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Last Updated: 08/30/2023

THE WHITE HOUSE
WASHINGTON

12/17

Mike -

Dan said to send
this to you -

FYI -

Betty

CABINET AFFAIRS STAFFING MEMORANDUM

ALL CABINET MEMBERS	Action	FYI		Action	FYI
Vice President	☒	☐	CEQ	☐	☐
State	☒	☐	OSTP	☐	☐
Treasury	☒	☐		☐	☐
Defense	☒	☐		☐	☐
Justice	☒	☐		☐	☐
Interior	☐	☐		☐	☐
Agriculture	☒	☐	Powell	☒	☐
Commerce	☒	☐	Cribb	☒	☐
Labor	☒	☐	Bauer	☒	☐
HHS	☐	☐	Dawson (For WH Staffing)	☒	☐
HUD	☐	☐		☐	☐
Transportation	☒	☐		☐	☐
Energy	☒	☐		☐	☐
Education	☐	☐		☐	☐
Chief of Staff	☒	☐		☐	☐
OMB	☒	☐		☐	☐
UN	☐	☐		☐	☐
USTR	☒	☐		☐	☐
CEA	☒	☐	Executive Secretary for:		
			DPC	☐	☒
CIA	☒	☐	EPC	☒	☐
EPA	☐	☐		☐	☐
GSA	☐	☐		☐	☐
NASA	☒	☐		☐	☐
OPM	☐	☐		☐	☐
SBA	☐	☐		☐	☐
VA	☐	☐		☐	☐

RETURN TO:

☐ Associate Director
Office of Cabinet Affairs
456-2800
(Room 235, OEGB)

THE WHITE HOUSE
WASHINGTON

December 16, 1987

MEMORANDUM FOR THE ECONOMIC POLICY COUNCIL

FROM: EUGENE J. McALLISTER *EM*

SUBJECT: Agenda and Paper for the December 17 Meeting

The agenda and paper for the December 17 meeting of the Economic Policy Council are attached. The meeting is scheduled for 11:00 a.m. in the Roosevelt Room.

The single agenda item will be a report from the Working Group on Space Commercialization. The Working Group has prepared for the Council's consideration a number of proposals for advancing commercial space efforts. A paper from the Working Group is attached.

Attachment

ECONOMIC POLICY COUNCIL

December 17, 1987

11:00 a.m.

Roosevelt Room

AGENDA

1. Report from the Working Group on Space Commercialization

December 16, 1987

COMMERCIAL SPACE INITIATIVE

A quarter of a century ago, U.S. technological leadership in landing a man on the moon and returning him safely to Earth pushed back the frontier of space, providing opportunities for new scientific discoveries and a myriad of commercial activities in Earth's orbits and potentially on the lunar surface as well.

The Administration remains committed to pushing back farther the frontier of space through continued exploration of the solar system. The technology development necessary for future missions will contribute importantly, as it has done in the past, to the U.S. commercial sector's competitiveness in space activities. However, vigorous commercialization of space -- as well as U.S. leadership in space overall -- ultimately will depend upon the United States' ability to assure reliable, low cost, and continual access to space and reduce the cost of space systems and infrastructure. These aims can be accomplished through traditional belief and reliance on the vitality and productivity of the U.S. private sector. In effect, the free enterprise system must be expanded to space.

The Working Group on Space Commercialization has developed an initiative for the Council's consideration. This initiative has three components:

- o Building a Solid Talent and Technology Base
- o Assuring a Highway to Space
- o Promoting a Strong Commercial Presence in Space

I. BUILDING A SOLID TALENT AND TECHNOLOGY BASE

U.S. civil and commercial space leadership and competitiveness are highly dependent upon a sophisticated, evolutionary aerospace and space technology enterprise. This foundation will enable further exploration of the solar system and scientific discoveries and make routine commercial use of space practical.

In addition, while the national pool of talent drawn to these endeavors will inevitably depend upon market opportunities in the coming years, it is important that young people and their teachers have opportunities to become familiar with aerospace and

space-related careers and the link between excellence in these disciplines and basic math, science, and computer skills. In this regard, it is interesting to note that the scientists, engineers, and technicians necessary to operate the Space Station are in elementary school today.

Proposal 1: The Administration will fund the Pathfinder technology development program beginning in FY 1989. (OMB currently has proposal under review in the budget process).

Project Pathfinder is a research and technology program that will enable a broad range of manned and/or unmanned missions beyond Earth's orbits. The Administration proposed initiating in the FY 1988 a predecessor to Pathfinder: the Civil Space Technology Initiative (CSTI). This initiative is intended to foster development of technologies critical to U.S. missions in the Earth's orbits.

In announcing Pathfinder, the Administration will stipulate a number of commercialization policies to apply to both the Pathfinder and CSTI programs:

- consistent with Administration policies and related statutes, federally funded contractors, universities and Federal labs will own the rights to any patents and technical data including copyrights resulting from this program;
- proposed technologies and patents available for licensing will be housed in a designated Pathfinder library; and
- when contracting for commercial development of technological products, NASA will specify its requirements in a manner that provides contractors with maximum flexibility to pursue innovative and creative approaches.

Project Pathfinder will be organized around four major focuses:

A. Exploration Technology,
including U.S. capability to develop:

- (a) planetary rover;
- (b) sample acquisition, analysis and preservation;
- (c) surface power; and
- (d) optical communications.

These technologies would be important to gathering data for robotic and manned missions to the moon, Mars, or other planets.

B. Operations Technology,
including U.S. capacity to develop:

- (a) autonomous rendezvous and docking;
- (b) resources processing pilot plant;
- (c) in-space assembly and construction;
- (d) cryogenic fluid depot; and
- (e) space nuclear power.

These technologies would augment existing U.S. capabilities, while reducing the cost of space infrastructure and operations for Earth orbit missions or the robotic and manned exploration of the Solar System.

C. Humans-in-Space Technology,
including:

- (a) extra-vehicular activity;
- (b) human performance; and
- (c) closed-loop life support.

These technologies would provide essential engineering systems to enable effective performance and good health during long-duration missions.

D. Transfer Vehicle Technology,
including:

- (a) chemical transfer propulsion;
- (b) cargo vehicle propulsion;
- (c) high-energy aerobraking;
- (d) autonomous lander systems; and
- (e) fault-tolerant systems.

These technologies would provide critical logistics capability, while reducing the cost and risk for advanced transportation systems essential for a range of missions including Earth-orbiting science and the robotic and manned exploration of the Solar System.

RESEARCH

Proposal 2:

The Administration will establish a new Federal-industry-university organization affiliated with the NASA Office of Commercial Space Programs to encourage a broader range of microgravity research opportunities for Federal, university, and commercial researchers. Federal agencies represented in the organization will include NASA, NSF, NIH, NBS, and other interested agencies.

*General idea
good - Needs
fleshed out
by 6/6/77
for sets at 7/77*

This organization will have among its activities the following:

- a. Encouraging and facilitating Government leases of commercial vehicles and facilities, e.g. Spacehab and ISF, with microgravity environments;
- b. Developing a central mechanism to facilitate Federal, university, and commercial researchers' access to commercial R&D services, including payload design consulting and launch services;
- c. Facilitating through peer review access to limited research opportunities in the Shuttle and Space Station;
- d. Examining and recommending proposals for a Federal commercial launch voucher program, enabling Federal agencies to fund broader levels of microgravity research requiring a space launch.

EDUCATION

Proposal 3: NASA will expand its two week workshop program for high school science and math teachers to include junior high and elementary teachers. This will provide competitive opportunities for teachers to visit NASA field centers and selected aerospace industrial and university facilities.

The number of teachers annually participating in this program would increase from 200 to 1,000 at an annual cost of \$1.25 million.

Proposal 4: NASA will double the fellowship program for graduate and undergraduate students pursuing space science and engineering authorized in the FY 1988 budget National Space Grant College Act from the current 300 to 600 by 1990.

*2 letters in
NSF. Grant refers
workshop*

Doubling the number of fellowships would increase the cost of the program from \$5.2 million per year to \$10.8 million.

NOTE: NASA has not included these new education spending proposals in its FY 1989 budget request. If the Council recommends these new proposals, NASA requests that the funding be added to its budget -- rather than absorbed in its budget.

Proposal 5: NASA, NSF, and DoD will contribute materials and classroom experiments for coordination and distribution by the Department of Education to requesting schools for use in school development of "tech shop" programs and courses. NASA's Office of Commercial Space Programs will encourage corporate cost sharing of this program.

Proposal 6: As part of a possible Education Initiative, Federal agencies will encourage employees, including scientists, engineers, and technicians in aerospace and space related fields to take a sabbatical year to teach in any level of education in the United States under the Program.

II. ASSURING A HIGHWAY TO SPACE

The interruption in the Shuttle system has created an opportunity for a private commercial launch industry to develop. The private sector was given a big boost in August 1986 when the President directed NASA to remove certain commercial and foreign payloads from the Shuttle manifest.

The commercial expendable launch vehicle industry now includes seven companies. The Department of Transportation estimates that the U.S. commercial launch sector has committed itself to non-recurring investments of more than \$400 million in facilities and equipment and more than \$1 billion in recurring expenditures to support commercial space transportation.

Long term competitiveness of the U.S. commercial launch industry will largely depend upon the U.S. sector's ability to reduce the costs associated with space launches and the nature of foreign launch competition, e.g. Europeans, Soviet Union, China, and Japan, much of which is currently subsidized. The President has directed USTR to begin international negotiations to ensure a level international playing field in commercial launch services.

The Working Group has identified several additional steps the Administration might take to ensure the development of the private U.S. commercial launch industry:

Proposal 7: All U.S. Government agencies will procure necessary ELV launch services directly from the private sector to the fullest extent feasible. (Implementing guidance will be contained in the forthcoming NSDD.)

Proposal 8: The Administration will consult with the commercial sector on the construction of commercial launch facilities separate from facilities owned by the DoD and NASA, and the

potential use of such facilities by the Federal Government (This proposal suggests the Federal Government may either provide subsidies for constructing commercial launch facilities and/or commit to purchase launch services at these facilities.)

*Prohibited by law
otherwise ok*

Proposal 9: NASA and DoT will explore the possibility of providing a one time launch voucher that can be used to purchase private sector launches by requesting owners of secondary payloads that have a current agreement for a Shuttle launch. The voucher cannot be applied to payloads requiring the unique capabilities of the man-rated Shuttle.

Study only

Proposal 10: The Administration will also take administrative actions and offer statutory proposals to address the insurance concerns of the commercial launch industry.

*No identification of package
No government identification*

A. Third-party Liability: Consistent with Administration tort policy, the Administration will propose eliminating awards to third parties for punitive and pain and suffering damages resulting from commercial launch accidents.

B. Government Property Damage Liability: The liability of commercial launch operators for damage to Government property arising from a launch accident shall be limited to the level of insurance required by DoT pursuant to the Commercial Space Launch Act. Above this level, the Government will waive its right to recover for damage to Government property. Below this level, the Government shall waive its right to recover for damage to Government property where such damage is caused by the willful misconduct of Government employees or Government contractors.

*Use of measuring standard
in addition to willful misconduct*

III. PROMOTING A STRONG COMMERCIAL PRESENCE IN SPACE

Federal investment in space technology and ventures has provided over the years the foundation for several commercial space industries, including communication and remote sensing satellites, launch services, and materials processing. Although Government continues to be the primary source of funding for technology advances, increasing foreign competition and the costs of development and operation of space vehicles and facilities suggests that the key to U.S. leadership and competitiveness in space lays ultimately with the vitality and productivity of the

private sector. This means shifting from Federal "commercialization" of space through primarily technology spin-offs to Federal encouragement of commercial development and management of space systems and infrastructure.

In addition to policies regarding space commercialization enumerated in the proposed National Security Decision Directive on National Space Policy, the Working Group on Space Commercialization has identified the following proposals:

Proposal 11: The Administration will announce a Federal commitment to the Industrial Space Facility (ISF) developed by the commercial sector. The Federal commitment will include the following:

*Working Group
look at this whole
section more closely.*

- a. The Federal Government will commit to a minimum \$140 million lease agreement per year for five years.
- b. The Federal lease agreement will begin on the date that NASA has agreed to launch the facility, regardless of whether the launch occurs contingent upon the facility being otherwise ready for launch on that date.
- c. Within thirty days NASA will develop and forward a plan for the use of ISF facility. Pursuant to this plan, NASA and ISF will establish a mutually agreed initial launch date.

NASA will make a "best effort" to service the industrial facility (three times per year) using the Shuttle system. NASA has already agreed to defer payments for these launches until the facility generates a revenue stream or two years after the initial launches.

Proposal 12: The Administration will announce a Federal commitment to a commercially developed, owned, and managed pressurized Shuttle middeck module: Spacehab.

*W.G. should
examine the
one too*

Spacehab modules are pressurized metal cylinders that fit in the Shuttle payload and connect to the crew compartment through the orbiter airlock. These modules take up approximately two tenths of the payload bay and increase the pressurized living and working space of orbiters by approximately 1,000 cubic feet. The area of the Shuttle where Spacehab fits is ideal for

microgravity research. In addition, the modules can serve as additional habitation for crew and specialists. The facility is intended to be ready in mid-1991.

The Federal commitment will include the following:

- a. A "best effort" to manifest the modules on the Shuttle up to three times per year, depending upon customer demand for Spacehab.
- b. A NASA commitment to lease part or all of the Spacehab facility primarily to work off its backlog of secondary R&D payloads.

An alternative to proposals 11 and 12 is to indicate a willingness to contract with private sector space facilities and solicit proposals.

Domestic only

Proposal 13: NASA will make expended Shuttle external tanks available to all feasible private sector endeavors, without necessarily recovering the cost of the tanks, over the next five years, subject to national security, international obligations, and public safety restrictions. NASA will provide any necessary technical or other assistance to these endeavors on a direct cost basis. If private sector demand is sufficient, NASA may auction the external tanks.

14 & 15 need more work. They are relatively new items

Proposal 14: The Government will foster a more competitive environment in satellite telecommunications by: (1) ending the FCC's "balanced loading" policy which now regulates the share of AT&T's international voice traffic that must be routed through INTELSAT, regardless of the cost of alternative routing; (2) introducing and advocating reforms within INTELSAT that will make its operations consistent with a competitive facilities marketplace; and (3) encouraging other nations to increase the competitive access to international facilities from within their territories.

5. Sprinkle for "let market place work" End monopoly
Should we withdraw from INTEL SAT Decision for FCC

SDI Problems here

Proposal 15: NASA will revise its Guidelines on commercialization of the Space Station to clarify and strengthen its commitment to private sector investment in the Space Station program. To underscore this commitment, NASA would announce, through a Statement of Interest in the Commerce Business Daily early in 1988, that it is prepared to purchase commercial goods and services to the

fullest extent feasible for development, operations, and logistics support of the Space Station, where such goods and services: (1) are not already being contracted for; and (2) are part of the approved program plan. Such goods and services would be privately developed and financed, and would fall into three categories:

- services, i.e. support for operations and logistics (includes items such as waste disposal, data and communications management, engineering support services);
- space transportation for assembly and servicing, which would include options for heavy-lift launch or man-rated ELV support; and
- equipment and components not already contracted for.

[NASA has proposed the following alternative formulation for Proposal 15: "NASA will, in consultation with OMB, review and as necessary revise its Statement on commercialization of the Space Station to re-emphasize its commitment to purchasing commercially available goods & services to the fullest extent feasible. NASA will take steps to assure that the Statement receives broad distribution, including publication in the Commerce Business Daily."]

NASA's current policy "welcomes and encourages participation" in the Space Station program by the private sector. The policy only states that NASA "will entertain proposals for commercial development and operations." This policy statement is not of sufficient strength that the private sector will make the necessary investments in development of space infrastructure.

Thus, it is important that there be specific and strong guidance to NASA that privatization of some aspects of the Space Station is desirable not only for the encouragement of space commercialization, but also to help maintain a reasonable schedule for development, deployment, and operations in the face of severe fiscal constraints on the Federal budget.

The private sector would finance the development, production, and operation of its elements, with

the Federal Government, through NASA, acting as the customer. Joint government-industry ventures could also be considered. In all cases, the commercial partner would own all rights to resulting technologies, with royalty-free use by the government for its own purposes.

Private sector proposals will be evaluated on the basis of criteria including amount of private sector investments and the degree of risk sharing.

Proposal 16: NASA will announce performance safety and schedule requirements, and provide an opportunity for a crew emergency return vehicle (CERV) to be designed, built, and operated by the commercial sector. (Note: A decision to build the CERV may be pending for some months yet.)

Further Work

The Working Group will be working over the coming months to assess the feasibility of a lunar base developed and managed by the private sector.

In addition, the forthcoming NSDD commissions a study to explore the means whereby the nation's private capital resources can be enlisted in order to support the space goals that lend substance and credibility to (continuing) United States space leadership.

INDUSTRIAL SPACE FACILITY

The Administration will announce a Federal commitment for services such as the Industrial Space Facility (ISF) developed by the commercial sector. The Federal commitment will include the following:....[see Proposal 11]

Background

The Industrial Space Facility (ISF) is a privately financed, constructed and operated space platform, proposed by Space Industries, Inc. and Westinghouse. The ISF will be launched and serviced by the shuttle and may be used as a: manufacturing facility, assembly platform, test bed, laboratory, power source or storage facility. The ISF module, when docked to the shuttle, provides a shirtsleeve work space to conduct manned research or maintenance activities. It supports automated research and processing payloads when orbiting in a free-flying mode. The ISF could be launched as early as 1991; it is currently manifested on the shuttle for 1992.

The ISF can serve as a: shuttle enhancement by extending the shuttle's on-orbit duration and providing additional power, a shirt-sleeve work space and storage space; space station pathfinder by offering a test facility for systems, user equipment, logistics and operating procedures and by extending shuttle on-orbit duration during space station build-up; defense research and operations facility by accomodating special purpose equipment and providing access to open space, short-term high-power surges and secure controlled integration and operations; material sciences laboratory by supporting either manned or automated experiments and allowing on-orbit reconfiguration and servicing.

The Space Industries Partnership has already raised \$30 million for design and development work. It plans to raise an additional \$200 million in equity investment and \$475 million in debt to deliver one fully functional ISF on orbit. The Space Industries Partnership has an agreement with NASA to provide 3 shuttle flights on a deferred payment basis.

Analysis

Government-created risks represent barriers to attracting debt financing into commercial space ventures. In the case of ISF, private debt markets are unable to assume the risk of timely shuttle launches, overall shuttle performance and the commercial risk associated with insufficient user contracts. Consequently, necessary debt capital is unavailable unless the government directly or indirectly assumes responsibility for timely shuttle performance and for providing a long-term commitment to purchase services sufficient to secure commercial financing. The Space Industries Partnership will assume responsibility for timely delivery and on-orbit operations of the ISF and will assume cost overrun risks by providing basic on-orbit services at fixed rates.

Pros

- o ISF represents a dramatic privatization initiative, involving \$250 million of private capital at risk to help build the nation's space infrastructure.
- o The proposed approach (a fixed-price government service contract) is an efficient way to stimulate private investment and innovation in space. It is a fiscally responsible way to help maintain space leadership.
- o The U.S. will have a permanent, man-tended, commercial space facility in orbit in 1992--put there with private capital--which can, among other things, actively support space station development activities.
- o Successful deployment of ISF will help break the current logjam in commercial space development and encourage other large-scale entrepreneurial space ventures.
- o It is expected that a competitive market will develop as the initial contract period helps establish the commercial viability of on-orbit services. [Note: the government service contract covers only a portion of the ISF to facilitate debt financing. The remainder must be sold to commercial customers if the Partnership is to break even. The venture

will be profitable when ISF facilities are expanded to support more customers.]

Cons

- o Neither NASA nor DoD has acknowledged a requirement for a facility like ISF, but they might have uses for such a facility if it were available.
- o A government service contract of this magnitude should be awarded competitively, even though doing so may constitute an expropriation of a privately financed development effort.
- o The U.S. government cannot establish firm launch dates beyond 1990 at this time even for its own flights.
- o Shuttle performance requirements for the ISF may require additional investments for shuttle improvements.

THE WHITE HOUSE

WASHINGTON

December 10, 1987

MEMORANDUM FOR WORKING GROUP ON COMMERCIAL SPACE

FROM: EUGENE J. McALLISTER *EM*
SUBJECT: Commercial Space Initiative

I have attached a narrowed list of options without background information as a basis for discussion tomorrow at a meeting of the Working Group for principals plus one staff person Friday, December 11, at 1:30 p.m. in room 248 of the Old Executive Office Building.

I anticipate a meeting of the Economic Policy Council during the week of December 14.

Dec 11/12/2022
DECLASSIFIED UPON REQUEST
OF CLASSIFIED ENCLOSURE(S)

~~CONFIDENTIAL~~

DECLASSIFIED

Authority NBC Waiver

BY dr - 11/17/2022

~~CONFIDENTIAL~~

DRAFT

December 10, 1987

Proposed Commercial Space Initiative

I. ENCOURAGING A VIGOROUS U.S. COMMERCIAL SPACE LAUNCH INDUSTRY

A. Insurance

Δ to eliminate pain sugg
Proposal 1a: The Administration will propose a statutory cap of \$ million on awards to third parties for punitive and pain and suffering claims resulting from commercial launch mishaps. NASA's indemnification policy will symmetrically reflect this policy.

~~Proposal 1b: The Administration will propose a statutory cap on awards to third parties at the level of "probable maximum loss" (PML). Total damages that could be awarded to all plaintiffs in connection with a single launch mishap could not exceed this amount. DOT in consultation with other agencies would set PML amounts before launches.~~

Proposal 2a: The Administration will establish a "shared liability" standard whereby the Government will accept liability for damages resulting from commercial launch mishaps at Air Force ranges to the extent that damages are caused by Air Force negligence. In addition, commercial launch firms would only have to insure against estimated maximum probable loss of Air Force property used in direct connection with launches. *gross* *per DoD* *Tross* *govt*

~~Proposal 2b: The Administration will establish a "cross waivers" or no fault standard for determining liability for damages resulting from mishaps at Air Force ranges. In addition, commercial launch firms would only have to insure against estimated maximum probable loss of Air Force property used in direct connection with launches.~~

B. Government Reliance on Commercial Vehicles

consistent w/
Proposal 1: The DoD will (where feasible as defined in the NSDD on National Space Policy) procure commercial launch services, rather than rockets themselves, for its launch needs.

DRAFT

Proposal 2:

*cost out coverage:
all payload
not
reimburse*

NASA will inventory its secondary and primary R&D payloads pending a Shuttle Launch and provide a one time launch voucher for owners of those payloads who can launch their proposed experiments and projects on a commercial U.S. expendable launch vehicle.

II. BUILDING A SCIENCE AND TECHNOLOGY BASE

Proposal 1:

The Administration will fund the Pathfinder technology development program. In addition, the Administration will announce the following commercialization policies for Pathfinder and its predecessor the Civil Space Technology Initiative funded in FY 1988 at \$134 million:



Consistent with Administration policies and related statutes, federally funded contractors and universities and Federal labs will own the rights to any patents and technical data including copyrights resulting from this program;



Proposed technologies and patents available for licensing will be housed in a designated Pathfinder library;



In contracting for commercial development of these technologies, NASA will specify desired outcome, i.e. performance, rather than design, permitting contractors to develop the latter.

Proposal 2:

The Administration will establish a new administrative entity: a National Space Research (Conduit or Center). This entity would:

1. Act as a broker for Federal agencies leasing the Industrial Space Facility (ISF);
2. Encourage and coordinate Federal space-related R&D, including potential contributions from NSF, NIH, DoE, and DoD as well as NASA, and encourage universities and commercial R&D in space and ground related facilities;
3. Coordinate a Federal launch voucher program for R&D using expendable launch vehicles and related recovery technology or the Shuttle for those agencies providing grants for this purpose.
4. Select from among applicants for space-based R&D time in the Space Station.

~~CONFIDENTIAL~~

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III. ENSURING HUMAN TALENT IN SPACE ENDEAVORS

Proposal 1: As part of the Administration's initiative in developing materials and experiments for States and schools to establish "tech shop" courses, NASA, NSF, and DoD (~~Air Force~~) will contribute materials and classroom experiments to be coordinated and distributed to requesting schools by the Department of Education. NASA's Office of Commercial Space Programs will also encourage commercial contributions or cost sharing for this program.

Proposal 2: As part of the Administration's initiative in increasing opportunities for exchanges of Federal employees and teachers, NASA, Air Force, and other aerospace and space related agencies will permit Federal employees to take a sabbatical year to teach in any level of education in the U.S.

IV. ENCOURAGING PIONEERING COMMERCIAL EFFORTS IN SPACE

Proposal 1: The Administration will announce a commitment to a proposed Industrial Space Facility (ISF). This commitment would include the following:

1. A Federal leasing commitment for approximately \$140 million *per year for 5 years* for 70 percent of the facility). The new National Space Research (Conduit or Center) would procure this lease space on behalf of one or more Federal agencies; and
2. Launches on the Shuttle at a date(s) certain necessary for assembly of the ISF. The Government would stipulate that it will pay a penalty fee approximating the Government ISF lease commitment should it fail to meet these launch commitment.

Proposal 2: NASA will make the Shuttle's external tanks available to all feasible private sector endeavors without cost over the next five years. NASA will also provide any necessary technical assistance to these endeavors.

Proposal 3: The Administration will announce a commission to examine the feasibility of a private sector lunar base. The commission will report back to the President by July 1988. Their report will include a recommendation on how to further pursue this objective.

~~CONFIDENTIAL~~

V. PRIVATIZATION OF SPACE INFRASTRUCTURE INVESTMENT

Proposal 1a: The Air Force will inventory its existing launch pads, towards the goal of declaring a certain number of those facilities as surplus and auctioning them off to the commercial sector.

Proposal 1b: The Administration will provide a subsidy of _____ to cost share with one State and the commercial sector the construction of commercial launch facilities separate from Air Force facilities.

Proposal 2: The Administration will announce performance needs for a crew emergency return vehicle (CERV) to be designed and managed by the commercial sector. A criteria for awarding the contract will be that the proposed vehicle (1) be developed at a cost lower than possible were the Federal Government to develop it; and (2) have a significant commercial use(s).

Proposal 3: NASA will announce candidate areas for commercial development, operations, and logistics support of the Space Station. These would include:

- o Logistics vehicles and services:
 - fluid resupply
 - waste disposal
 - product changeout and return
- o Engineering support services (e.g. on-orbit equipment testing, calibration, repair and maintenance)
- o Ground-based telescience
- o Man-tended free flying laboratories
- o On-orbit operations and training
- o Data and communications management
- o User equipment consortium for orbital equipment

The development and production of these items would be financed by the commercial sector and purchased by the Federal Government, consistent with Administration policies preferring the procurement of services, or leased by the Federal Government. Joint Federal-commercial ventures would also be considered. In such cases, the commercial partner would own all rights to

DRAFT

resulting technologies and data, with the Federal Government having the right to use these royalty-free. Proposals would be judged on the basis of technical merit, cost, amount of commercial sector investment and subsequent use, degree of commercial risk sharing, etc. This practice would be continued throughout the life of the Space Station Program.

Proposal 4: The Federal Government will make a clear commitment to purchase its remote sensing data, subject to national security restraints, from the private sector. The Administration will also state its intention to continue to purchase remote sensing data, rather than a next generation LANDSAT satellite.

Proposal 5: The Administration will formally cease its support for monopoly status of the U.S. national satellite system. This would be achieved through (1) ending the FCC's "balanced loading policy"; and (2) lifting restrictions on separate system access to the "public switch network".

~~CONFIDENTIAL~~

NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

*Space
policy*

0382

January 22, 1988

MEMORANDUM FOR

MR. DONALD GREGG
Assistant to the Vice President
for National Security Affairs

MR. H. LAWRENCE SANDALL
Executive Secretary
Central Intelligence Agency

MR. MELVYN LEVITSKY
Executive Secretary
Department of State

MR. MICHAEL DRIGGS
Assistant to the President
for Policy Development

MR. ROBERT B. ZOELLICK
Executive Secretary
Department of the Treasury

RADM JOSEPH C. STRASSER
Office of the Chairman
Joint Chiefs of Staff

COLONEL WILLIAM M. MATZ
Executive Secretary
Department of Defense

MR. WILLIAM R. STAPLES
Executive Secretary
Arms Control and Disarmament Agency

MR. GERALD J. MCKIERNAN
Chief of Staff
Department of Commerce

MR. JONATHAN F. THOMPSON
Executive Assistant to the Director
Office of Science and
Technology Policy

MS. RUTH KNOUSE
Director, Executive Secretariat
Department of Transportation

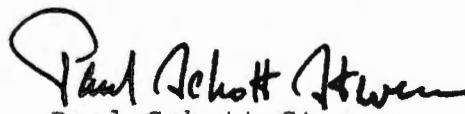
MR. HENRY CLEMENTS
Executive Officer
National Aeronautics and
Space Administration

MR. L. WAYNE ARNY
Associate Director for National
Security and International Affairs
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SUBJECT: Cleared Q & As on National Space Policy

The attached questions and answers associated with the recently signed national space policy are provided for your use in responding to media and public queries. Your cooperation in ensuring a consistent Administration response on this matter is appreciated.


Paul Schott Stevens
Executive Secretary

Attachment
Tab A National Space Policy Q & As

NATIONAL SPACE POLICY

Q: How long was the policy in preparation?

A: The Interagency Group for Space (IG-Space) held its first meeting on July 31, 1987, to begin revising existing national space policy. The Senior Interagency Group for Space (SIG-Space) held its final review meeting on December 17, 1987. The remaining time until the President signed the new policy was devoted to final administrative preparation of the directive, and final policy and legal review.

Q: What agencies participated in preparing the new policy directive?

A: SIG-Space member agencies include the National Security Council Staff (chair); the Departments of State, Defense, Commerce, and Transportation; representatives of the Director of Central Intelligence, Organization of the Joint Chiefs of Staff, the National Aeronautics and Space Administration, Office of Management and Budget, and the Office of Science and Technology Policy. In addition, the Treasury Department participated throughout the review process.

Q: Why did it take so long?

A: This was a comprehensive review of all aspects of national space policy--the first since 1982.

Q: The trade press reported that the interagency process encountered numerous serious arguments among the agencies. Will you comment?

A: Over the course of the review, a range of options was considered on the various issues. The important thing is that any differences that existed were resolved in an

orderly process that thoroughly examined all of the options identified.

Q: Did some of the issues go to the President for resolution?

A: I will not comment on the specific issues considered by SIG-Space or the President. Suffice it to say that a structured process exists to obtain decisions within the interagency process when consensus cannot be obtained.

Q: Was the reestablishment of the National Aeronautics and Space Council considered during the policy review? If so, why was the idea rejected?

A: The idea was surfaced during deliberations, but it did not enjoy much support. Replacing one interagency process (SIG-Space) with another (the Space Council) accomplishes little. The President has established an effective interagency process not only for space, but for all important U.S. matters that cut across agency boundaries. To single space out for different treatment would invite other areas to demand their own tailored decision-making process--a sure recipe for bureaucratic gridlock. SIG-Space works as an effective forum for senior-level consideration of space issues, and if agreement cannot be obtained there, an orderly process exists to elevate decisions and if necessary, secure Presidential decisions. The very fact that SIG-Space was able to produce this revised national space policy attests to its effectiveness.

Q: How did the SIG-Space process and the Economic Policy Council's deliberations on space commercialization work -- together or separately?

A: SIG-Space was responsible for the revision of national space policy, integrating all the broad elements of governmental space activity (civil and national security) as well as private sector, nongovernmental space activities. To encourage the private sector, SIG-Space developed policies to make certain that the government avoids actions that may deter or preclude the development of the commercial sector, and within a framework that ensures that government agencies are reliable customers for private sector space goods and services. Consistent with this policy, the EPC, consistent with its central role for private-sector space activities, developed a number of significant commercial space initiatives to further these overall national objectives for space commercialization. In summary, the efforts were complementary, well-coordinated, and substantial numbers of the participants were involved in both processes.

Q: Were the reports of the National Commission on Space (Paine Report) and Sally Ride's report on "Leadership and America's Future in Space" used in the preparation of this revised space policy?

A: Both of these reports were considered in the preparation of this policy.

Q: What else was used?

A: IG-Space representatives used a wide variety of source documentation including previous National Security Decision Directives relating to space, proposals developed by the Economic Policy Council's Commercial Space Working Group, testimony before Congressional committees, as well as numerous editorials and policy papers on the topic of

America's future in space. Other key sources of information were comparisons that were accomplished of U.S. space activities versus those of other countries in three areas: civil, commercial, and national security.

Q: Can you comment on the conclusions of these comparisons?

A: In general, these studies do not support claims that the U.S. is years behind the Soviets in space capabilities, popular impressions of "lost U.S. leadership in space" notwithstanding. The reality is that in most important areas the U.S. is ahead technologically. In fact, by most important quantifiable measures (data accuracy, timeliness, quality, and quantity), U.S. space systems are the world's finest and will remain so for the foreseeable future (notable exceptions are in manned spaceflight, deployed ASAT capabilities, and space transportation systems). Most comparisons that appear in the trade and popular press have highlighted the fact that U.S. manned and unmanned launch systems suffered disastrous accidents that essentially prevented launch of most U.S. space systems in 1986 and most of 1987. While true, these statements rarely go on to say that the U.S. has made major technical and policy changes to prevent a recurrence of these launch problems. Moreover, the successful Titan launches at both east and west coasts late last year have signalled that all U.S. expendable launch vehicles are once again operational, and we're confident the Shuttle will be returned to safe, reliable operation later this year. Furthermore, during the launch

hiatus caused by the Shuttle and Titan failures, our on-orbit spacecraft continued to function extraordinarily well and provided us with necessary services through that difficult period. That fact attests to the quality of our space systems. The U.S. does not need to duplicate Soviet space capabilities; we must use space systems efficiently to support U.S. requirements. The comparisons point out that the U.S. is not preeminent in every aspect and discipline of space activity. However, our space policy acknowledges that space leadership in an increasingly competitive international environment does not demand this universal preeminence; rather, it states that the U.S. objective is leadership in those areas critical to important U.S. goals.

Q: What are the implications of these assessments?

A: In the civil sector, the assessment revealed that the space capabilities of our competitors are indeed growing, and in some cases, at a more rapid rate than ours. However, in most critical areas (space transportation and manned spaceflight being notable exceptions) U.S. technological capabilities remain the best in the world. It is clear, though, that the launch hiatus has diminished the traditional U.S. lead in several key science and exploration areas--a trend that will continue until the Space Shuttle is returned to safe, reliable operation and we begin to launch the backlog of important civil payloads that are awaiting access to space.

In the national security area, U.S. space capabilities, under conditions short of direct attack on our space systems, are clearly superior to those of our potential adversaries. In the event of a conflict involving attacks on space systems, our technological lead would tend to be offset by demonstrated Soviet antisatellite capabilities for which the U.S. has no direct counterpart. Nonetheless, the national security space sector has taken a number of steps to assure continued mission capability even if we experience failures in our on-orbit or launch assets, whether from natural causes or hostile action.

In commercial space systems, U.S. efforts, although still in an embryonic stage, promise important economic, industrial base, and national security benefits as long as government policies continue to provide a climate conducive to sustained commercial growth in space-related activities. As a direct result of these policies, American firms are aggressively marketing launch services worldwide and, to date, U.S. ELV companies have signed contracts to launch 12 satellites, contributing approximately \$500 million to the U.S. balance of trade. Investments totaling approximately \$400 million have been made in this emerging business by commercial expendable launch vehicle (ELV) companies, which may result in the creation of some 8,000 new jobs. For its part, the U.S. Government is making its facilities and services available to commercial launch firms at direct cost. Martin Marietta Corporation, General Dynamics

Corporation, and Space Services, Inc. have each signed agreements with the U.S. Government to use national launch facilities. A streamlined licensing process, administered by DOT, is already in place.

Q: In exactly what areas are the Soviets ahead?

A: The Soviets are pursuing particularly aggressive programs in areas of long-duration manned spaceflight and heavy-lift launch capability which serve particular Soviet needs for which there is not always a direct U.S. counterpart. And, as previously mentioned, the operational Soviet antisatellite program is a continuing and troublesome asymmetry.

Q: Is NASA's budget adequate to ensure U.S. leadership?

A: The President's FY 1989 budget, to be submitted to Congress shortly, supports the objective of space leadership in areas of critical importance to the U.S. while remaining consistent with the President's commitment to deficit reduction. "Leadership" is achieved not through just NASA's budget, but through the funding requested for all U.S. government space activities, as well as the important contributions provided by the U.S. private sector. The budget provides for a carefully balanced strategy of research, development , operations, and technologies for science, exploration, and appropriate applications. NASA's FY 1989 funding request is a significant increase over the funds appropriated in FY 1988. NASA agrees that the FY 1989

budget projections support the civil leadership objectives in the policy.

Q: Would you explain what the establishment of this human exploration goal means? Is this a commitment to fly people to Mars or return to the Moon? What is the dollar commitment associated with the Pathfinder technology program announced in the policy?

A: This new long-range goal establishes the general direction and focus for efforts and technologies guiding the Nation's civil space sector.

It is not a commitment to any particular mission at this time. It is premature now to decide whether Mars, the Moon, or even another body in the solar system represents the appropriate pathway for future exploration. We first need to understand the many challenges that such potential future missions would encounter. The Pathfinder technology program consists of studies and research efforts to examine the key challenges expected before mission-specific decisions are made.

The funding for the Pathfinder program is contained in the President's FY 1989 budget, to be submitted to Congress shortly.

Q: When would a specific manned planetary decision be made?

A: Decisions on manned planetary programs will follow when such programs can be realistically achieved. As we learn more about the long-term aspects of living and working in space, identifying and meeting the technical challenges ahead of us, the more we will understand about when and where specific programs are possible. Until we have the results

from Pathfinder, it is premature to speculate when a manned planetary mission might be appropriate. As we study such programs, we will also begin to understand and consider the cost implications as an input into when the Nation could afford the associated investment.

Q: Isn't this just another way for the Administration to delay indefinitely a real leadership decision on America's next big space program?

A: No. The Administration has committed to the long-term goal of human expansion, and proposes the Pathfinder program as the best way to reach a realistic decision on specific missions to achieve this new goal. To do otherwise at this time, by committing prematurely, for example to a manned mission to Mars by a certain date, could turn out to be a hasty, costly, and even dangerous decision based on current data and technology.

Q: Might the U.S. and the Soviets cooperate in a future manned mission?

A: International cooperation is a goal of U.S. space policy. Such cooperation will consider U.S. national security, foreign policy, scientific and economic interests. The current U.S. - Soviet cooperative agreement on space (signed April 15, 1987) outlines cooperation in 16 space science projects, all unmanned. These projects could conceivably form the basis for discussions concerning future cooperative manned missions, but it is very premature to speculate on such cooperation. The U.S. has not committed itself to any manned mission to Mars, and the current budget situation makes such an outlook, even in the future, difficult at

best. Moreover, we are presently rebuilding our space cooperation relationship with the Soviet Union after a five year interruption, and it will take some time to restore confidence to the level at which more ambitious cooperative projects could be considered.

In the manned realm, NASA's Space Station program continues to be the focus of our international efforts through the end of this century, emphasizing the cooperation with friends and allies which the President is seeking.

Q: Why has the military space budget been rising faster than NASA's?

A: Decisions on military space spending are made within the overall DOD budget based on the contribution that space systems make in the overall national security strategy and independent military requirements. Rising military space spending reflects recognition that military space activities are increasingly critical to our national security. Part of the increase in DOD's space spending reflects the costs associated with its launch recovery program initiated in the aftermath of the ELV and Space Shuttle Challenger accidents.

Q: Doesn't this risk military dominance over civil space activities?

A: As the new space policy states, the civil and national security sectors of the overall space effort are distinct and independent, responding to their own requirements, yet they are strongly interacting to avoid unnecessary duplication. The relative magnitude of the efforts should not be the focus of attention as each responds to

independent requirements, and funding for one sector is not at the expense of another.

Q: What restrictions remain on government regulation of civil Earth remote sensing?

A: There are no predetermined limitations or restrictions on the performance of civil Earth remote sensing systems. In reviewing licensing applications for civil Earth remote sensing systems, the federal government will consider national security and foreign policy factors, including those required by law. Such considerations have not precluded licensing in the past. A key national space policy objective is to encourage US-operated commercial systems that are competitive with or superior to foreign-operated systems.

Q: What about the Soviet lead in heavy lift launch systems; doesn't this provide them with a significant advantage?

A: Not necessarily. U.S. launch capability responds to identified launch requirements, as it did during the Apollo program when the Saturn V provided the necessary lift. The current and planned family of U.S. launch vehicles meets all current U.S. launch needs. On the other hand, we do not completely understand how the Soviets will use their heavy lift capability. It could certainly give them new capabilities for manned space activities or planetary missions. It could also allow them to duplicate military capabilities we have achieved using lower weight systems. In addition, the President has recently (1-4-88) approved the management and funding plan for the joint DOD-NASA

Advanced Launch System program which will address the future U.S. need for more capable launch systems by the end of the 1990s.

Q: What role do U.S. commercial space ventures play in this new policy?

A: The policy clarifies and reaffirms the government's commitment to rely on the private sector for space-related goods and services where feasible and commercially available. Both "feasible" and "commercially available" are defined in the policy. It directs that U.S. government actions that preclude or deter commercial space activities, except for national security and public safety, are to be avoided. By seeking to eliminate laws and regulations that unnecessarily impede the private sector, the policy seeks to encourage the private sector and allow the space environment to become another arena for free enterprise.

Q: What does the policy have to say about commercial launch vehicles?

A: Commercial launch operations are recognized as an integral part of the Nation's launch strategy. DOT's lead role within the government for establishing Federal policy and regulatory guidance affecting commercial launch operations is reaffirmed. The policy also directs government agencies to encourage a domestic commercial launch industry by contracting for necessary ELV launch services directly from the private sector whenever feasible. It also provides guidelines for the use of government launch-related facilities by U.S. commercial launch operators.

Q: Most of the policy seems to focus on launch systems and commercialization. Does this imply that space science is being downgraded?

A: No, quite the contrary. Under this policy, the first objective of U.S. civil space activities is to expand knowledge of the Earth, its environment, the solar system, and the universe. This policy, and the implementing guidelines, reaffirm the long-standing objective of supporting a vigorous and far-reaching program of space science.

Q: What about unmanned space exploration? Are we ending this program?

A: No, not at all. The policy guidelines state that NASA will conduct a balanced program of manned and unmanned exploration. The new guidelines on unmanned exploration make the importance of this activity to the achievement of overall space objectives clear. The fact is that we need both manned and unmanned exploration, with determinations made on the basis of cost, safety, suitability, and expected results given the specific mission objectives involved.

Q: What is the significance of the policy statement on space debris?

A: We have long recognized that space debris could have an impact on future space missions. NASA and the Air Force have had the problem under study for several years, and the DOD has addressed the issue in its own space policy statement last year. Space debris is a long-term problem which has complex technical and economic implications. An interagency group will be established to consider this issue

fully and to make recommendations on actions we can take that are cost effective and consistent with mission requirements.

Q: Isn't this (space debris) an international problem? What are other countries doing? The U.N.?

A: In the long run, solving the space debris problem will require action by all major spacefaring nations and organizations. Several countries have expressed concern about the problem, and the issue has been mentioned in the committees of the International Telecommunications Union and in the U.N. Committee on the Peaceful Uses of Outer Space. However, the general feeling is that it is premature for discussion in the U.N. and that it would be a mistake to rush through politically-driven measures to deal with this problem. We do not believe there are any simple, easy solutions to the space debris issue.

Q: What are the reasons for including a statement on continued government support for research and development of advanced space communications technologies?

A: Our review reaffirmed that space communications are critical to a wide range of U.S. goals. NASA's past work in developing and transferring communications satellite technology to industry resulted in a commercial space communications program of unparalleled success. The policy recognizes the need for an active U.S. Government role in developing appropriate space communications technologies to meet special government needs.

Q: In your guidance and implementation section, you refer to studies of financing alternatives for the space

infrastructure developments. What are space infrastructural elements?

A: These are the elements not used up or degraded by their role in supporting a specific mission. Ground and (eventually space) deployed support facilities; nonrecurring development and production costs; space utilities; space habitats, etc., are examples.

Q: What are the objectives of the infrastructure financing study?

A: We would like to understand the opportunities and potential for enlisting the private sector capital sources in the initiatives, risk assumption and the profit potential of space undertakings. The desirability of such undertakings, the specific mechanisms, the legislative or regulatory procedures, the relationships to the mission-responsible agencies, the cash flow and profitability are essential expected results.

Q: Does the policy say anything about SDI?

A: The policy does state that DOD will ensure that the military space program incorporates the support requirements of the Strategic Defense Initiative.

(THE FOLLOWING Q & As ARE NOT TO BE HANDED OUT)

Q: Why is there no mention of U.S. space reconnaissance in the policy? (OR) What can you tell us about satellite reconnaissance?

A: As you know, the U.S. conducts satellite photoreconnaissance for monitoring arms control agreements. As a matter of policy, this subject is not discussed outside of classified channels, and I prefer not to address it.

THE FOLLOWING EXPANDED RESPONSE SHOULD BE GIVEN ONLY WHEN A
FURTHER RESPONSE CANNOT BE AVOIDED:

The only "facts of" the United States photoreconnaissance program that have been declassified are that: (1) the United States conducts satellite photoreconnaissance for peaceful purposes, including monitoring of arms control agreements, intelligence collection, and providing defense related information for indications and warning, and (2) photoreconnaissance has a near-real-time capability. I want to make clear that all other information about this activity is classified, and the current policy does not in any way signal a relaxation in our classified protection of this sensitive source of information. Other than what I've just mentioned, as a matter of policy this subject is not discussed outside of classified channels.

Q: But so much has been written about satellite reconnaissance, how can you continue to pretend that this information is classified?

A: There is always speculation in the open press, as well as in the academic and scientific worlds, concerning the full

range of classified activities--intelligence, space, and defense. This is an area we do not discuss.

ALL OTHER QUESTIONS ON THIS TOPIC

Other than what I've just mentioned, as a matter of policy this subject is not discussed outside classified channels, and I am not authorized to discuss this subject further.

THE WHITE HOUSE

Office of the Press Secretary

*Space
Policy*

For Immediate Release

February 11, 1988

THE PRESIDENT'S SPACE POLICY AND COMMERCIAL SPACE
INITIATIVE TO BEGIN THE NEXT CENTURY

FACT SHEET

The President today announced a comprehensive "Space Policy and Commercial Space Initiative to Begin the Next Century" intended to assure United States space leadership.

The President's program has three major components:

- o Establishing a long-range goal to expand human presence and activity beyond Earth orbit into the Solar System;
- o Creating opportunities for U.S. commerce in space; and
- o Continuing our national commitment to a permanently manned Space Station.

The new policy and programs are contained in a National Security Decision Directive (NSDD) signed by the President on January 5, 1988, the FY 1989 Budget the President will submit shortly to Congress, and a fifteen point Commercial Space Initiative.

I. EXPANDING HUMAN PRESENCE BEYOND EARTH ORBIT

In the recent NSDD, the President committed to a goal of expanding human presence and activity in the Solar System. To lay the foundation for this goal, the President will be requesting \$100 million in his FY 1989 Budget for a major new technology development program "Project Pathfinder" that will enable a broad range of manned or unmanned missions beyond the Earth's orbit.

Project Pathfinder will be organized around four major focuses:

- Exploration technology;
- Operations technology;
- Humans-in-space technology; and
- Transfer vehicle technology.

This research effort will give the United States know-how in critical areas, such as humans in the space environment, closed loop life support, aero braking, orbital transfer and maneuvering, cryogenic storage and handling, and large scale space operations, and provide a base for wise decisions on long term goals and missions.

Additional highlights of the NSDD are outlined in Section IV of this fact sheet.

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II. CREATING OPPORTUNITIES FOR U.S. COMMERCE IN SPACE

The President is announcing a fifteen point commercial space initiative to seize the opportunities for a vigorous U.S. commercial presence in Earth orbit and beyond -- in research and manufacturing. This initiative has three goals:

- o Promoting a strong U.S. commercial presence in space;
- o Assuring a highway to space; and
- o Building a solid technology and talent base.

Promoting a Strong U.S. Commercial Presence in Space

1. Private Sector Space Facility: The President is announcing an intent for the Federal Government to lease space as an "anchor tenant" in an orbiting space facility suitable for research and commercial manufacturing that is financed, constructed, and operated by the private sector. The Administration will solicit proposals from the U.S. private sector for such a facility. Space in this facility will be used and/or subleased by various Federal agencies with interest in microgravity research.

The Administration's intent is to award a contract during mid-summer of this year for such space and related services to be available to the Government no later than the end of FY 1993.

2. Spacehab: The Administration is committing to make best efforts to launch within the Shuttle payload bay, in the early 1990s, the commercially developed, owned, and managed Shuttle middeck module: Spacehab. Manifesting requirements will depend on customer demand.

Spacehab is a pressurized metal cylinder that fits in the Shuttle payload bay and connects to the crew compartment through the orbiter airlock. Spacehab takes up approximately one-quarter of the payload bay and increases the pressurized living and working space of an orbiter by approximately 1,000 cubic feet or 400 percent in useable research volume. The facility is intended to be ready for commercial use in mid-1991.

3. Microgravity Research Board: The President will establish, through Executive Order, a National Microgravity Research Board to assure and coordinate a broader range of opportunities for research in microgravity conditions.

NASA will chair this board, which will include senior-level representatives from the Departments of Commerce, Transportation, Energy, and Defense, NIH, and NSF; and will consult with the university and commercial sectors. The board will have the following responsibilities:

- o To stimulate research in microgravity environments and its applications to commercial uses by advising Federal agencies, including NASA, on microgravity priorities, and consulting with private industry and academia on microgravity research opportunities;
- o To develop policy recommendations to the Federal Government on matters relating to microgravity research, including types of research, government/industry/and academic cooperation, and access to space, including a potential launch voucher program;

- o To coordinate the microgravity programs of Federal agencies by:
 - reviewing agency plans for microgravity research and recommending priorities for the use of Federally-owned or leased space on microgravity facilities; and
 - ensuring that agencies establish merit review processes for evaluating microgravity research proposals; and
- o To promote transfer of federally funded microgravity research to the commercial sector in furtherance of Executive Order 12591.

NASA will continue to be responsible for making judgments on the safety of experiments and for making manifesting decisions for manned space flight systems.

4. External Tanks: The Administration is making available for five years the expended external tanks of the Shuttle fleet at no cost to all feasible U.S. commercial and nonprofit endeavors, for uses such as research, storage, or manufacturing in space.

NASA will provide any necessary technical or other assistance to these endeavors on a direct cost basis. If private sector demand exceeds supply, NASA may auction the external tanks.

5. Privatizing Space Station: NASA, in coordination with the Office of Management and Budget, will revise its guidelines on commercialization of the U.S. Space Station to clarify and strengthen the Federal commitment to private sector investment in this program.
6. Future Privatization: NASA will seek to rely to the greatest extent feasible on private sector design, financing, construction, and operation of future Space Station requirements, including those currently under study.
7. Remote Sensing: The Administration is encouraging the development of commercial remote sensing systems. As part of this effort, the Department of Commerce, in consultation with other agencies, is examining potential opportunities for future Federal procurement of remote sensing data from the U.S. commercial sector.

Assuring a Highway to Space

8. Reliance on Private Launch Services: Federal agencies will procure existing and future required expendable launch services directly from the private sector to the fullest extent feasible.
9. Insurance Relief for Launch Providers: The Administration will take administrative steps to address the insurance concerns of the U.S. commercial launch industry, which currently uses Federal launch ranges. These steps include:
 - o Limits on Third Party Liability: Consistent with the Administration's tort policy, the Administration will propose to Congress a \$200,000 cap on noneconomic damage awards to individual third parties resulting from commercial launch accidents;

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- o Limits on Property Damage Liability: The liability of commercial launch operators for damage to Government property resulting from a commercial launch accident will be administratively limited to the level of insurance required by the Department of Transportation.

If losses to the Government exceed this level, the Government will waive its right to recover for damages. If losses are less than this level, the Government will waive its right to recover for those damages caused by Government willful misconduct or reckless disregard.

- 10. Private Launch Ranges: The Administration will consult with the private sector on the potential construction of commercial launch range facilities separate from Federal facilities and the use of such facilities by the Federal Government.
- 11. Vouchers for Research Payloads: NASA and the Department of Transportation will explore providing to research payload owners manifested on the Shuttle a one time launch voucher that can be used to purchase an alternative U.S. commercial launch service.

Building a Solid Technology and Talent Base

- 12. Space Technology Spin-Offs: The President is directing that the new Pathfinder program, the Civil Space Technology Initiative, and other technology programs be conducted in accordance with the following policies:
 - o Federally funded contractors, universities, and Federal laboratories will retain the rights to any patents and technical data, including copyrights, that result from these programs. The Federal Government will have the authority to use this intellectual property royalty free;
 - o Proposed technologies and patents available for licensing will be housed in a Pathfinder/CSTI library within NASA; and
 - o When contracting for commercial development of Pathfinder, CSTI and other technology work products, NASA will specify its requirements in a manner that provides contractors with maximum flexibility to pursue innovative and creative approaches.
- 13. Federal Expertise on Loan to American Schools: The President is encouraging Federal scientists, engineers, and technicians in aerospace and space related careers to take a sabbatical year to teach in any level of education in the United States.
- 14. Education Opportunities: The President is requesting in his FY 1989 Budget expanding five-fold opportunities for U.S. teachers to visit NASA field centers and related aerospace and university facilities.

In addition, NASA, NSF, and DoD will contribute materials and classroom experiments through the Department of Education to U.S. schools developing "tech shop" programs. NASA will encourage corporate participation in this program.

- 15. Protecting U.S. Critical Technologies: The Administration is requesting that Congress extend to NASA the authority it has given the Department of Defense to protect from wholesale release under the Freedom of Information Act those critical national technologies and systems that are prohibited from export.

III. CONTINUING THE NATIONAL COMMITMENT TO THE SPACE STATION

In 1984, the President directed NASA to develop a permanently manned Space Station. The President remains committed to achieving this end and is requesting \$1 billion in his FY 1989 Budget for continued development and a three year appropriation commitment from Congress for \$6.1 billion. The Space Station, planned for development in cooperation with U.S. friends and allies, is intended to be a multi-purpose facility for the Nation's science and applications programs. It will permit such things in space as: research, observation of the solar system, assembly of vehicles or facilities, storage, servicing of satellites, and basing for future space missions and commercial and entrepreneurial endeavors in space.

To help ensure a Space Station that is cost effective, the President is proposing as part of his Commercial Space Initiative actions to encourage private sector investment in the Space Station, including directing NASA to rely to the greatest extent feasible on private sector design, financing, construction, and operation of future Space Station requirements.

IV. ADDITIONAL HIGHLIGHTS OF THE JANUARY 5, 1988 NSDD

- o U.S. Space Leadership: Leadership is reiterated as a fundamental national objective in areas of space activity critical to achieving U.S. national security, scientific, economic and foreign policy goals.
- o Defining Federal Roles and Responsibilities: Government activities are specified in three separate and distinct sectors: civil, national security, and nongovernmental. Agency roles and responsibilities are codified and specific goals are established for the civil space sector; those for other sectors are updated.
- o Encouraging a Commercial Sector: A separate, nongovernmental or commercial space sector is recognized and encouraged by the policy that Federal Government actions shall not preclude or deter the continuing development of this sector. New guidelines are established to limit unnecessary Government competition with the private sector and ensure that Federal agencies are reliable customers for commercial space goods and services.
- o The President's launch policy prohibiting NASA from maintaining an expendable launch vehicle adjunct to the Shuttle, as well as limiting commercial and foreign payloads on the Shuttle to those that are Shuttle-unique or serve national security or foreign policy purposes, is reaffirmed. In addition, policies endorsing the purchase of commercial launch services by Federal agencies are further strengthened.
- o National Security Space Sector: An assured capability for national security missions is clearly enunciated, and the survivability and endurance of critical national security space functions is stressed.
- o Assuring Access to Space: Assured access to space is recognized as a key element of national space policy. U.S. space transportation systems that provide sufficient resiliency to allow continued operation, despite failures in any single system, are emphasized. The mix of space transportation vehicles will be defined to support mission needs in the most cost effective manner.
- o Remote Sensing: Policies for Federal "remote sensing" or observation of the Earth are established to encourage the development of U.S. commercial systems competitive with or superior to foreign-operated civil or commercial systems.