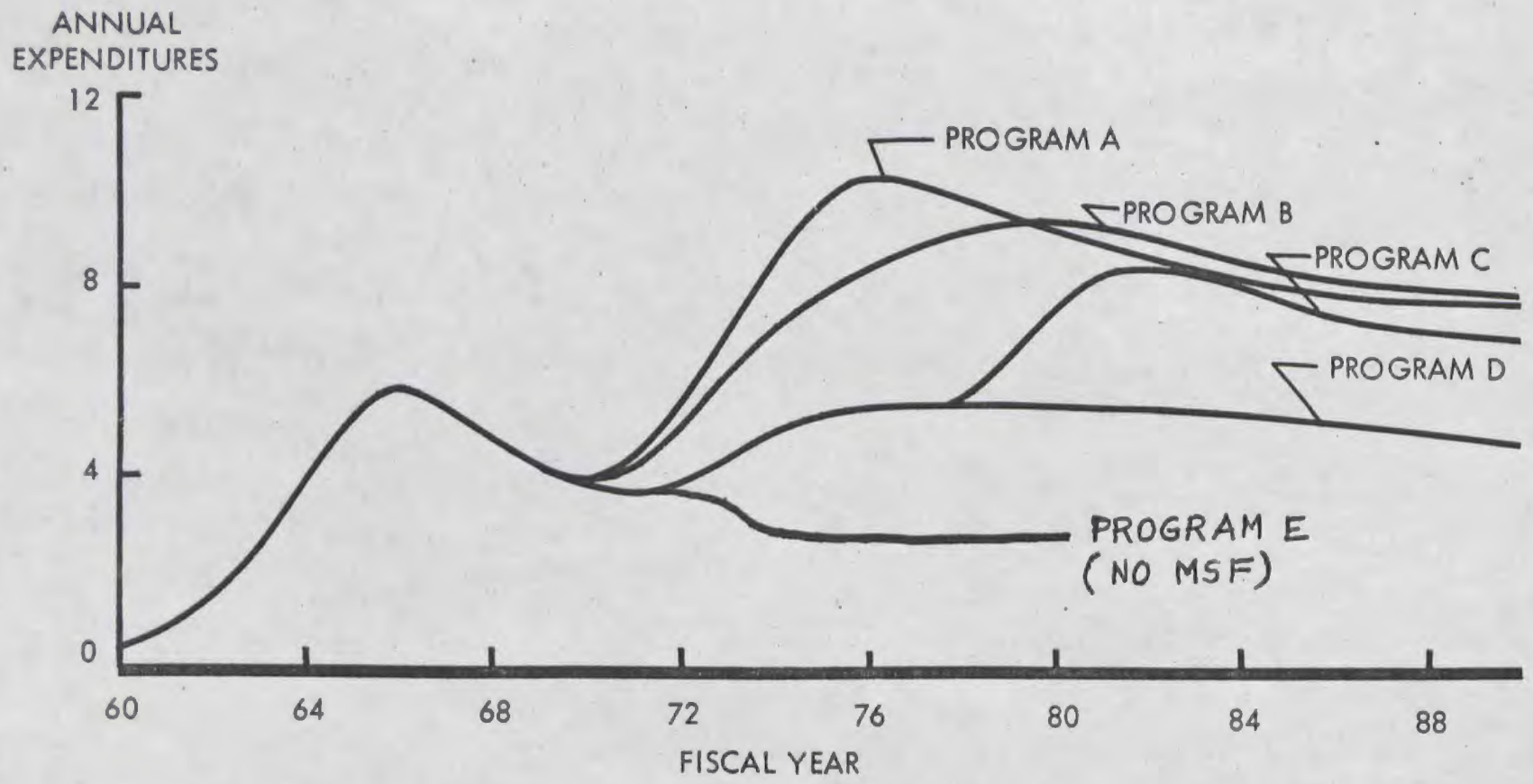

FIGURE I

FIGURE II

COMPARATIVE PROGRAM ACCOMPLISHMENTS

Milestones	Option A	Option B	Option C,D (*)
Space Transportation System			
Earth-to-Orbit Shuttle	1975	1976	1977
Nuclear Orbit Transfer Stage	1978	1978	1981
Space Tug	1976	1978	1981
Manned Systems			
Space Station (Earth Orbit)	1975	1976	1977
50-Man Space Base (Earth Orbit)	1980	1980	1984
100-Man Space Base (Earth Orbit)	1985	1985	1989
Lunar Orbiting Station	1976	1978	1981
Lunar Surface Base	1978	1980	1983
Initial Mars Expedition	1981	1983	C-1986 D-Open
Scientific			
Large Orbiting Observatory	1979	1979	1983
High Energy Astron. Capability	1973	1973	1981
Out-of-Ecliptic Survey	1975	1975	1978
Mars-High Resolution Mapping	1977	1977	1981
Venus-Atmospheric Probes	1976	1976	Mid-80's
Multiple Outer Planet "Tours"	1977-79	1977-79	1977-79
Asteroid Belt Survey	1975	1975	1981
Applications			
Earliest Oper. Earth Resource System	1975	1975	1976
Demonstration of Direct Broadcast	1978	1978	Mid-80's
Demonstration of Navigation/Traffic Control	1974	1974	1976

(*) OPTION E would include accomplishment of Scientific and Applications milestones at the A and B time scale, but not the Space Transportation System or Manned System milestones.

FIGURE II

surface base. Funding would rise from the present $4 billion level to $8-10 billion in 1976. Decision to proceed with development of the space station, earth-to-orbit shuttle and the space tug would be required in FY 1971. Firm decisions on other major systems or missions would not be needed until later years; for example, a decision to develop the Mars excursion module for an initial manned Mars expedition would not be required before FY 1974.

Options C and D illustrate a decision to maintain funding generally at or slightly above recent funding levels. These options are identical with the exception that Option C includes a decision to launch a manned planetary mission in 1986 and in Option D this decision is deferred. Both options demonstrate the effect of simultaneous development of the Space Transportation System and earth orbital space station module, each of which are expected to require peak expenditure rates of the order of $1 billion per year, and both options include a substantial increase in unmanned science and applications from present levels but less than that in Options A and B. Maintaining the unmanned program at the Option A and E level would require an average of a few hundred million dollars in additional funding. Decision to develop both space station and earth-to-orbit shuttle would be deferred until FY 1972, resulting in

initial availability for these systems in 1977. Similar delays would accompany other major milestones, with decision on the Mars Excursion Module occurring about FY 1978. Funding for both options would remain approximately level at $4 billion for the next two fiscal years and then would rise to a peak of $5.7 billion in 1976 - this increase reflecting simultaneous peak resource requirements of space station and space shuttle developments. Option C would have a later peak of nearly $8 billion in the early 1980's resulting from the manned Mars landing program.

Detailed description of NASA program Options A through D, with typical launch schedules and funding requirements are included in Attachment B.

Option E was chosen by the Space Task Group to illustrate a program conducted at funding levels significantly lower than at present. It is our judgment that, in order to achieve significantly reduced NASA budgets, it would be necessary to reduce manned space flight operations below a viable minimum level. Therefore, Option E has been constructed with the assumption of a hiatus in manned flight following completion of Apollo applications and follow-on Apollo lunar missions. It thus sacrifices for the period of such reduced budgets program objectives relating to development of new capability, and the contribution of continuing manned space flight to several of the other

program objectives recommended by the Task Group. Option E does, however, include a vigorous and expanded unmanned program of solar system exploration, astronomy, space applications for the benefit of man and potential for international cooperation. Funding for such a program would reduce gradually to a sustaining level of $2-3 billion depending upon the depth of change assumed for the supporting NASA facilities and manpower base.

The Space Task Group is convinced that a decision to phase out manned space flight operations, although painful, is the only way to achieve significant reductions in NASA budgets over the long term. At any level of mission activity, a continuing program of manned space flight, following use of launch vehicles and spacecraft purchased as part of Apollo, would require continued production of hardware, continued operation of extensive test, launch support and mission control facilities and the maintenance of highly skilled teams of engineers, technicians, managers and support personnel. Stretch-out of mission or production schedules, which can initially reduce total annual costs, would result in higher unit costs. More importantly, very low-level operations are highly wasteful of the skilled manpower required to carry out these operations and would risk deterioration of safety and reliability throughout

the manned program. At some low level of activity, the viability of the program is in question. It is our belief that the interests of this Nation would not be served by a manned space flight program conducted at such levels.

A similar set of DoD Options, A through C, were constructed to illustrate three basically different levels of activity.

Option A places heavy emphasis on the contribution of space systems to strategic deterrence and damage limiting, predicated on the view that the threat to United States security through 1985 will continue to evolve in an unmistakably strong and provocative fashion. Option A provides for a rapid build-up of military space capabilities into an operational force in being, andearly enhancement of national security. It also involves a rapid build-up of supporting technology for early exploitation. Option A could produce technical and operational benefits to NASA and other agencies earlier than now contemplated.

Option B provides a balanced posture which, for a time, protects the potential for all capabilities envisioned for Option A, but with a lower level of commitment. The rapid build-up of technology is retained in this option.

In Option B, moreover, the assumed threat is lower than that assumed for Option A. Consequently, the main emphasis of Option B is on communications, surveillance, and inspection. In addition, Option B minimizes resource requirements, does not require policy changes, and does not evoke international and political issues.

Option C provides a balanced program of military space activity at a lower level of system deployment than Options A and B, but still includes the technology and support effort necessary for contingency planning and those programs now considered to be reasonable and predictable requirements. It assumes no increase in the threat to national security. The primary elements of Option C are an evolution of existing space capabilities in communications, surveillance, and navigation, with somewhat limited deployments; Space Transportation System studies and experimentation; and a somewhat enlarged base of technology and study.

Annual resource requirements for the DoD options are shown in Figure III, and a detailed description of the DoD options is included in Attachment C.

In the options selected for NASA and DoD, resource requirements have been projected which represent a large number of decisions made in sequence over a number of years. Thus, the resource projections represent the upper envelope or sum of funds required to support these decisions. Many of these decisions are relatively independent - that is, an earth orbit space station module can be developed independently, without commitment to placing such a station in orbit around the moon, or sending such a module on a mission to Mars. In both of these examples, however, development of the space

RESOURCE REQUIREMENTS FOR DOD SPACE ACTIVITIES

(IN BILLIONS OF DOLLARS)

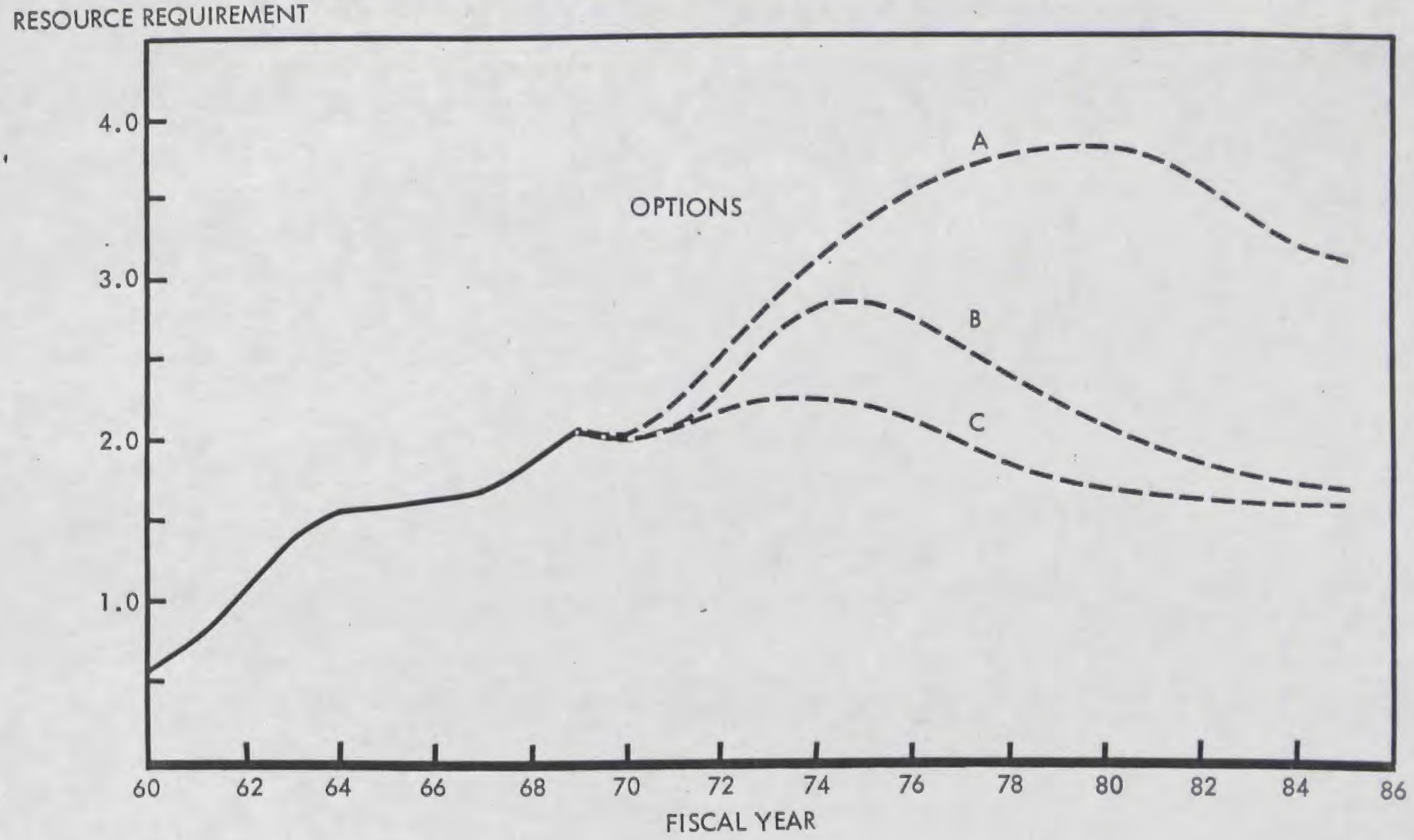

FIGURE III

station module would be the normal first step in achieving the lunar orbit station or Mars mission capability. An example of the set of major program elements and hence decision points inherent in the options described based upon Option C is included as Figure IV. A diversity of specific programs with varying emphasis can be constructed by delaying or shifting initiation of funding for these major elements relative to other new developments.

There is, therefore, a great amount of flexibility inherent in each of these options and adjustments to funding constraints may be made on a yearly basis as part of the normal budget process. Of course, once initiated, a specific major system development profits from continuity in funding - stretchout or major fluctuations in funding for specific projects generally increase the total costs associated with them.

The level of activity for the NASA and the DoD programs are essentially independent, that is, selection of Options A or B for NASA could be consistent with an Option C level of activity for DoD, since the DoD space activity will continue to be responsive to the needs of

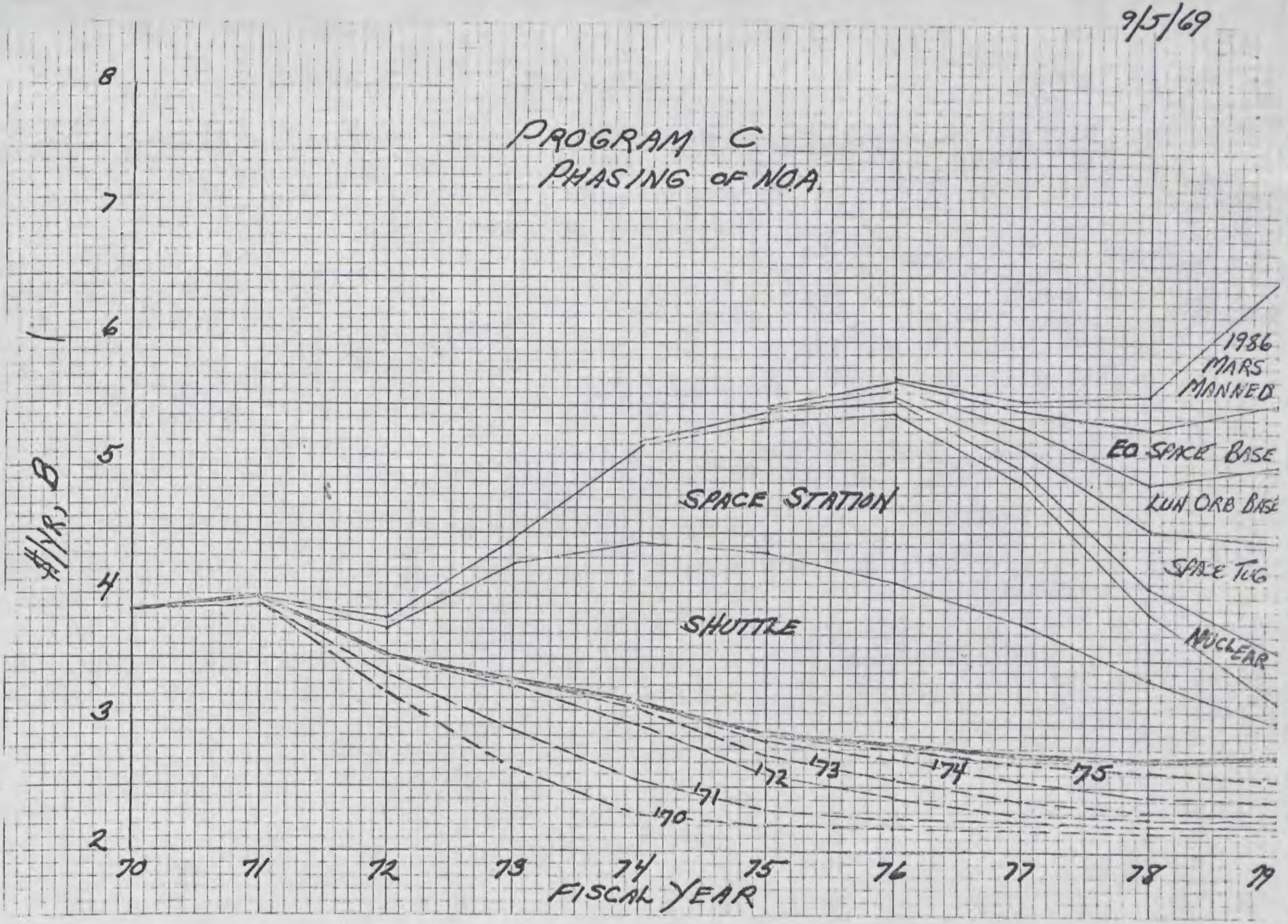
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FIGURE IV

national security and will be determined on a case-by-case basis under the budget and program established annually for the Defense Department. It is important, however, that continued coordination of the NASA and DoD programs and the effect of each agency's activity on a common industrial and facility base receive authoritative attention.

V. CONCLUSIONS AND RECOMMENDATIONS

The Space Task Group in its study of future directions in space, with recognition of the many achievements culminating in the successful flight of Apollo 11, views these achievements as only a beginning to the long-term exploration and use of space by man. We see a major role for this Nation in proceeding from the initial opening of this frontier to its exploitation for the benefit of mankind, and ultimately to the opening of new regions of space to access by man.

We have found increasing interest in the exploitation of our demonstrated space expertise and technology for the direct benefit of mankind in such areas as earth resources, communications, navigation, national security, science and technology, and international participation.

We have also found strong and wide-spread personal identification with the manned flight program, and with the outstanding men who have participated as astronauts in this program. We have concluded a forward-looking space program for the future for this Nation should include continuation of manned space flight activity. Space will continue to provide new challenges to satisfy the innate desire of man to explore the limits of his reach.

We have surveyed the important national resource of skilled program managers, scientists, engineers and workmen who have contributed so much to the success the space program has enjoyed. This resource together with industrial capabilities, government and private facilities and growing expertice in space operations are the foundation upon which we can build.

We have found that this broad foundation has provided us with a wide variety of new and challenging opportunities from which to select our future directions.

We have found questions about national priorities, about the expense of manned flight operations, about new goals in space which could be interpreted as a "crash program." Principal concern in this area relates to decisions about a manned mission to Mars. We conclude that NASA has the demonstrated organizational competence and technology base by virtue of the Apollo success and other achievements to carry out a successful program to land man on Mars within fifteen years. There are a number of precursor activities necessary before such amission can be attempted. These activities can proceed without developments specific to a Manned Mars Mission - but for optimum benefit should be carried out with the Mars mission in mind. We conclude that a manned Mars mission should

be accepted as a long-range goal and option for the space program, but unless option A is adopted that a specific date for such a mission need not be established at the present time.

We believe the Nation's future space program possesses potential for the following significant returns:

-- new operational space applications to improve the quality of life on earth
-- non-provocative enhancement of our national security
-- scientific and technological returns from the space investments of the past decade and expansion of our understanding of the universe
-- low-cost, flexible, long-lived, highly reliable, operational space systems with a high degree of commonality and reusability
-- international involvement and participation on a broad basis

Therefore, we recommend -

That this Nation accept the basic goal of a balanced manned and unmanned space program conducted for the benefit of all mankind.

To achieve this goal, the United States should emphasize the following program objectives:

- increase utilization of space capabilities for services to man, through an expanded space applications program
- enhance the defense posture of the United States and thereby support the broader objective of peace and security for the world through a program which exploits space techniques for accomplishment of military missions
- increase man's knowledge of the universe by conduct of a continuing strong program of lunar and planetary exploration, astronomy, physics, the earth and life sciences
- develop new systems and technology for space operations with emphasis upon the critical factors of: (1) commonality, (2) reusability, and (3) economy, through a program directed initially toward development of a new space transportation capability and space station modules which utilize this new capability.
- promote a sense of world community through a program which provides opportunity for broad international participation and cooperation.

As a focus for the development of new capability, we recommend the United States accept the long-range option or goal of manned

planetary exploration with a manned Mars mission before the end of this century as the first target.

In proceeding towards this goal, three phases of activity can be identified:

- initially, activity should concentrate upon the dual theme of exploitation of existing capability and development of new capability, maintaining program balance within available resources.
- second, an operational phase in which new capability and new systems would be utilized in earth-moon space with groups of men living and working in this environment for extended periods ot time. Continued exploitation of science and applications would be emphasized, making greater use of man or man-attendance as a result of anticipated lowered costs for these operations.
- finally, manned exploration missions out of earth-moon space, building upon the experience of the earlier two phases.

Schedule and budgetary implications associated with these three phases are subject to Presidential choice and decision at this time with detailed program elements to be determined in a normal annual budget and program review process. We believe the initial phase

would require an investment in the NASA program at a level no less than the anticipated FY 70 budget. Should it be decided to develop concurrently the space transportation system and the modular space station, a rise of annual expenditures to approximately $6 billion in 1976 is required. A lower level of approximately $4-5 billion could be met if the space station and the transportation system were developed in series rather than in parallel.

For the Department of Defense, the space activities should be subject to continuing review relative to the Nation's needs for national security. Such review and decision processes are well established. However, the planned expansion of the DoD space technology effort and its documented interest in the Space Transportation System demands continued authoritative coordination through the Aeronautics and Astronautics Coordinating Board to assure that the national interests are met.

The Space Task Group has had the opportunity to review the national space program at a particularly significant point in its evolution. We believe the new directions we have identified can be both exciting and rewarding for this Nation. The environment in which space program is viewed is a vibrant, changing one and the new

opportunities that tomorrow will bring cannot be predicted with certainty. Our planning for the future should recognize this rapidly changing nature of opportunities in space.

We recommend that the National Aeronautics and Space Council be utilized as a mechanism for continuing reassessment of the character and pace of the space program.