NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Terry White
Release No. 86- 004

February 5, 1986

NASA AWARDS SPACE STATION TESTBED CONTRACT TO ROCKWELL

The NASA Johnson Space Center, Houston has awarded a five-year cost-plus-fixed-fee contract to Rockwell International Corporation's Houston office for design of a Space Station thermal test bed.

Valued at an estimated $5,805,500, the contract began January 1, 1986 and will run to January 1, 1991. Rockwell will design NASA-built test bed components and test sequences for determining space environment thermal loads on Space Station habitation modules and structures. Space Station is projected to be operational by 1992.

Negotiations for the contract began in November 1985.

# # #

NASA News

National Aeronautics and
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For Release:

Jim Kukowski
NASA Headquarters, Washington, D.C.
(Phone: 202/345-1548)

For Release
Feb. 10, 1986

Release 86-11

NASA POSTPONES GALILEO, ULYSSES, ASTRO-1 LAUNCHES

NASA announced today that it has postponed the Ulysses mission to investigate the poles of the sun and the Galileo mission to orbit Jupiter and send a probe into that planet. Both spacecraft were scheduled to be launched by the Space Shuttle in May.

The agency also announced that it would not launch the Astro-1 mission, which was scheduled to fly in March. Astro-1 is an ultraviolet astronomy laboratory mounted in the Shuttle's payload bay that was to examine quasars, "hot" stars, galaxy centers and Halley's Comet.

The decisions on Galileo and Ulysses were made by Dr. William R. Graham, NASA acting administrator, after consultations with senior officials of the German Research and Technolgy Ministry and the European Space Agency. Dr. Graham said that the decision not to launch in May "does not reflect a judgement that the resumption of Space Shuttle launch operations would necessarily be postponed until after the launch opportunity for either Galileo or Ulysses."

Dr. Graham said the decision took into account two principal factors:

"1. That key personnel required to assure a safe and successful launch of either Galileo or Ulysses are preoccupied with the timely analysis of causes of the 51-L accident.

"2. That the consequences of the accident have significantly eroded the schedule margins for launch site processing required prior to the first flight of the Shuttle/Centaur upper stage."

An upper stage is a rocket attached to the spacecraft. It is used to boost a spacecraft on its mission from low Earth orbit after it has been deployed from the Space Shuttle. Two orbiters were modified to carry the missions, Atlantis and Challenger. Challenger was destroyed in the accident Jan. 28.

Although the missions have been postponed, NASA will proceed with planned tests to ensure that all interfaces between the spacecraft, their upper stages, the Shuttle and the launch facilities are validated prior to launch.

Revised launch dates will be determined after a schedule for resumption of Shuttle launches has been established, NASA said.

Due to their trajectory requirements, both the Galileo and Ulysses missions are dependent on the relative positions of Jupiter and the Earth at launch time. (Ulysses also must be sent to Jupiter to get a gravity assisted boost to reach the sun). Jupiter must be almost directly on the opposite side of the sun from Earth at the time of launch if it is to be in the required location at the time of spacecraft arrival. This geometric arrangement occurs once every 13 months. Therefore, for a direct launch to Jupiter, both missions would be delayed at least 13 months until another favorable launch window occurred.

Astro-1 had to be launched in the March-April time frame to observe Halley's Comet. With that opportunity gone, a new, specific launch date request for the mission has not yet been established.

However, scientists are anxious to get the mission into space because of the observatory's capabilities. In addition to the unique ultraviolet observations it can make of celestial objects, Astro-1 could complement the observations of the Hubble Space Telescope. It is capable of wide-field observation of heavens. Scientists would use these observation to select the most interesting targets for detailed investigation by the Space Telescope.

A new launch date will be selected in the future.

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For Release:

John Lawrence
RELEASE NO. 86-006

February 13, 1986

"CHALLENGER 7 FUND"

In response to many inquiries regarding donations and contributions in memory of the crew of the Challenger, the families of the seven astronauts have asked former astronaut Dr. Joseph P. Allen to represent them in coordinating the proper distribution of contributions which have been, and will be, made in their memory.

Interested persons may send contributions to:

The Challenger 7 Fund
c/o Texas American Bank
Trust Division
P.O. Box 2529
Houston, TX 77252

# # #

NASA News

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Jack Riley
RELEASE NO. 86-007

For Release:
February 20, 1986

SEVEN JSC TEAMS SUPPORT ACCIDENT INVESTIGATION

The Johnson Space Center has formed seven teams to provide data and analysis as requested to support the STS 51-L mission accident investigation.

Activity is underway in the following areas: visual data, orbiter, flight and crew operations,main propulsion system, systems integration, cargo and failure scenario.

Data provided by JSC is integrated with information from teams at NASA Headquarters and other field centers to assist the commission appointed by the President.

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NASA News

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Janet Ross
Release No. 86-009

For Release:
March 7, 1986

LUNAR AND PLANETARY CONFERENCE TO BE HELD AT JSC

The Seventeenth Lunar and Planetary Science Conference will be held March 17-21 at the NASA Johnson Space Center in Houston.

The conference has been held annually since the first lunar material was returned to Earth after Apollo 11 in 1969.

Highlights of this year's conference include sessions on Mars and Venus. A special session will be held to discuss Martian geomorphology and its relation to subsurface volatiles. Five Russian scientists will conduct sessions on Venus and will present new data obtained from the Soviet Venus Radar Mapper mission.

Most of the meetings during the five-day conference will be held at the Robert Gilruth Recreation Center at JSC.

# # #

NOTE TO EDITORS: Members of the press wishing to cover any part of the conference should contact Janet Ross, NASA Media Services Branch, (713) 483-5111, for copies of the press abstracts, interviews with conference participants or other assistance. Press badges will be issued for the conference.

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John Lawrence
RELEASE NO. 86-010

For Release:
March 12, 1986

ASTRONAUT DON LIND RETIRES

Astronaut Don L. Lind, Ph.D., will retire from NASA and join the faculty at Utah State University as a professor of physics at the beginning of the 1986 fall quarter.

Lind said the change is the result of several months of discussion with the university, dating to late-1985. At Utah State, he will continue research projects he has in progress, in addition to teaching physics classes.

Lind has been a NASA astronaut since 1966. He flew aboard the orbiter Challenger on mission 51-B in April 1985. During that seven-day mission he performed experiments in a variety of scientific disciplines in the Spacelab module.

Utah state has been active in upper atmosphere and space research for some three decades. Its scientific projects on the Space Shuttle have included both professional and student experiments.

# # #

NASA News

National Aeronautics and
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Houston, Texas 77058
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For Release:

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

April 2, 1986

Jim Ball
Kennedy Space Center, Florida
(Phone: 305/867-2468)

RELEASE: 86-37

DESTACKING OF 61-G ELEMENTS AND MODIFICATIONS TO ORBITERS PLANNED

Destacking of the solid rocket motors for use on Space Shuttle mission 61-G, launch of the Galileo spacecraft to Jupiter, is scheduled to begin early this month as a data-gathering activity in support of the Challenger accident investigation.

The principal objective of the destacking exercise is to gather information to assess the preflight conditions in and around the vicinity of solid rocket motor field joints. Of primary interest will be the condition of the field joint "O" rings.

Inspections during destacking also will focus on examination of the putty used in the joints and on correlating rocket motor case ovality, or "roundness," with any assembly damage.

Assessments also will be made on the degree of clevis gap-opening resulting from stacking and assembly and the degree of propellant slumping that occurs as a result of vertical stacking.

Any relevant data from the destacking inspections that may be useful in the investigation of the Challenger accident will be assembled by the NASA 51-L Data and Design Analysis Task Force and provided to the Presidential Commission on the Space Shuttle Challenger Accident.

Operations to remove the external tank from the 61-G stack are underway this week. Orbiter Discovery will be temporarily moved out of the Vehicle Assembly Building storage bay while the 61-G external tank is placed in a storage cell.

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In parallel with the 61-G destacking operations, the KSC shuttle processing team will proceed with approved modifications on the orbiters.

This work includes major modifications to the orbiter Discovery to equip the ship for missions that will use the Centaur upper-stage, structural reinforcement of the orbiter's wings, and installation of special instrumentation for future launches from the Vandenberg Air Force Base in California.

Other modifications planned for the orbiters Discovery, Columbia and Atlantis, include previously approved modifications and equipment upgrades that were deferred until time was available.

-end-

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NASA News

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

April 25, 1986
6:00 p.m. EST

RELEASE 86-53

STATEMENT BY REAR ADMRIAL TRULY

With the upcoming transfer of the remains of the Space Shuttle crew early next week, the time is appropriate to share with the American public the efforts which have been expended and the status of NASA's search for the probable cause of their death.

Because NASA has not been able to ascertain the cause of death of the crew, I have felt that it has been inappropriate to comment prior to this time. The determination is a very difficult and time-consuming task. Three approaches to review of the evidence are being actively pursued: examination of the remains; direct examination of the wreckage; and analysis of photography and radar to determine forces imposed on the vehicle.

I had hoped that a careful and professional examination of the remains would provide the answer. The identification and examination of the remains was conducted by personnel from the Armed Forces Institute of Pathology. The examinations have not revealed any conclusive evidence about either the cause or time of death.

Further, the wreckage examination task is complicated by the amount of damage done at water impact. Whether or not a cabin rupture occured prior to water impact has not yet been determined

-more-

by a superficial examination of the recovered components. An in-depth analysis with significant testing of the wreckage is required and is being pursued.

NASA is currently concentrating its efforts on analysis to attempt to determine the forces imposed on the cabin during and after breakup. This requires careful enhancement of photography, review of the radar data and significant engineering calculations. Extremely large forces were imposed on the vehicle as evidenced by the immediate breakup into many pieces. The determination of the magnitude and direction of these forces and their effect on the crew module is a lengthy process and is currently in work. Once these forces have been accurately determined, if in fact they can be, the structural analysts will attempt to estimate the effect on the structural and pressure integrity of the crew module. Once any conclusive results are obtained, the wreckage must then be examined to attempt to verify the results of the analysis.

All of this work is being vigorously and carefully pursued Its results will be reported first to the families and then to the public.

- end -

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For Release:

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-1192)

May 14, 1986

RELEASE NO: 86-61

NASA ANNOUNCES BASELINE CONFIGURATION FOR SPACE STATION

NASA Administrator Dr. James C. Fletcher today announced the selection of a baseline configuration for the permanently manned Space Station. This configuration will be used to guide preliminary design activities for the remaining 8 months of the Phase B (definition and preliminary design) studies.

The announcement came after more than a year of study by NASA centers and contractor teams during which the overall architecture of the station was defined and specific subsystems for operating the Space Station were chosen.

Acting Associate Administrator for the Office of Space Station John D. Hodge described the baseline Space Station configuration at a news conference today in Washington, D.C.

President Reagan directed NASA in January 1984 to develop a permanently manned Space Station within a decade. Definition of Space Station architecture and subsystems began in April 1985 with the selection of eight U.S. aerospace companies to perform the detailed definition and preliminary design studies under contract to four NASA centers. The Space Station reference configuration used as a starting point for conducting the definition studies included unmanned free-flying platforms and a manned base called the "power tower."

Important changes in the reference configuration of the Space Station have been made in response to user requirements. The "dual keel" Space Station provides for a better microgravity environment (10-5Gs for all modules), increases useable area on the structure for attaching external payloads, allows better pointing accuracy due to the stiffer structure and reduces traffic through the laboratory modules.

-more-

As part of their definition activities, NASA and the contractors also studied the approach of initially man-tending the Space Station by phasing in the permanently-manned aspects of the program over a 3-to-5-year period. The current planning scenario for the baseline configuration can incorporate this man-tended approach, enabling a future decision on phasing in the permanently manned feature of the station. A report on this man-tended approach has been submitted to Congress.

A total of 14 Space Shuttle flights are required for assembly of the baseline Space Station configuration. Attached payloads and the laboratory module are scheduled to be carried up early in the assembly sequence to provide a useful capability for conducting early scientific operations prior to the addition of the habitation module. Two additional flights from the West Coast will be required to place the two planned polar platforms into orbit.

The current schedule calls for NASA to begin development of the Space Station in October 1986 with the contracts for actual hardware development slated for negotiation and signature in the spring of 1987. First element launch would occur in 1993, with a useful, permanently habitable station in place in 1994. The remaining elements required to complete assembly of the Space Station would be launched over the next 2 years.

Major features of the baseline configuration are:

* Dual keel configuration consisting of two vertical keels 361 feet long, connected by upper and lower horizontal booms 146 ft. long. The former reference configuration consisted of a single keel 400 ft. long. The Space Station now measures 503 ft. at its widest point from tip to tip of the transverse boom on which the power modules are mounted. The truss building block selected is a 16.4-ft. cube and is erectable by astronauts during extravehicular activity (EVA) and assisting fixtures. Struts will be made up of individual 2.12-inch outer diameter, .060-inch thick tubes of a graphite/epoxy composite material.

* Two 44.5-ft. long, 13.8-ft. interior diameter U.S. supplied modules with external interconnects. The reference configuration was four 35-ft. long modules with internal interconnects. Useable volume provided by two baseline-size modules is approximately the same as four reference-size modules. One U.S module will provide laboratory functions and the other will be used for crew quarters. Baseline configuration also includes two smaller logistics modules 24.1 ft. long. One logistics module will be attached to the station for on-orbit use while the other is being replenished on the ground. Flights to exchange logistics modules will occur on approximatley 90-day

cycles. Module structures will be formed from aluminum waffle panels formed into four cylindrical and two conical segments. The habitation module will include a capacity to maintain up to eight crewmembers.

* Location of modules near the station's center of gravity to provide the best possible microgravity environment for experiments. The reference configuration had modules clustered at the bottom of the single keel.

* Raft module pattern with four nodes and two tunnels to serve as module interconnects. The new configuration frees up the maximum useable volume inside the modules. The reference was racetrack configuration where modules were directly connected to each other. Nodes and tunnels will be made of aluminum. Nodes will be 12 ft. in diameter and have six 6.7-ft. diameter berthing ports. Tunnels will be 12 ft. long and 6.7 ft. in diameter.

* Internal module pressure of 14.7 per square inch and 80/20 nitrogen/oxygen mixture ratio to approximate sea level Earth atmospheric conditions. This atmosphere is compatible with the existing data base for life sciences experiments and due to its normal oxygen content will minimize flammability problems and ease constraints on materials that can be used inside the modules.

* Closed-loop environmental control and life support system. Oxygen and water (including wash water and urine, but excluding fecal water) will be recycled. Potable water will be distilled and nitrogen and food will be resupplied.

* Hybrid solar power system with 75 kilowatts of power at completion of station assembly period. Reference configuration used only photovoltaic system. The hybrid system will be designed so that 25 kilowatts are provided by the photovoltaic system and 50 kilowatts are supplied by the solar dynamics system. Nickel-hydrogen batteries will provide storage for the photovoltaic system to handle eclipse periods. The primary power distribution system is still under review.

* Five locations on the structure for placing attached payloads and a facility for servicing free flying spacecraft and platforms. Payload attach equipment could support four or more individual payloads. Possible locations include three on upper boom, one on left keel and one on lower boom. Two coarse pointing systems designed for accuracy of 1 arc minute also will be provided.

* Telerobotic servicer as a part of the baseline configuration. The servicer will be compatible with astronauts on EVAs or with mobile remote manipulator system for servicing attached payloads and free-flying spacecraft. Future application of the robotic servicer as a "smart" front end for an Orbital Maneuvering Vehicle is planned.

* Polar platform with useful payload on single Shuttle launch. Platform will have maximum equipment commonality with the Space Station such as solar arrays and nickel-hydrogen batteries.

* Co-orbiting platform with systems common to polar platform and manned base which can be used to support astrophysics and materials processing.

* Gaseous hydogen/oxygen propulsion system for altitude boost with four modules located on the four quadrants of the Space Station. Thrusters on the propulsion modules will be in the 11.3-to-56.3-pound thrust range.

* Assembly altitude of 220 nautical miles. Operational altitude will be 250 nautical mi. minimum. Frequency of periodic reboost of station to operational altitude will be determined by solar activity.

* Metric as standard unit of measurement. Deviations permitted only where costs of implementing metric are unreasonable.

* Inclusion of international elements into the overall design, including the Canadian Mobile Servicing Center (MSC) and hardware provided by Japan and the European Space Agency. The MSC will include the Space Station remote manipulator system, end effectors, servicing tools, control stations and special purpose dextrous manipulators. NASA will provide the mobile capability for the MSC's base structure. Japan is conducting preliminary design on a pressurized laboratory module with a local manipulator arm, attached work deck for mounting payloads requiring direct exposure to space, and an experiment logistics module. Discussions with ESA will continue to focus on a permanently attached pressurized laboratory for life sciences and materials experiments, a polar platform and a co-orbiting platform.

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National Aeronautics and
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For Release

Maurice Parker
(804) 865-2935

June 2, 1986

RELEASE NO. 86-28

NASA TO SPONSOR CONFERENCE ON MARS

NASA will sponsor a major conference on the planet Mars, to coincide with the tenth anniversary of the Viking missions that explored Mars in 1976. The conference will be held July 21-23, 1986, at the National Academy of Sciences in Washington, D.C.

The conference will be sponsored by the Solar System Exploration Division of NASA's Office of Space Science and Applications.

The purpose of the conference is to take a comprehensive look at present knowledge and understanding of Mars; present and future exploration of the planet; and issues and options for further manned exploration.

Subjects to be discussed will include the geology, volcanism, channels, moons, meteorology, polar regions and biology of Mars. Exploration programs considered will include observer missions, aeronomy, seismic network, sample return and the 1988 Russian Mars program. Discussions of human exploration will include transportation systems, key technologies and life support.

Anyone interested in the history, science and exploration of Mars is invited to attend the conference. Attendance will be first-come, first-served, and limited to 600 people.

For further information, write to The Mars Conference, Mrs. Lu Agee, P.O. Box 416, Hampton, Va. 23669. Telephone (804) 865-8400.

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NASA News

National Aeronautics and
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Washington, D.C. 20546
AC 202-453-8400

Leon N. Perry
Headquarters, Washington, D.C.
(Phone: 202/453-1547)

Brian Welch
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

For Release:
June 2, 1986

RELEASE: 86-68

LUNAR SOIL PRODUCES HIGH GRADE CONCRETE MATERIAL

Experimenting with 1/3 cup of NASA-supplied lunar soil samples, scientists recently created a concrete product stronger than concrete made with Earth materials.

Researchers at the Construction Technology Laboratory (CTL), Skokie, Ill., studied the strength and characteristics of the lunar sample to determine its suitability as an ingredient of construction grade concrete. Preliminary results revealed that concrete material made from lunar samples achieved a strength of 10,800 pounds per square inch (psi). This is about 5 percent stronger than equivelent, high-strength Earth concrete.

According to Dr. T.D. Linn, CTL principal research engineer, tests performed on a 1-inch cube and three slabs of lunar concrete provide evidence that lunar material will be useful for building concrete structures on the moon. "We are quite pleased that early results show the lunar concrete is of a higher quality than any developed using Earth materials. In previous tests, over a one-and-a-half-year period, using quartz sand, the highest rating attained was 10,260 psi," said Linn.

Current American Concrete Institute standards require a rating of 4,000 psi for slab and 5,000 psi for column, the most critical requirement in constructing buildings.

Linn said prior to the tests, the lunar soil was examined under a scanning electron microscope to determine its physical properties and appeared to make good concrete material. He added that lunar concrete contained no organic substances as is found in Earth concrete materials, which generally is considered an impurity.

- more -

The lunar soil sample was allocated to the Linn research team by NASA's Johnson Space Center, Houston, where the lunar rock collection is housed. The repository contains nearly 850 pounds of lunar material returned to Earth by Apollo astronauts from six manned missions to the moon.

According to repository curator Dr. Doug Blanchard, "In supplying Dr. Linn and his associates with the lunar sample, we had hoped to study how we might use some of these materials to make a lunar base a viable opportunity. The results from Dr. Linn's investigations are very interesting. The fact that lunar cement behaves like high quality concrete made with Earth materials proves that it apparently works."

NASA planners anticipate a return to the moon after the turn of the century and the establishment of a permanent lunar base. Such a facility would require a variety of construction techniques designed for long-term life support in the harsh environment of the moon.

Emphasizing that the results are preliminary, Dr. Wendell Mendell, Johnson planetary scientist said, "These results, while they are preliminary in nature, are extremely interesting. We want to see what additional conclusions can be obtained from further examination of the data." Explaining the significance of the lunar soil tests, Dr. Mendell said, "Concrete is one of several materails being considered for building on the moon. If you can make a brick on the moon, you save a great deal of money. That's a tremendous incentive for learning to use lunar materials."

The proposal to study lunar soil as a possible source of building materials was made by CTL in 1984. The Lunar and Planetary Sample Team, a peer review panel which advises the lunar materials program at Johnson, approved the proposal to provide the lunar sample for study in the fall of 1985.

CTL is a non-profit research facility sponsored by the Portland Cement Association. Results from the lunar soil tests will be made available to the general public.

- end -

NOTE: Photographs to illustrate this news release will be distributed without charge to media representatives. Photographs may be obtained by writing to or phoning:

Public Affairs Audio-Visual Office
LFD-8/NASA Headquarters
Washington, D.C. 20546
(Phone: 202/453-8375)

Photo Numbers:
B & W - 86-H-244, 86-H-245

NASA News

National Aeronautics and
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For Release

Debra J. Rahn
Headquarters, Washington, D.C.
(Phone: 202/453-2754)

June 5, 1986

Maurice Parker
Langley Research Center, Hampton, Va.
(Phone: 804/865-2934)

TWO COMPANIES SELECTED TO BUILD WIND TUNNEL MODELS

Micro Craft Inc., Tullahoma, Tenn. and Hampton, Va., and DEI-East Inc., Newport News, Va., have been selected for negotiation of individual contracts to design and fabricate precision aerospace models for wind tunnel tests at NASA Langley Research Center, Hampton, Va.

The models delivered under the contracts will support the overall NASA aeronautics research program and may include advanced aerospace, DOD, commercial and general aviation configurations.

Two cost-plus-award-fee contracts will cover a period of 3 years, with 2-year options. Total value of the combined contracts is approximately $20 million.

Wind tunnel models must accurately represent the aerodynamic shapes, aeroelastic properties or dynamic properties as required for particular tests.

The two companies will build models of various scale sizes, which may have complex contoured shapes and highly cambered and twisted wings with controlled shapes and finishes. Exacting dimensional tolerances and surface finishes may be required for wind tunnel models. Some models may be tested at temperatures as low as minus 300 degrees F. Others may be tested at temperatures as high as 2,000 degrees F.

The companies will build the models at their facilities.

-end-

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For Release

James F. Kukowski
Headquarters, Washington, DC
(Phone: 202/453-1548)

June 5, 1986

Frank O'Donnell
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

RELEASE: 86-73

NEWLY DISCOVERED ASTEROIDS COULD PROVIDE FOR FUTURE SPACE MINING

Studies of the makeup of two newly discovered asteroids that could possibly provide the basis for future mining in space have been announced by astromomers and colleagues at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif.

In work at several observatories, the astronomers have established that two near-Earth asteroids are probably composed chiefly of nickel-iron metal, much like some asteroids in the main asteroid belt and meteorites that impact Earth.

Astronomers previously suspected that such near-Earth asteroids were extinct comets. As such, they would have probably originated in the far outer solar system where comets are believed to have formed.

Nickel-iron asteroids, on the other hand, would have probably formed in the inner solar system. Most would have originated along with objects in the main asteroid belt orbiting the sun between Mars and Jupiter. Metallic near-Earth asteroids, however, may have begun as part of the cloud of material that condensed and became Earth.

One of the two asteroids studied, designated 1986 EB when it was discovered earlier this year, is known as an Aten-class asteroid -- one whose orbit is inside Earth's. The other, designated 1986 DA, belongs to the Amor class -- asteroids whose orbits are close to Earth's, but which are beyond Earth's orbit and do not cross it. Both are about one mile in diameter.

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The observations were made by planetary astronomers Dr. Edward Tedesco of JPL and Dr. Jonathan Gradie of the University of Hawaii.

Using the 120-inch NASA Infrared Telescope at Hawaii's Mauna Kea Observatory, they found that the two asteroids have spectral qualities and albedo that put them in the same class as metallic asteroids of the main asteroid belt (albedo refers to an object's reflectivity). Astronomers study the light, or spectra, of an object to determine its chemical composition.

Tedesco made later observations at Arizona's Kitt Peak National Observatory with Dr. Robert Nelson of JPL and at Mauna Kea with Dr. Marc Buie of the University of Hawaii.

The astronomers noted that metallic asteroids near-Earth might provide suitable sites for future mining operations in space, as has been proposed to provide raw materials for possible interplanetary expeditions in the 21st century.

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For Release

Terry White
Release No. 86-016 June 9, 1986

NOTE TO EDITORS: JSC SETS NEW CENTER ACCESS RULES

Starting July 6, 1986, NASA Johnson Space Center security guards will admit news media people with permanent JSC badges only through the main gate at NASA Road 1 and Upper Bay Road. Badges must be displayed to the gate guard during a "rolling stop."

Visiting newspeople must also enter the main gate, telling the guard on duty that they wish to go to the Building 2 News Center for badging.

Other JSC gates will be open only to Center employees with permanent car windshield decals.

Local-area newspeople with permanent news media badges nearing expiration should renew with JSC Security through the Media Services Branch of Public Affairs in Building 2.

# # #

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For Release:

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

June 11, 1986

John Lawrence
Johnson Space Center, Houston, Texas
(Phone: 713/ 483-5111)

RELEASE: 86-75

ASTRONAUT GARRIOTT TO LEAVE NASA

Astronaut Owen K. Garriott, Ph.D., leaves NASA and government service this week after more than 20 years at the Johnson Space Center, Houston.

Highlights of Garriott's career include a 2-month stay in space aboard Skylab, July 28-Sept. 25, 1973, and the 10-day Spacelab 1 mission, Nov. 28-Dec. 8, 1983, on the Space Shuttle Columbia.

Garriott's plans include consulting and an active role in space research.

-end-

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For Release:

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

June 11, 1986

RELEASE NO: 86-76

GROUP TO REVIEW SPACE SHUTTLE MANAGEMENT

During testimony this morning before the House Committee on Science and Technology, James C. Fletcher, NASA Administrator, and Rear Admiral Richard H. Truly, NASA Associate Administrator for Space Flight, announced that astronaut Robert L. Crippen (Capt., USN) has been assigned to head a small group which will examine the overall Space Shuttle program management. Where changes to existing organization or lines of authority are deemed appropriate, the group will recommend solutions for approval.

This review was part of the recommendations of the Presidential Commission on the Space Shuttle Challenger Accident, headed by William P. Rogers, and an element of Truly's plan for safely returning the Shuttle to flight status, issued March 24. In this plan Truly stated, "The National Space Transportation System (NSTS) program management philosophy, structure, reporting channels and decision-making process will be thoroughly reviewed and those changes implemented which are required to assure confidence and safety in the overall program, including the commit to launch process."

Crippen's group will review the findings and conclusions of the Rogers Commission leading up to the Commission's recommendations on Shuttle management structure, the use of astronauts in NASA management positions, the creation of a Shuttle safety panel and improved communications within the Shuttle program. Part of the review process will entail discussions with former NASA managers (e.g., previous associate administrators) and others inside and outside NASA to solicit their opinions and advice on the subjects of the study. Other members of the group will be announced later.

On announcing the assignment, Truly said, "Captain Crippen, a veteran of four Shuttle flights, is extremely well qualified to lead this project by virtue of his extensive experience in several NASA programs including the Shuttle.

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Further, his intimate involvement in the NASA task force supporting the Rogers investigation of the Challenger accident provides significant insight into all of the Commission's findings and recommendations."

- end -

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

June 17, 1986

John Lawrence
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

RELEASE: 86-78

ASTRONAUT JAMES VAN HOFTEN RESIGNS

Astronaut James van Hoften, Ph.D., veteran of two Space Shuttle flights, will resign from NASA to take a position within private industry.

Dr. van Hoften, 42, will work in the Defense and Space Organization of Bechtel of San Francisco. The exact date of his resignation has not been established but is expected to be this summer.

On each of his two Shuttle flights, Dr. van Hoften performed extravehicular activities to repair faulty satellites. On Mission 41-C, April 6-13, 1984, he and astronaut George D. Nelson repaired the Solar Maximum Mission satellite and returned it to orbit. With astronaut William F. Fisher on Mission 51-I, Aug. 27-Sept. 3, 1985, he performed on-orbit repair of SYNCOM IV-3.

Prior to joining NASA in 1978, Dr. van Hoften was an assistant professor of civil engineering at the University of Houston.

- end -

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For Release:

Release No. 86-78

NASA TESTS ADVANCED WEATHER OBSERVING SYSTEMS

A team of scientists from two NASA centers, two federal agencies and several universities are cooperating this summer at the Goddard Space Flight Center's Wallops Flight Facility to test new sensors for observing weather and clouds.

The experiment, called the Satellite Precipitation and Cloud Experiment (SPACE), will use high altitude aircraft as a platform for new instruments that will provide a better understanding of the atmospheric processes leading to precipitation and severe storms.

The SPACE project is part of a larger meteorological field experiment called COHMEX--the Cooperative Huntsville Meteorological Experiment, being conducted by NASA's Marshall Space Flight Center in Huntsville, Alabama; the University of

-more-

Chicago; and the Federal Aviation Administration in the Tennessee Valley. COHMEX is the combination of three independent atmospheric projects--SPACE, Microburst and Severe Thunderstorms (MIST) experiment, and the FAA Lincoln Laboratory Operational Weather Studies (FLOWS).

Crucial observations for SPACE are being obtained from three high-altitude aircraft with nine experimental remote sensing systems measuring visible, infrared and microwave radiation.

This is the first time that such a complete complement of atmospheric instruments has been operated together. Four of the instruments have been developed at the Goddard Space Flight Center in Greenbelt, Maryland, for cloud and precipitation observations. This include two microwave radiometers, a microwave precipitation radiometer and advanced microwave moisture sensor, and a unique laser radar system.

The Marshall Space Flight Center is operating two lightning sensor packages for studying the relationship between lightning and storm intensity, and both Goddard and Marshall are employing mapping radiometers for cloud and moisture distribution.

Two university research groups--the University of Wisconsin and the Massachusetts Institute of Technology--have provided advanced temperature sounding systems for studying pre-storm and storm weather conditions.

Data received from the SPACE project will be correlated with data received from the GOES and NOAA weather satellites.

Principal scientists at Wallops for the SPACE project are Dr. Richard Blakesly of Marshall and Dr. James Spinhirne of Goddard.

The three NASA Ames Research Center's aircraft--two U-2s and one ER-2--will operate from the Wallops Flight Facility. The aircraft will fly in the Huntsville and Wallops areas, selected because of the facilities available and the weather--violent microbursts and thunderstorms that occur in May, June and July. Other advantages include the lack of heavy aircraft traffic which might restrict research aircraft operations and the rolling farmland which reduces the clutter seen by radar.

The high altitude flights at Wallops also are being correlated with two sounding rocket launches scheduled during a night thunderstorm. In addition, numerous ground stations will be used for correlative measurements.

The National Science Foundation (NSF) is sponsoring the University of Chicago component of the COHMEX experiment, MIST, which is concerned with the structure of microbursts from thunderstorms. The FAA experiment, FLOWS, is concerned

with the development and testing of automatic algorithms for wind shear detection using pulse Doppler weather radars. The results from FLOWS will be used to develop the next generation of weather radars for the FAA Terminal Doppler Radar (TDR). The NASA experiment will provide correlative data for the MIST and FLOWS program but also will make use of results from the NSF and FAA experiments.

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For Release

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Headquarters, Washington, D.C.
(Phone: 202/453-1922)

June 19, 1986

RELEASE: 86-79

HERBOLSHEIMER APPOINTED COMMERCIAL PROGRAMS DEPUTY

Lawrence F. Herbolsheimer has been appointed Deputy Assistant Administrator for the Office of Commercial Programs, NASA Headquarters, Washington, D.C. Herbolsheimer will be responsible for advancing the interests and participation of the private sector in the U.S. space program.

Prior to his government experience, Herbolsheimer was Corporate Planning/Business Development Manager in the International Division of Container Corp. of America, Chicago.

He is a co-founder of Vertechs Corp. (a technology development firm), Montgomery Foods, Inc. (a food distribution and marketing firm), Apex Corp. (a technology search firm) and Middle West Consultants, Ltd. (an international business consulting firm).

Until September 1985, Herbolsheimer served as Associate Director in the White House Office of Cabinet Affairs where he was responsible for developing and advancing policy issues of the Departments of Commerce, Transportation, Agriculture, the Office of the U.S. Trade Representative, Federal Communications Commission and NASA.

Herbolsheimer also was a Presidential appointee to the Commercial Space Working Group under the Cabinet Council on Commerce and Trade. He served as a representative to Executive Branch committees such as the Trade Policy Committee, the Senior Interagency Group on International Economic Policy and the Senior Interagency Group on Space.

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Herbolsheimer holds a master of business administration degree from the Harvard Graduate School of Business Administration and a bachelor of arts degree in economics from Illinois Wesleyan University.

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For Release:

Sarah G. Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

June 19, 1986
5:00 p.m. EDT

RELEASE NO: 86-80

NASA TERMINATES DEVELOPMENT OF SHUTTLE/CENTAUR UPPER STAGE

Following a meeting today with key Headquarters and NASA Center officials, Dr. James C. Fletcher, Administrator of NASA, announced his decision to terminate development of the Centaur Upper Stage for use aboard the Space Shuttle. NASA, under the direction of Rear Admiral Richard H. Truly, is initiating efforts to examine other alternatives for the major NASA planetary and scientific payloads which were scheduled to utilize the Centaur Upper Stage. NASA will provide assistance to the DOD as it examines alternatives for those national security missions which had planned to use Centaur. This decision will not affect Centaur programs other than those which were planning to use the Space Shuttle.

At the time of the Shuttle 51-L accident, the Centaur was in the final months of preparation for the then-scheduled 1986 launches of the Galileo and the Ulysses spacecraft for their exploration missions to Jupiter and the polar regions of the sun. Major safety reviews of the system were underway at that time, and these reviews were intensified in recent months to determine if the program should be continued. The final decision was made on the basis that even following certain modifications identified by the ongoing reviews, the resultant stage would not meet safety criteria being applied to other cargo or elements of the Space Shuttle system.

An independent study conducted by the surveys and investigations staff of the House Committee on Appropriations, Subcommittee on Hud-Independent Agencies, recently was provided to NASA by Chairman Edward P. Boland and Congressman William Green, the ranking minority member. The chairman and Mr. Green also concluded, based on the study, that the proper course at this time is to terminate the Shuttle/Centaur System Development and to seek other alternatives.

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Fletcher announced his intention to appoint a NASA committee to review the history of the Shuttle/Centaur program and the events leading to this management decision. He also stated that, "although the Shuttle/Centaur decision was very difficult to make, it is the proper thing to do and this is the time to do it." He reaffirmed his commitment to the planetary science program and pledged to seek alternative solutions as quickly as possible.

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Barbara Selby
Headquarters, Washington, D.C.June 27, 1986
(Phone: 202/453-8400)4:00 p.m. EDT

Mack Herring
National Space Technology Laboratories, NSTL, Miss.
(Phone: 601/688-3341)

RELEASE NO: 86-83

NASA SELECTS SVERDRUP FOR NSTL SUPPORT SERVICES CONTRACT

The National Aeronautics and Space Administration has selected Sverdrup Technology, Inc., Tullahoma, Tenn., for negotiations leading to the award of a cost-plus-award-fee contract for techical support services at NASA's National Space Technology Laboratories (NSTL), Bay St. Louis, Miss.

Sverdrup's proposal reflected a proposed cost of approximately $45 million for a period of 3 years beginning in the fall of 1986. The contract will provide for a total period of performance of up to 8 years, consisting of the basic contract year, two 1-year priced options and five 1-year unpriced options. As proposed by Sverdrup, the total contract has a potential overall estimated cost of approximately $105 million. Each of the first 3 years also includes price options for additional effort.

Technical support services covered by the contract consist of test complex services for Space Shuttle main engines, engineering services, laboratory and field services, and data services for NASA and 18 other government agencies located at NSTL.

Other firms submitting proposals were Computer Sciences Corp., Falls Church, Va.; EG&G, Wellesley, Mass.; Government Support Services, Philadelphia; RCA Services Co., Cherry Hill, N.J.; and Technical Support Associates, Albuquerque, N.M.

The contract will be managed by NSTL.

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Mark Hess
Headquarters, Washington, D.C.June 30, 1986
(Phone: 202/453-1192)

RELEASE NO: 86-84

NASA ANNOUNCES SPACE STATION ASSOCIATE ADMINISTRATOR,
NEW PROGRAM STRUCTURE

Andrew J. Stofan, Director, Lewis Research Center, Cleveland, today was appointed Associate Administrator for Space Station.

Stofan's appointment was announced by Dr. James C. Fletcher, NASA Administrator. The Space Station is a major program of the space agency.

Stofan has been director of Lewis since July 1982. Prior to his Lewis assignment, Stofan was Acting Associate Administrator for Space Science and Applications, NASA Headquarters, Washington, D.C.

In addition to the appointment, Fletcher announced a number of organizational and management structural actions, effective immediately, designed to strengthen technical and management capabilities in preparation for moving into the development phase of the Space Station program.

The decision to create the new structure comes as the result of recommendations made to Fletcher by a committee headed by former Apollo program manager Gen. Samuel C. Phillips who conducted a review of Space Station management as part of a longer-range assessment of NASA's overall capabilities and requirements.

Fletcher said the new Space Station management structure is consistent with recommendations by the Rogers Commission which investigated the Space Shuttle Challenger accident. The commission recommended that NASA reconsider management structures, lines of communication and decision-making processes to assure the flow of important information to proper decision levels.

Fletcher said the program will employe the services of a top-level, non-hardware support contractor. In addition to the systems engineering role, the Program Office will contain a strong operations function to ensure the program adequately deals with the intensive needs of a permanent facility in space.

A Systems Integration Field Office will be established as part of the Program Office organization and will be located in

-more-

Houston. Fletcher said the new associate administrator will define the longer-term role of the Houston office, the role of the systems engineering and analysis function in Washington, and the schedule of development and transition of functions to Washington.

Project managers located at Goddard Space Flight Center, Greenbelt, Md.; Johnson Space Center, Houston; Kennedy Space Center, Fla.; Lewis Research Center, Cleveland; and Marshall Space Flight Center, Huntsville, Ala., will report functionally to the associate administrator. They will coordinate with their respective center directors to keep them informed of significant program matters.

In other actions, Fletcher has directed acting Associate Administrator for Space Station John D. Hodge to streamline and clarify NASA's procurement and management approach for the Space Station program and to issue instructions related to work package assignments, procurement of hardware and services, and selection of contractors for the development phase of the program.

In addition, Hodge also has been tasked to develop a program overview document that will spell out the role automation and robotics will play in the Space Station program and to conduct further studies in the areas of international involvement, long-term operations, user accommodations and servicing and issue detailed directions in the near future.

Fletcher has authorized NASA to proceed with the procurement of a Technical and Management Information System (TMIS), a versatile computer-based information network. It will link NASA and contractor facilities together and will provide engineering services, such as computer aided design, as well as management support on such things as schedules, budgets, manpower and facilities.

Since mid-April, Phillips has been examining the Space Station program from a technical as well as management perspective, as part of a broader look into the way NASA manages its programs, including relationships between the various space centers and NASA headquarters. His report reflects discussions with representatives from all the NASA centers and the contractors involved in the definition and preliminary design of the Space Station, as well as officials from other offices within NASA.

In his January 1984 State of the Union message, President Reagan directed NASA to develop a "permanently manned Space Station within a decade." NASA assigned responsibilities for various elements and systems of the Space Station to five of its space centers, and in April 1984, awarded 21-month long contracts to eight industry teams to conduct definition and preliminary design studies (Phase B). A baseline configuration was selected in May of this year to guide preliminary design activities through the remainder of the Phase B study. Development is scheduled to begin in the spring of 1987. Initial launch of Space Station elements is set for early 1993 with a permanently manned capability to be in place by 1994.

end

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For Release

Billie Deason
RELEASE NO. 86-017

IMMEDIATE

"SPACE AND THE HUMAN DILEMMA" SEMINAR SCHEDULED AT JSC

A one-day seminar "Space and the Human Dilemma" cosponsored by NASA-Johnson Space Center, the University of Houston-Clear Lake and the Houston chapter of the American Institute of Aeronautics and Astronautics is slated for Saturday, July 19.

Featuring seven experts on the history of space technology development, space exploration and regional/Houston-area impacts of the space program, the seminar begins at 8:30 a.m. and continues through 5 p.m. in the briefing room of JSC's Public Affairs Office, Building 2. Registration will be held from 8:30-9 a.m.

Following opening remarks by university officials at 9 a.m., the keynote address will be presented by Dr. David Lewis, professor of history at Auburn University. Other speakers include: Dr. Gerald Carr, former astronaut and commander of the 84-day Skylab IV mission; Alcestis Oberg, author and senior space editor for Aviation/Space magazine; Dr. William Urban, president, Houston Economic Development Council; Dr. David Goldfield, history professor, University of North Carolina at Charlotte; Dr. George Lipsitz, UH-Clear Lake history professor; and Dr. Roger Bilstein, history professor and author.

Registration fee is $3. For more information call 713-488-9320. The program is made possible by a grant from the Texas Committee for the Humanities, a state program of the National Endowment for the Humanities.

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Rec'd 7/25/86

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For Release:

Billie Deason
Release No. 86-018

JSC ENGINEERING DIRECTORATE SPONSORS EXPO

The Engineering Directorate of the Johnson Space Center will host its fourth annual "Show-and-Tell" Expostion at the Gilruth Recreation Center on July 30 and 31, 1986. This year's exposition carries the theme "JSC Engineering - 25 Years of Excellence" in recognition of JSC's establishment in 1961.

Eight technical organizations will display and demonstrate a variety of hardware and software, including space suits from Mercury through Shuttle, advanced missions concepts, communication system hardware evolution and the application of infrared and laser systems. Also on exhibit will be guidance, navigation, and control developments, new concepts in rocket injector design, a fluidic momentum device, and a Spacelab mockup.

Employees of the JSC organizations will be on hand to explain the displays and answer questions.

The exhibit is open to the public on July 30 from 10 a.m. to 4 p.m. and on July 31 from 10 a.m. to 4 p.m. and from 6 p.m. to 8 p.m. and will be located in both the ballroom and gymnasium of the Gilruth Recreation Center, building 207, at the Johnson Space Center.

Rec'd 7/25/86

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For Release

Douglas K. Ward
RELEASE NO. 86-019

IMMEDIATE

CHALLENGER TAPES BEING ANALYZED

Engineers at JSC have begun efforts to playback tape from Challenger's onboard operational recorder which includes intercom voice channels.

The tape--from operational recorder #2--was severely damaged by exposure to seawater and resultant chemical by-products. Engineers at IBM developed a process for neutralizing the caustic chemicals and restoring the tape to the point it can be analyzed.

Data and voice channels are intermixed on the digital bit stream and the tape must be decoded using flight type equipment in a laboratory at JSC. Preliminary analysis of the tape shows the crew was unaware of the events associated with the tragedy and the internal communications were being maintained as would be expected during a normal ascent.

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For Release

Debra J. Rahn
Headquarters, Washington, D.C.
(Phone: 202/453-2754)

July 14, 1986

H. Keith Henry
Langley Research Center, Hampton, Va.
(Phone: 804/865-2934)

Release: 86-90

NASA FEATURES AERO-SPACE PLANE, RESEARCH PILOTS AT EAA CONVENTION

NASA returns to Oshkosh, Wisconsin, Aug. 1-8, with a new exhibit, entitled "21st Century Aviation", for display at the 34th Annual EAA International Fly-In Convention and Sport Aviation Exhibition.

Visitors to the NASA exhibit will gain a glimpse of the future, including potential concepts of the joint NASA/Department of Defense National Aero-Space Plane Program, announced by President Reagan in his 1986 State of the Union address.

As envisioned, future hypersonic cruise vehicles would be capable of flying intercontinental ranges at high altitudes and speeds within the atmosphere. For example, a hypersonic vehicle could reduce trip time from the U.S. West Coast to Tokyo to about 2 hours. The comparable subsonic flight takes more than 10 hours. A second major application would provide aero-space vehicles efficient and powerful enough to boost payloads and passengers to Earth orbit.

Throughout the 6,000-square-foot exhibit, research tools and techniques needed for aircraft of the 21st Century are explored. Highlighted are rapidly increasing computer capabilities:

NASA's Ames Research Center, Mountain View, Calif., has a new supercomputer and simulation complex soon to be capable of one billion computations per second. Complex measurements of air flow around modern and advanced aircraft that once took days or weeks will now take only minutes. The aerospace industry and universities also will use this national resource.

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Advanced cockpit displays may be touch-sensitive; aircraft controls may react to voice commands. The promise of completely redesigned cockpits is generating increased interest in human factors research -- how these and other projected technologies will affect pilot satisfaction and performance.

Other displays include a close look at rotorcraft research and potential applications. In addition, a variety of live and taped features will be presented daily in the Aerospace Theater. Outside the exhibit building will be the NASA AEROVAN travelling exhibit.

NASA's aeronautical research will be depicted in the agency's first exhibit of aeronautical art. Thirteen original works have been created by some of America's foremost artists.

NASA's Goddard Space Flight Center, Greenbelt, Md., will provide its SARSAT mobile exhibit that presents an overview of the Search and Rescue Satellite system.

SARSAT is part of a multilateral cooperative program sponsored by the United States, Canada, France and the Soviet Union. The program's goal is to demonstrate the effectiveness of satellites in reducing the time needed to rescue air and maritime distress victims and significantly increase the possibility of saving lives. As of May 15, 1986, the number of lives saved had reached 576 -- 244 marine, 311 air and 21 terrestrial.

Four NASA research pilots will appear in a special evening program and speak at forum talks. The pilots fly a mixture of missions in a variety of aircraft, ranging from atmospheric research over spewing volcanoes to new concepts of flight control for military fighters.

Teacher-In-Space finalists, two of 10 chosen from approximately 11,000 applicants, will be sharing their experiences with young people and adults in several appearances during the EAA convention.

More than two dozen NASA speakers will conduct technical forums throughout the convention, ranging from "Stall-Spin Research with Radio-Control Models" to "X-Wing: Developing Technology for a Supersonic Helicopter."

NASA aeronautics centers supporting the exhibit are Langley Research Center, Hampton, Va.; Lewis Research Center, Cleveland; and Ames Research Center, which includes Dryden Flight Research Facility, Edwards Air Force Base, Calif.

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Sarah Keegan
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July 22, 1986

Jim Ball
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

RELEASE: 86-95

TESTING OF SHUTTLE ORBITER WEATHER PROTECTION STRUCTURE SCHEDULED

Space Shuttle Atlantis is scheduled to be moved to Launch Pad 39-B to support verification testing of newly installed weather protection structures at Kennedy Space Center, Fla.

Currently stacked on Mobile Launcher Platform 1 in the Vehicle Assembly Building, Atlantis is slated to be transported no earlier than August 19.

A considerable portion of the orbiter is shielded by the Rotating Service Structure (RSS) that closes in around the Space Shuttle at the launch pad.

The new $3.3 million system of sliding and folding doors and seals will cover previously exposed, lower portions of the orbiter to greatly reduce the risk of damage to the orbiter's fragile heat protection tiles. The metal doors will slide between the orbiter's belly and its external tank.

Other weather protection structures to provide a roof seal and enclose the space between the RSS and the external tank were checked earlier this year.

Without the shielding, the tiles are susceptible to damage from hail and wind-blown debris and heavy rains can erode tile water-proofing.

The assembled Shuttle will allow checks of structural clearances, verification of seal integrity and validation of deployment procedures and timelines.

-more-

Operations managers and facility engineers scheduled the Pad B weather protection checkout to take advantage of having a fully assembled shuttle available. Atlantis originally had been assembled to support planned testing of Shuttle/Centaur hardware at Pad A this summer.

Existing weather protection systems at Pad 39-A are slated to be upgraded to the Pad B configuration next year.

Atlantis is expected to remain on the launch pad until early September.

- end -

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Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-1192)

For Release
July 24, 1986

RELEASE: 86-98

SPACE STATION WILL INCREASE JSC MANPOWER LEVEL

Dr. James C. Fletcher, NASA Administrator, released the following statement today following a meeting with members of Congress concerning Space Station manpower levels at the Johnson Space Center in Houston:

o Current projections indicate that the total on or near-site employment at the Johnson Space Center will increase from the current level of about 12,600 to an average of 14,000 during Space Station development. These figures take into account changes made in program management. This projected employment level could increase by another 1,000 personnel through potential assignment of additional Space Station tasks to JSC. "Another way to look at this is that without the Space Station program, JSC's employment level likely will not grow significantly over the next few years."

These figures come from a joint analysis by NASA Headquarters and JSC on the impact on manpower levels of recent decisions about Space Station management. As a result of these decisions, management of the Space Station program will be shifted from JSC to NASA Headquarters and responsibility for developing systems for the habitation module and airlock shifted from JSC to the Marshall Space Flight Center in Huntsville, Ala.

o Andrew Stofan, the Associate Administrator for the Space Station, has been instructed to review the June 30 work package decisions to determine how they can be properly implemented and to develop recommendations concerning remaining decisions relative to the JSC work package role. These decisions address JSC's larger integration role and the manner in which it is to be implemented.

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"I also have instructed Mr. Stofan to incorporate in his review the formal assumption that JSC shall retain its long-term role as NASA's pre-eminent center of excellence for the development of manned spacecraft systems and have reiterated my view that the JSC role in crew and crew-related activities, trainers and simulators is not to be diminished as a result of the restructuring of work package roles between JSC and MSFC.

o The decision to shift responsibility for the Space Station's habitation module systems from the Johnson Space Center to the Marshall Space Flight Center has raised concern at JSC and in the Houston area about possible loss of identification as the focal point of NASA's manned space flight activities.

"I understand this concern. Houston has proudly emphasized its role with humans in space for many years.

"In this regard I want to assure my NASA colleagues at the Johnson Space Center and the citizens of Houston that this identification will not be lost. Houston is and will be mission control for Space Shuttle flights. Houston is and will be the training center for and the home of the corps of astronauts. It is and will continue to be the center for planning and directing Space Shuttle missions.

"Concerning the Space Station, the responsibility to outfit the habitation module was shifted to the center that is developing the module structure, or shell, because such a move will increase efficiency and simplify management communication, coordination and decision-making. JSC will have technical direction over development of habitation related systems as is appropriate for the center which is pre-eminent for manned space flight.

"Does this mean that JSC will lose its role in manned flight in the Space Station era? Absolutely not. The Johnson Space Center is the focal point of expertise in human activity in space. Much of the actual work related to the development of habitation module systems will be done at the Johnson Space Center. Astronauts who man the Space Station will be trained there. The missions to assemble and support the Space Station will be planned and controlled from Houston.

"In short, the Johnson Space Center's role as NASA's pre-eminent center of excellence in manned spacecraft systems is not changing. In the Space Station era it will be enhanced. We anticipate that any benefits to the economy of the Houston region that proceed with this association with manned flight will continue and will, indeed, be enhanced in the future."

- END -

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Dr. Mark Littmann
Space Telescope Science Institute, Baltimore, Md.
(Phone: 301/338-4757)

For Release:
August 7, 1986
2:30 p.m., EDT

RELEASE: 86-108

AMATEUR ASTRONOMERS TO HAVE OBSERVING TIME ON SPACE TELESCOPE

NASA and the Space Telescope Science Institute, Baltimore, Md., announced today that U.S. amateur astronomers will be given the opportunity to make observations with the Hubble Space Telescope (HST).

The announcement was made by Dr. Riccardo Giacconi, director of the institute, which is under contract to NASA. He said that a small amount of observing time is being reserved for amateurs from the director's discretionary time, which is set aside for astronomical targets of opportunity.

Dr. Giacconi said that amateur astronomers also could use Space Telescope data and picture archives and conduct cooperative observation projects, using their own telescopes for observations in concert with Space Telescope observations.

With a 94-1/2 inch mirror, the HST will be the largest astronomical telescope ever placed in space. Because it will be above the Earth's atmosphere, astronomers expect the telescope to detect celestial objects 50 times fainter and see them with 10 times the clarity of ground-based telescopes.

Amateur astronomers have made significant contributions to astronomy since the telescope was invented nearly 4 centuries ago. There are at least a quarter million amateur astronomers in the U.S.

-more-

In announcing this program, Dr. Giacconi said, "The professional astronomy community is deeply grateful to amateur astronomers for decades of valuable assistance in our observational programs and for helping to interpret our findings to the public at large. I look to amateur astronomers to ask refreshingly new questions and I expect that they will make a real contribution to the advancement of astronomy."

To explore and implement cooperative scientific efforts with the HST project on behalf of amateur astronomers, the following nationally recognized leaders of amateur astronomer activities have agreed to serve as the Hubble Space Telescope Amateur Astronomers Working Group:

Dr. David W. Dunham	President, International Occultation Timing Association
Stephen J. Edberg	President, Western Amateur Astronomers
Jesse B. Eichenlaub	President, Independent Space Research Group
George D. Ellis	President, Astronomical League
Dr. Janet A. Mattei	Director, American Association of Variable Star Observers
Gerald Persha	International Amateur-Professional Photoelectric Photometry
Dr. John E. Westfall	Acting Director, Association of Lunar and Planetary Observers

Plans by the working group for soliciting and evaluating amateur astronomer proposals for use of the HST will be announced shortly. The working group has selected Stephen J. Edberg as its chairman. Mike Potter, research assistant at the Space Telescope Science Institute, is serving as project advisory officer.

On behalf of the Hubble Space Telescope Amateur Astronomers Working Group, Edberg responded, "We are grateful for the trust that NASA, the Space Telescope Science Institute and Dr. Giacconi have shown in amateur astronomers. We look forward to continuing our long tradition of amateur contributions to astronomy as we join our professional colleagues in taking the next great step in the study of the cosmos."

The HST is a project of international cooperation between NASA and the European Space Agency (ESA). NASA's Marshall Space Flight Center, Huntsville, Ala., is the lead center for the development of the Hubble Space Telescope. NASA's Goddard Space Flight Center, Greenbelt, Md., is responsible for development of American scientific instruments aboard the Hubble Space Telescope, for spacecraft operations and management of the Space Telescope Science Institute. ESA has furnished the Space Telescope with one of its instruments and its solar arrays for electrical power.

Prime contractor for the telescope optics was Perkin-Elmer Corporation, Danbury, Conn. Lockheed Missiles and Space Company, Inc., Sunnyvale, Calif., was prime contractor for the HST and support systems. The scientific instruments for Space Telescope were designed by teams of scientists and constructed by aerospace corporations, NASA centers and universities.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Selby
Headquarters, Washington, D.C.August 18, 1986
(Phone: 202/453-8400)

RELEASE NO: 86-114

ASTRONAUT RIDE NAMED SPECIAL ASSISTANT FOR STRATEGIC PLANNING

Dr. Sally K. Ride has been detailed to the position of Special Assistant to the Administrator for Strategic Planning. In this position, she will be responsible for reviewing NASA's goals and objectives for near to long-term planning.

Ride was selected by NASA as an astronaut candidate in 1978. She has been a mission specialist on two Space Shuttle flights -- STS-7 in June 1983 and STS 41-G in October 1984. Recently she served as a member of the Presidential Commission on the Space Shuttle Challenger Accident.

A native of Los Angeles, Ride is a graduate of Stanford University, where she received a B.S. degree in physics and a B.A. degree in English in 1973, and M.S. and Ph.D. degrees in physics in 1975 and 1978, respectively.

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Houston, Texas 77058
AC 713 483-5111

Headquarters, Washington, D.C.
(Phone: 202/453-1192)

For Release:
August 20, 1986
1 p.m. EDT

RELEASE: 86-116

NASA ANNOUNCES PLAN FOR SPACE STATION REVIEW

NASA Associate Administrator for the Office of Space Station Andrew J. Stofan announced today the formation of two teams to review Space Station design and work package assignments and functions.

A Space Station Configuration Critical Evaluation Task Force, headed by W. Ray Hook, Manager, Space Station Office at NASA's Langley Research Center, Hampton, Va., will conduct a technical review of Space Station architecture and systems. The task force will conduct their activities at Langley. An Executive Technical Committee, headed by Stofan, will provide oversight and guidance to the task force and will assess the impact of any design modifications or changes on individual NASA center and contractor roles.

Stofan's actions are in response to NASA Adminstrator James C. Fletcher's July 31 directive to conduct a thorough review of all aspects of Space Station design and to hold off the implementation of work package realignment for a period of up to 90 days.

Approximately 35 people will serve on the task force full time. Several hundred more will take part in the technical evaluation, including NASA personnel from the work package centers and from outside of the program, Phase B contractors, and representatives from user groups and the international partners.

The Executive Technical Committee will include representatives from engineering organizations at the five prime Space Station centers, the flight crew office and the user community. The acting Space Station program manager and project managers from the five Space Station centers also will serve on this committee.

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The task force will critically examine all aspects of the current Space Station baseline configuration. It will evaluate the configuration in terms of the amount of extravehicular activity required for assembly and maintenance of the station, launch capacity of the shuttle fleet when again operational, assembly sequence of the baseline configuration, any resultant impact to the utilization of the station, potential impact on international partners and overall technical performance and integrity of the station.

The Executive Technical Committee will approve the assumptions, engineering and technical constraints identified by the task force and will oversee their activities. The committee will examine work package assignments from the standpoint of changes required due to the impact of any design iterations, minimizing development costs and achieving simple, controllable interfaces.

Results of the overall evaluation will be factored into the request for proposals to be released to industry in the next fiscal year beginning Oct. 1, 1986. Selection of contractors to design, build and test Space Station hardware is scheduled to take place in 1987.

President Reagan, in his 1984 State of the Union message, directed NASA to develop a permanently manned Space Station within a decade. The Space Station, comprised of a manned base and unmanned platforms, will provide a multi-purpose facility in low-Earth orbit for the conduct of science, technology and commercial activities.

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NASA News

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Houston, Texas 77058
AC 713 483-5111

For Release

David W. Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

Aug. 20, 1986
11:00 a.m. EDT

RELEASE: 86-117

McCARTNEY NAMED KENNEDY SPACE CENTER DIRECTOR

Lt. Gen. Forrest S. McCartney, Commander of the Space Division, Air Force Systems Command, Los Angeles, has been named Director of the Kennedy Space Center, Fla. On assignment from the Air Force, he is expected to report to NASA on approximately October 1.

"General McCartney's close association with our nation's space program and his outstanding management record make him an excellent choice to become director of the Kennedy Space Center. I am pleased that the Air Force has allowed him to take on this assignment with NASA," said NASA Administrator James C. Fletcher.

McCartney succeeds Richard G. Smith who retired from NASA on July 31, 1986.

Born March 23, 1931, in Ft. Payne, Ala., McCartney received a bachelor of science degree in electrical engineering from the Alabama Polytechnic Institute, Auburn, in 1952 and earned a master's degree in nuclear engineering from the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, in 1955. He also is a graduate of the Armed Forces Staff College, Norfolk, Va.

McCartney's Air Force assignments have included the Satellite Control Facility, Sunnyvale, Calif., as a satellite controller during early space operations; the Office of Space Activities, Headquarters Air Force Systems Command, Andrews Air Force Base, Md., as a project officer in the Titan III program and various Air Force communication satellite programs; the Directorate of Space at Headquarters U.S. Air Force, Washington, D.C., as the program element monitor for satellite communications programs and other selected space-related efforts; and the Air Force Eastern Test Range, Patrick Air Force Base, Fla., as director of range engineering.

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In June 1974, McCartney was assigned to the Space and Missile Systems Organization at Los Angeles Air Force Station as the systems program director for Fleet Satellite Communications Systems. In August 1976, he was reassigned within the organization as deputy for space communications systems.

McCartney moved to Norton Air Force Base, Calif., in September 1979, as vice commander of the Ballistic Missile Office and was named commander of the Ballistic Missile Office and M-X program director in November 1980. He became vice commander of the Space Division in May 1982 and commander, Space Division and vice commander, Space Command in May 1983. Upon activation of the U.S. Space Command, he was redesignated commander of the Space Division in October 1985.

His military decorations and awards include the Distinquished Service Medal, Legion of Merit with one oak leaf cluster, Meritorious Service Medal and Air Force Commendation Medal with three oak leaf clusters. He also wears the master missile badge and the master space badge.

McCartney and his wife, the former Ruth Griffis of Memphis, Tenn., have two daughters, Margaret and Worthy.

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NASA News

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AC 713 483-5111

For Release:

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

August 27, 1986
2:00 p.m. EDT

RELEASE NO: 86-120

NASA ANNOUNCES DISPOSITION OF SHUTTLE MISSION 51-L FLIGHT MEMENTOS

During the mission 51-L salvage operation, several items from the Official Flight Kit (OFK) and Personal Preference Kits (PPK) were recovered. Some of the recovered OFK items were flown for and will be presented to specific institutions or organizations, while others were flown by NASA without predetermined recipients, in anticipation of the presentation of post-flight awards and mementos.

The PPKs contained personal items flown at the request of each individual crew member and those items recovered will be returned to the crew families.

NASA will suitably prepare and present to each state and territory one 51-L crew patch, one United States flag and the respective state or territory flag, with a request that these items which were flown on 51-L be displayed appropriately in memorial to the crew. In addition, NASA will present one memento to the National Air and Space Museum, which is the national repository for items depicting the history of the space program.

NASA will present those recovered items which were flown for a specific organization or institution to the intended recipient. Where multiple items were flown, one will be presented and the remainder placed in permanent storage. NASA will announce the recipients of the items to be presented after all have been notified. All items not flown for a specific organization or institution will be placed in permanent storage in a location to be determined by the NASA Administrator.

In announcing the disposition of these items from the mission 51-L Official Flight Kit, Dr. James C. Fletcher, NASA Administrator, stated, "Since our space program is the nations's program, all its people should have a reminder of the Challenger

and its crew. I believe that providing a suitable remembrance to each state and territory, as well as our National Air and Space Museum, serves this purpose."

Attached is a list of all items carried in the OFK. A list will be available describing those OFK items recovered and their recipients after recipients have been notified.

CONTENTS OF 51-L OFFICIAL FLIGHT KIT

ITEM	CONTENT	ITEM	CONTENT
1-11.	Flags and Patches	49.	Patch
12.	Emblems	50.	Patch
13.	Etchings	51-53	Deleted prior to flight
14.	Patch and Flag	54.	Patch
15.	Deleted prior to flight	55.	Deleted prior to flight
16.	Video Disk	56.	Pin
17.	Flag	57.	Pin
18.	License Plate/Banner/Decals	58.	Flag
19.	Patches	59.	Flag
20.	Wings	60.	Flag
21.	Banner and Patch	61.	Flag
22.	Flag and Medallion	62.	Flag
23.	Book covers	63.	Medallion
24.	Piece of Glider Rib	64.	Medallion
25.	Medallion	65.	Diploma
26.	Floppy Disk/Medallion	66.	Medallion
27.	Medallion	67.	Picture
28.	Flags	68.	Flag
29.	Flag	69.	Flag
30.	Deleted prior to flight	70.	Flag
31.	Medallion	71.	Seal
32.	Deleted prior to flight	72.	Patches
33.	Soccer Ball	73.	Ring
34.	Seal	74.	Pin
35.	Flag	75.	Patch
36.	Badges/Buckles	76.	Pin
37.	Flag	77.	Pin
38.	Flag/Football	78.	Key
39.	Medallion	79.	Plaque
40.	Flag	80.	Patches
41.	Coffee Block	81.	Coin Sets
42.	Ceramic Star	82.	Patches
43.	Patches	83.	Decals
44.	Pennant	84.	Copies of Constitution
45.	Wings	85.	Certificates
46.	Patch	86.	Decals
47.	Deleted prior to flight	87.	Flag
48.	Patch		

NASA News

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For Release
September 5, 1986
4:30 p.m. EDT

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

Dick Young
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

RELEASE NO: 86-126

LOCKHEED SHUTTLE PROCESSING CONTRACT EXTENDED FOR THREE YEARS

NASA's John F. Kennedy Space Center, Fla., has extended for 3 years its Shuttle Processing Contract (SPC) with Lockheed Space Operations Co., Titusville, Fla. The current contract expires September 30, 1986.

Admiral Richard H. Truly, Associate Administrator for Space Flight, today announced his intent to form a review group to assess Shuttle processing, the SPC contract and the relationship of flight hardware contractors as part of NASA's overall review of Shuttle operations. Any approved changes to the SPC contract resulting from the review will be formalized during the contract negotiations through contract amendments.

The original SPC priced option for the 3-year period established at the outset of the contract in 1983 was for $1,317,861,540 and the extension covers the period from Oct. 1, 1986 through Sept. 30, 1989.

A breakout of the prepriced option allocated $927,165,050 to operations at KSC and $390,696,490 to the Air Force facility at Vandenberg AFB, Calif.

The dollar value of this extension award does not reflect those changes that will result from the temporary suspension in Shuttle launch operations at KSC due to the 51-L accident or the delay in initiating Shuttle launch operations at the Air Force facility at Vandenberg. Changes necessitated by those events will be handled through contract amendments.

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Under this cost-plus-award fee contract, Lockheed performs Shuttle processing services, including checkout, launch, landing and operation of related ground services, at Kennedy Space Center in Florida and, on behalf of the U.S. Air Force, at Vandenberg.

The SPC includes the initial 3-year period, now nearing its conclusion, the 3-year priced option covered in the new award and three unpriced 3-year options, for a total potential contract period of 15 years.

The SPC merged services formerly covered under 15 separate contracts in a single agreement and was the second comprehensive contract to be awarded by KSC. The first, the KSC Base Operations Contract, was awarded to EG&G in December 1982.

The third, the Payload Ground Operations Contract, is now in the procurement process.

- end -

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Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-1192)

For Release:
September 9, 1986

RELEASE: 86-129

SPACE STATION OFFICE FORMS OPERATIONS TASK FORCE

Associate Administrator for the Office of Space Station, Andrew J. Stofan, announced today the formation of an operations task force to review options and recommend concepts for managing and conducting operations aboard the permanently manned Space Station.

Carl B. Shelley, manager of the Customer Integration Office, Johnson Space Center, Houston, Texas, and Dr. Peter T. Lyman, assistant laboratory director, Office of Telecommunications and Data Acquisition, Jet Propulsion Laboratory, Pasadenda, Calif., will serve as co-chairmen of the operations task force.

"The Space Station will consist of both unmanned platforms and a manned base," Stofan said. "With Shelley and Lyman as co-chairman of the task force, we can capitalize on their vast knowledge of manned and unmanned spaceflight operations from long careers working at the NASA centers that are preeminent in the two modes of spaceflight."

At President Reagan's direction, NASA is developing a Space Station which will serve as a permanent facility in space for the conduct of scientific, technology and commercial activities.

International space agencies currently are participating in the preliminary design of the Station and may contribute elements to it as well.

The focus of the task force will be to explore alternative approaches to operating and managing the deployed Space Station, which must integrate a diverse set of U.S. and international hardware elements and accommodate a wide range of manned and unmanned user activities and to recommend an effective concept for operating the system. The task force will report its results and recommendations for operations planning and implementation to the Associate Administrator for Space Station.

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About 25 people will serve on the task force full-time. Additional people will serve part-time as consultants or in other special capacities. Members will represent NASA centers, the private sector, the academic community and other governmental agencies with experience and interest in space operations. NASA has invited the international partners to contribute to the U.S. task force activities on any similar operational assessments conducted in parallel.

The task force will begin its work in the next few weeks and is expected to remain active for approximately 4 to 6 months. The task force will conduct its work in Washington, D.C.

- end -

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AC 713 483-5111

For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

September 16, 1986

John Lawrence
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

ASTRONAUT FULLERTON REASSIGNED

Astronaut Charles G. Fullerton, Col., USAF, will be reassigned as an aerospace test pilot at NASA's Dryden Flight Research Facility, Edwards, Calif., effective next month.

Fullerton, a veteran of two Space Shuttle flights, piloted Columbia on its third test flight, March 22-30 1982 and was commander of Challenger on Mission 51-F, a Spacelab flight from June 29-July 5, 1985. He was selected as an astronaut in September 1969.

At Dryden, which is co-located with Edwards Air Force Base, Fullerton will fly test and evaluation flights aboard such aircraft as the F-104, T-38 and B-52. His more than 11,200 hours of flying time includes experience in 84 types of aircraft.

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For Release:

Billie A. Deason
RELEASE NO. 86-030 IMMEDIATE

DR. MICHAEL B. DUKE TO PRESENT KEYNOTE ADDRESS AT SYMPOSIUM '86

Dr. Michael B. Duke, Chief, Solar System Exploration Division at NASA's Johnson Space Center, will present the keynote address at Symposium '86, Sept. 22-24, 1986 in Atlantic City, N. J. He will discuss magnetic levitation transportation systems for the development of a lunar base.

Magnetic levitation technology, now in its infancy on Earth, may be a strong candidate for providing a lunar transportation system. "Maglev" also should be uniquely compatible with operations in the lunar vacuum.

Symposium '86 combines the First Lunar Development Symposium and the First U.S. Maglev Transportation Conference. Sessions are scheduled at the Resorts International Hotel. Featured speakers include Dr. Isaac Asimov and columnist Jack Anderson.

Symposium '86 will discuss new concepts and technologies as well as the business and financial aspects of space science, lunar development and transportation. The technical program of Symposium '86 is sponsored by The Engineers' Club of Philadelphia.

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For Release:

Steve Nesbitt
RELEASE NO. 86-033

DONALD R. PUDDY ASSIGNED TEMPORARY DUTY AS AMES CENTER DEPUTY

Donald R. Puddy, assistant director for systems in the Mission Operations Directorate at Johnson Space Center has been temporarily assigned as acting deputy director of the Ames Research Center, Mountain View, California.

The three-month assignment runs through mid-December while the Ames deputy director attends a management school at Harvard University.

Puddy came to the Johnson Space Center in 1964 (then the Manned Spacecraft Center) as a flight controller monitoring lunar module systems for the Apollo program. He later headed up organizations at the center with responsibility for the lunar module used during the moon landings.

He also was a flight director during the Skylab program and the Apollo-Soyuz Test Project, the joint U.S.-Soviet flight in 1975. He served as lead flight director for the first Space Shuttle mission in 1981 and was a flight director on the second Shuttle flight.

From 1982 to 1985, Puddy was chief of the Mission Operations Systems Division, overseeing the activity of more than 200 engineers specializing in Space Shuttle systems. In his current JSC assignment as Assistant Director for Systems within the Mission Operations Directorate, he supervises approximately 700 personnel dealing with Space Shuttle-related systems.

# # #

October 1, 1986

NASA News

National Aeronautics and
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AC 713 483-5111

Barbara Schwartz
RELEASE NO. 86-034

For Release
October 1, 1986

NSTS ENGINEERING OFFICE ESTABLISHED

Robert W. Moorehead has been appointed to the newly established position of Manager, National Space Transportation System (NSTS) Engineering Office. JSC Director Jesse Moore announced September 26, 1986, that Moorehead will report directly to Arnold Aldrich, Manager, National Space Transportation System and will be responsible for coordinating engineering activities between the Shuttle program and project organizations.

"This office has been created to bring renewed emphasis to the engineering activities across the NSTS program. A specific objective is to facilitate technical interchange between all program and project elements," Moore said in his announcement.

Approximately 30 employees will be reassigned from other NSTS organizations initially to staff the NSTS Engineering Office.

Specific functions of the NSTS Engineering Office include definition and control of program requirements; integration of flight-systems and ground systems performance requirements; management of integrated systems analyses and design data bases; Program-wide integration of project technical reviews, anomaly

-more-

closeouts, and performance improvements; NSTS software requirements management and control; and NSTS avionics integration.

Moorehead, who joined JSC in February 1964, has more than 14 years of direct NSTS experience in key management positions. His assignment prior to this new appointment was Assistant Manager of the NSTS Office. Moorehead has also served as Deputy Director of Kennedy Space Center's Shuttle Engineering Directorate, Deputy Manager of the STS Orbiter and GFE Projects Office, Manager of the Shuttle Avionics Office, and he has held several other management positions within the Shuttle Avionics Office.

Moorehead received a bachelor of science degree in electrical engineering from Mississippi State University and a master of science degree in electrical engineering from the University of Southern California. He is married to the former Delores Carmen Saldana of Ft. Worth, TX, and they have three children, Marcus Kent, 17, Tracy Dawn, 16, and Kimberly Noel, 12.

The NASA Special Achievement Award and NASA Exceptional Service Medal are only two of the many achievement awards presented to Moorehead during his tenure at JSC.

# # #

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For Release

David W. Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

Doug Ward
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

October 2, 1986
12:00 p.m. EDT

RELEASE NO: 86-138

MOORE REASSIGNED, COHEN NAMED JSC DIRECTOR

Dr. James C. Fletcher, NASA Administrator, today announced that Jesse W. Moore, Director of the Lyndon B. Johnson Space Center (JSC), Houston, will be reassigned in response to his request.

Also announced was the appointment of Aaron Cohen to succeed Moore as JSC director. Cohen is currently director of research and engineering at JSC.

Moore will be reassigned as special assistant to the General Manager, NASA Headquarters, effective Oct. 12, 1986. It is anticipated that Moore will subsequently apply for a Senior Executive Service sabbatical.

"NASA and the country owe special thanks to Jesse, who held two very difficult jobs during the days following the Challenger accident -- that of Associate Administrator for Space Flight and director of JSC. His skills and experience will be well utilized in whatever new assignment he ultimately undertakes," Dr. Fletcher said. Upon completion of the sabbatical, Moore is expected to be assigned to a key position within the Agency.

Moore came to NASA Headquarters in 1978 as Deputy Director of the Solar Terrestrial Division, Office of Space Science. In June 1979, he was appointed Director of the Space Flight Division. In Dec. 1981, he assumed the position of Director, Earth and Planetary Exploration Division. He was appointed Deputy Associate Administrator for Space Flight in 1983. He served as Acting Associate Administrator for Space Flight from April 1984 until he was appointed Associate Administrator on Aug. 1, 1984. While at NASA Headquarters Moore was awarded the NASA Exceptional Service Medal, the NASA Outstanding Leadership Medal and the Presidential rank of meritorious executive. He was named the JSC Center Director on Jan. 23, 1986.

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In prior assignments, Moore was employed at NASA's Jet Propulsion Laboratory, Pasadena, Calif., starting in 1966 and worked in a variety of areas. His last assignment was Science and Mission Design Manager for Project Galileo.

"Aaron Cohen has had a distinguished career in NASA which makes him especially fit for his new post as director of the center that supervises the Space Shuttle program," Dr. Fletcher said. "From 1972 to 1982 he served as the Space Shuttle Orbiter project manager. Perhaps no person in the country knows more about this unique vehicle than Aaron. He has earned the trust and admiration of his associates for his keen mind and exceptional management skills."

JSC is NASA's prime center for manned space flight activities. It is the focal point for development of manned spacecraft and space systems, and the training center for the astronaut corps. Manned missions are planned at JSC and controlled from JSC's mission control center.

Cohen came to NASA in 1962 in the Apollo Spacecraft Program Office at the Manned Spacecraft Center (now the Johnson Space Center). From 1970 to 1972, he served as Manager for the Command and Service Module (CSM), Apollo Spacecraft Program.

From 1972 to 1982, Cohen was Manager of the Space Shuttle Orbiter Project. In this assignment, he was responsible for directing the design, development, production and test flights of the Space Shuttle orbiter.

From 1982-1983, he was Director of the Engineering and Development Directorate with responsibilities for providing engineering development and test support for manned space flight programs assigned to the Johnson Space Center, such as the Space Shuttle and other advanced spacecraft.

In his present position, Cohen is responsible for the overall direction and management of all engineering and space and life science research and development in support of the major manned space flight programs assigned to JSC.

Cohen holds a bachelor of science degree in mechanical engineering from Texas A&M University (1952) and a master of science degree in applied mathematics from Stevens Institute of Technology (1958). He also has completed advanced graduate studies in mathematical physics at New York University and University of California at Los Angeles and was awarded an honorary doctor of engineering in 1982 from the Stevens Institute of Technology.

Cohen has received numerous NASA awards including two distinguished service medals and NASA Engineer of the Year (1982). He was honored with the Presidential rank of meritorious executive in 1981 and the Presidental rank of distinguished executive in 1982.

- end -

October 2, 1986

NASA News

National Aeronautics and
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AC 713 483-5111

For Release:

Dwayne C. Brown
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

October 15, 1986

RELEASE: 86-145

ASTRONAUT GREGORY NAMED TO NEW POST IN HEADQUARTERS SAFETY OFFICE

Astronaut Frederick D. Gregory, Col., USAF, has been named Chief of the Operational Safety Branch, Safety Division, in the Office of Safety, Reliability, Maintainability and Quality Assurance, NASA Headquarters, effective Oct. 14, 1986.

The purpose of this new position is to provide a senior safety manager for agency-wide oversight of NASA space and aeronautic programs operations and research and development and test facilities activities which affect both ground and flight operational safety. Gregory will participate with industry, the Department of Defense and other government agencies in developing policy and criteria to assure safety of personnel, equipment and mission for complex ground and flight operations.

Gregory was selected as an astronaut candidate by NASA in January 1978 and was pilot for Space Shuttle Mission 51-B. He has flown more than 40 different types of single and multi-engine fixed and rotary military and civilian aircraft, logging more than 5,100 hours of flight time.

Gregory, born Jan. 7, 1941 in Washington, D.C., received a BS degree from the United States Air Force Academy in 1964 and a Masters degree in information systems from George Washington University in 1977.

He is married and has two children.

-end-

NASA News

National Aeronautics and
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AC 713 483-5111

John Lawrence
RELEASE NO. 86-038

For Release
October 21, 1986

SENIOR STAFF CHANGES

Changes in several senior staff positions at NASA's Johnson Space Center, Houston, were announced today by Dr. Aaron Cohen, center director.

Effective immediately, the following JSC officials assume the new duties indicated:

Robert C. Goetz becomes technical assistant to the center director. He will assist with a number of projects of importance to JSC, including strategic planning activities. Goetz was formerly deputy center director, and was reassigned at his own request.

Clifford E. Charlesworth will serve as special assistant to the director. He has been with NASA since 1962 and has held several key positions, most recently as director of Space Operations.

Henry O. Pohl becomes director, Engineering. He has been associated with propulsion systems development since 1957. He came to JSC's Propulsion and Power Division in 1962 as a senior propulsion engineer and has held a number of key supervisory positions in that organization. He has served as division chief since 1980.

William R. Kelly will serve as director, Administration. He came to JSC in 1962 as a senior engineer in the Mercury Project Office. He has held a number of management positions within the center, most recently as Director of Center Support.

Dr. R. Wayne Young will report to Kelly as deputy director, Administration. He joined JSC in 1962 as a technical manager in the Apollo Spacecraft Project Office and has also held a number of key managerial positions.

Astronaut Paul J. Weitz is temporarily assigned as technical assistant to the center director. He served as pilot on the first manned Skylab mission in 1973 and in 1983 he commanded the sixth Space Shuttle mission. He has been an astronaut since 1966, and most recently was assigned as deputy chief of the Astronaut Office.

-end-

NASA News

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For Release:

John Lawrence
RELEASE NO. 87-007

March 6, 1987

SECOND GROUP OF PROSPECTIVE ASTRONAUTS

A second group of 22 prospective astronaut candidates will be interviewed by Johnson Space Center officials the week of March 8.

NASA expects approximately 100 applicants to go through the six-day program of interviews, indoctrination and testing. The first group of 22 was at JSC Feb. 22-27. Successful applicants will report for duty this summer.

The determination to augment the Astronaut Office with new candidates is based on such factors as the projected flight rate and attrition in the corps. Military personnel are nominated to NASA by their parent services, while applications from civilians are accepted year-round.

The second group consists of Kenneth D. Bowersox (Lt., USN), Ridgecrest, Calif.; Kevin P. Chilton (Maj., USAF), Shalimar, Fla.; Gregory S. Coale (Capt., USAF), Edwards, Calif.; Kenneth D. Cockrell (Lt. Cdr., USN), Lemoore, Calif.; Rhonda L. S. Cornum (Capt., USA), Olney, Md.; Cynthia A. Evans, Ph.D., Nyack, N.Y.; Christopher S. Finnerty (Capt., USAF), Centerville, Ohio; Deborah J. Jackson, Ph.D., Port Hueneme, Calif.; John C. Jarrell (Capt., USA), Lorton, Va.; John A. Jaurequi (Maj., USMC), Iwakuni, Japan; John F. Kinzer (Lt. Cdr., USN), Virginia Beach, Va.; Sally A. Look, Ph.D., Germantown, Md.; Donald R. McMonagle (Maj., USAF), Henderson, Nev.; William A. Meeley, Jr. (Cdr., USN), Burke, Va.; James H. Newman, Ph.D., Houston, Tex.; Troy D. Pennington (Maj., USMC), Edwards, Calif.; John D. Rickerson (Maj., USAF), Niceville, Fla.; Mario Runco, Jr. (Lt. Cdr., USN), Aiea, Hawaii; Anna M. Tavormina, Ph.D., League City, Tex.; James S. Voss (Maj., USA), Houston, Tx.; Carl E. Walz (Capt., USAF), Edwards, Calif.; and Scott E. McCarty (Lt. Cdr., USN), Virginia Beach, Va.

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

John Lawrence
RELEASE NO. 87-008

March 11, 1987

JSC General File

ASTRONAUT BOLDEN HEADS SAFETY DIVISION

Astronaut Charles F. Bolden, Jr. (Col., USMC), has been appointed Chief of the Safety Division at NASA's Johnson Space Center, Houston.

Bolden succeeds Jerome B. Hammack, who has been appointed assistant to the Director of Safety, Reliability and Quality Assurance for Assurance Technology Development at JSC.

Bolden came to NASA in May 1980 as an astronaut candidate. Since completing a year-long training and evaluation period he has held a variety of assignments within the Astronaut Office. He was pilot of the Space Shuttle Columbia on STS 61-C in January 1986. Most recently he has served as Special Assistant to the JSC Center Director.

The Safety Division is an element of JSC's Directorate of Safety Reliability and Quality Assurance headed by Charles S. Harlan. Bolden's appointment will not preclude his selection to future Space Shuttle flights.

Hammack, in his new position, will be primarily responsible for advance planning, investigating and developing new technologies, and for focusing the direction of the Safety, Reliability and Quality Assurance disciplines for the future.

# # #

NASA News

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For Release:

Jack Riley
RELEASE NO. 87-011

March 19, 1987

HUNTOON NAMED SPACE AND LIFE SCIENCES DIRECTOR

Carolyn Leach Huntoon, Ph.D., has been named to succeed Joseph P. Kerwin, M.D., as Director, Space and Life Sciences at the Johnson Space Center. The appointment is effective upon Kerwin's retirement April 1.

Dr. Huntoon, an endocrinologist, joined JSC in 1970 as a senior physiologist. She became chief of the Biomedical Laboratories Branch in 1976 and since 1984 has served as Associate Director of JSC. She has served as a member of astronaut selection boards since 1978.

During her 17 years with NASA, Dr. Huntoon has been the recipient of numerous awards, including both the NASA Exceptional Service Medal and the Exceptional Scientific Achievement Medal, the highest honor that NASA gives to a scientist. The University of Texas Health Science Center selected Dr. Huntoon as the Distinguished Professional Woman of the Year for 1985.

Dr. Huntoon's postgraduate work was accomplished at Baylor University College of Medicine in Houston. She spent two years as a National Academy of Science Research Associate in space medicine research.

# # #

NASA News

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For Release:

John Lawrence
RELEASE NO. 87-012

March 20, 1987

THIRD GROUP OF ASTRONAUT APPLICANTS TO BE INTERVIEWED

A third group of 22 prospective astronaut candidates has been invited to NASA's Johnson Space Center, Houston, for a week-long series of interviews and tests beginning Sunday, March 22.

Approximately 100 applicants in five groups are expected to be invited to JSC. Previous groups were at the center Feb. 22-27 and March 8-13. Successful applicants will report for duty this summer.

The determination to hire additional astronaut candidates is based on such factors as the projected flight rate and attrition in the astronaut corps. Military personnel are nominated to NASA by their parent services, while applications from civilians are accepted year-round.

The third group consists of Richard L. Bennett (Capt., USAF), Shalimar, Fla.; Curtis L. Brown, Jr. (Capt., USAF), Niceville, Fla.; Kevin P. Burns (Maj., USAF), Lancaster, Calif.; Joseph L. Byerly (Capt., USAF), Shalimar, Fla.; David W. Eidsaune (Capt., USAF), Edwards AFB, Calif.; Bruce D. Remick (Lt., USN), Leonardtown, Md.; Thomas B. Russell (Lt. Cdr., USN), Patuxent River, Md.; Bruce E. Stofferahn (Capt., USAF), Niceville, Fla.; Michael R. U. Clifford (Maj., USA), Norfolk, Va.; James D. Cloyd (Lt., USN), Pt. Mugu, Calif; David B. Cripps (Capt., USA), Patuxent River, Md.; Katherine R. Daues, Houston, Tx.; C. Michael Foale, Ph.D., Seabrook, Tx.; Joshua K. Hoyt, Ph.D., Woods Hole, Mass.; John N. Kohut (Lt. Cdr., USN), Hollywood, Md.; Thomas P. Moore, M.D., Indianapolis, Ind.; Ellen Ochoa, Ph.D., Pleasanton, Calif.; William A. Pailes (Lt. Col., USAF), Hawthorne, Calif.; Mary E. Reid, M.D., Birmingham, Ala.; Susan J. Reynolds, Kemah, Tx.; David E. Walker (Capt., USAF), Edwards, Calif.; and Virginia A. Whitelaw, Ph.D., Friendswood, Tx.

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Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

March 26, 1987
4:00 p.m. EST

RELEASE: 87-42

LOCKHEED SELECTED FOR ENGINEERING SUPPORT CONTRACT

NASA has selected Lockheed Engineering and Management Services Company, Houston, for negotiations leading to the award of a contract for engineering support at Johnson Space Center, Houston. This new effort consolidates work currently performed by that company; McDonnell Douglas Astronautics Co. and Northrop Services, Inc., under three separate contracts.

The contract provides research and development support services to all elements of JSC's Engineering Directorate and to specified elements of the Space and Life Sciences Directorate, emphasising continued support for Space Shuttle, Space Station and advanced missions programs.

Services provided by Lockheed will range from hands-on maintenance and operation tasks to the engineering associated with major systems design and development projects. Areas of technical activity include crew systems, avionics, propulsion and power, aerodynamics, flight performance, man-systems design, solar system exploration and lunar science, advanced systems planning and design and flight projects development and coordination.

With a basic performance period of 2 years beginning in May 1987, the cost-plus-award-fee contract will additionally contain three 2-year priced options. The total estimated cost proposed by Lockheed for the 8-year period is approximately $655 million. McDonnell Douglas Astronautics Co., Houston division also submitted a proposal.

- end -

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Leon N. Perry
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

Terry White
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

Jim Doyle
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

For Release:
March 27, 1987

RELEASE: 87-013

NASA BEGINS STUDY OF MARS SAMPLE RETURN MISSION

Two National Aeronautics and Space Administration centers are studying concepts for designing and building a robot space vehicle that would travel from Earth to the planet Mars, land and explore the martian surface and return an 11-pound sample of rock and soil to Earth.

Human exploration of Mars, preceeded by robotic missions including the sample-return, is one of four space initiatives recently brought under study by NASA to help the nation determine its next major goal in space. Other initiatives are: expanded Earth systems study, enhanced solar system exploration, and a permanent scientific base on the moon.

If approved and funded, the sample-return mission would be launched in 1998 and return with martian soil, rock and atmosphere samples in 2001. NASA has allocated $1.2 million for studies in Fiscal Years 1987-88.

The project has been recommended by the National Academy of Sciences and other space advisory groups. Unmanned Mars missions would be forerunners of manned Mars exploration in the 21st-first century.

Task teams at NASA's Johnson Space Center (JSC), Houston, and at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., are outlining preliminary scenarios on how a Mars sample-return mission could be flown.

- more -

JPL would study a Mars orbiter spacecraft and an automated surface rover equipped with sample-gathering scoops and tongs. The orbiter and Mars surface craft would depend heavily on preprogrammed computer software to manage tasks, since radio commands take almost an hour to reach Mars from Earth.

JPL will have overall project management. JPL managed the Viking Mars lander missions in 1975-76, the Voyager planetary missions and most other United States unmanned planetary exploration projects.

As now envisioned, JSC would study a spacecraft capable of entering and slowing down in the martian atmosphere--estimated at one percent the density of the Earth's atmosphere--to land gently on the planet's surface. JSC also would study the vehicle stage for lifting off Mars to rendezvous and dock with an orbiting spacecraft prior to return to Earth with the surface samples.

Returned martian soil, rock and atmosphere samples would undergo laboratory analysis, much like samples from the Moon during the Apollo lunar landing program. The Space Station probably will be used for initial study and analysis of the returned samples.

JSC will award two $350,000 martian atmospheric-entry study contracts, and JPL will award two $250,000 surface mobility and rover-lander rendezvous study contracts. The four contracts will begin October 1, 1987. Representatives of firms interested in the Mars project will be briefed at JPL March 31.

- end -

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Note: Video and radio programming are available to support this release.

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NASA News

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AC 713 483-5111

For Release:

John Lawrence
RELEASE NO. 87-014

March 30, 1987

FOURTH GROUP OF PROSPECTIVE ASTRONAUTS TO BE INTERVIEWED

A fourth group of 22 prospective astronaut candidates is at NASA's Johnson Space Center, Houston, this week undergoing testing, interviews and indoctrination.

This brings to 88 the total invited to JSC. A fifth group will arrive next week.

The fourth group consists of John C. Ball (Cdr., USN), Bonita, Calif.; Dan P. Clemens, Ph.D., Tuscon, Ariz.; Paul R. Deppe (Lt. Cdr., USN), Newport News, Va.; Lance G. Grace (Maj., USAF), Edwards AFB, Calif.; Christopher R. Henry (Cdr., USN), Coronado, Calif.; Jenny M. Howard, League City, Tx.; John D. Howard (Maj., USAF), Edwards AFB; Beth E. Hubert (Lt., USN), Lexington Park, Md.; Erwin B. Jenschke (Maj., USAF), Edwards, Calif.; Lewis D. Jollett (Maj., USAF), Edwards; Marcus A. McInnis (Lt. Cdr., USN), California, Md.; JoAnn Milliken, Ph.D., Alexandria, Va.; Cheryl A. Neely, Cocoa Beach, Fla.; Robert A. Rivers, Houston, Tex.; Samuel K. Ryals (Maj., USAF), Edwards AFB; James R. Selevan, M.D., Laguna Beach, Calif.; Michael H. Stevens (Maj., USMC), Patuxent River, Md.' Joseph R. Tanner, Houston, Tex.; Donald A. Thomas, Ph.D., Titusville, N.J.; Teri L. Vossler, Ph.D., Durham, N.C.; Jeffrey N. Williams (Capt., USA), Monterrey Calif.; and Peter J. K. Wisoff, Ph.D., Houston, Tex.

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NASA News

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Houston, Texas 77058
AC 713 483-5111

For Release:

Steve Nesbitt
RELEASE NO. 87-015

April 6, 1987

FIFTH GROUP OF PROSPECTIVE ASTRONAUTS TO BE INTERVIEWED

A fifth and final group of 24 prospective astronaut candidates is at NASA's Johnson Space Center in Houston this week undergoing testing, interviews and indoctrination.

This brings to 112 the total invited to JSC. Between 12 and 15 will be selected later this spring as astronaut candidates.

An astronaut candidate undergoes a one-year period of training and evaluation before becoming a member of the astronaut corps.

The fifth group consists of Mark E. Almquist (Capt., USAF), Edwards, Calif.; Douglas N. Barlow (Capt., USAF), Colorado Springs, Colo.; Matthew W. Blake, Mountain View, Calif.; Courtland C. Bivens (Capt., USA Reserve), San Jose, Calif.; Michael S. Burns, Ph.D., Laramie, Wy.; Daniel W. Bursch (Lt., USN), Chula Vista, Calif.; Jeffrey G. Canclini, Dayton, Ohio; Bryan Chakoumakos, Ph.D.,Albuquerque, N.M.; Virginia A. Clare, Huntington Beach, Calif.; Farrell W. Corley (LCdr., USN), San Diego, Calif.; Wayne M Denesik (Capt., USAF), Edwards, Calif.; Michael E. Fossum (Capt.,USAF), Edwards, Calif; Bernard A. Harris, Jr., M.D., San Jose, Calif.; William N. Higginbotham (Capt., USAF), Edwards, Calif.; Charles R. Justiz, Seabrook, Tex.; Eric R. Keto, Cambridge, Mass.; Barbara J. Lee, Katy, Tex.; Gary A. Mercer (Lt., USN), Patuxent River, Md.; Donald R. Pettit, Ph.D., Santa Fe, N.M.; John R. Rummel, Ph.D., Silver Spring, Md.; Richard F. Schaller, Champaign, Ill.; Mark D. Shackelford (Capt., USAF), Edwards, Calif.; Nancy J. Sherlock (Capt., USA), Enterprise, Ala.; and John E. Von Gohren (Lt., USN), Virginia Beach, Va.

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NASA News

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For Release:

Steve Nesbitt
RELEASE NO. 87-020

NOTICE TO EDITORS:

JSC SCHEDULES LONG-DURATION SIMULATION

A simulation of the first 56 hours of the next Space Shuttle mission is scheduled for April 28-30 at the Johnson Space Center.

The STS-26 timeline and payload will be used, but flight crew members will not be those selected for the first flight since the Challenger accident. The prime goal of the simulation is to exercise the people and the processes necessary to support next year's mission.

The integrated simulation between astronauts in the Shuttle Mission Simulator and flight control teams in the Mission Control Center will begin at 9 a.m. CDT, with launch scheduled at 9:09 a.m. Deployment of the payload, a Tracking and Data Relay Satellite, is scheduled for 3:15 p.m., 6 hours and 6 minutes after launch. The simulation will end no later than 5 p.m., April 30.

Flight controllers will support the simulation around-the-clock in MCC, but the flight crew will not remain in the SMS during sleep periods. Flight director change-of-shift news briefings are planned for 12:20 p.m on April 28 and 11:45 a.m. on April 29 and 30 if media interest warrants them.

Flight crew members are Michael L. Coats, commander; John E. Blaha, pilot; and Anna L. Fisher, James F. Buchli and Robert C. Springer, mission specialists.

Lead flight director is Charles W. Shaw, who will head the orbit 2 team. Other flight directors are Ronald D. Dittemore, ascent and orbit 1 team; and James M. Heflin, planning team.

Coats, Shaw and C. Stokes McMillan, simulation supervisor, will participate in a news briefing concerning the simulation at 2 p.m., Monday, April 27, in Room 135 of the JSC News Center, Building 2.

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NASA News

National Aeronautics and
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John Lawrence
RELEASE NO. 87-021

For Release
April 27, 1987

KEY ASTRONAUT ASSIGNMENTS

Four astronauts have been assigned to key posts in the Flight Crew Operations Directorate and Astronaut Office at NASA's Johnson Space Center, Houston.

Newly assigned are Henry W. Hartsfield, Deputy Director for Flight Crew Operations; Daniel C. Brandenstein (Capt., USN), Chief of the Astronaut Office; Karol J. Bobko (Col., USAF), Assistant for Operations to the Director, Flight Crew Operations; and Steven A. Hawley, Ph.D., Deputy Chief of the Astronaut Office.

Hartsfield was formerly Deputy Chief of the Astronaut Office and succeeds Brandenstein as Deputy for Flight Crew Operations. The organization includes as its major elements the Aircraft Operations Division, Vehicle Integration Test Office, Payload Specialist Liaison Office and the Astronaut Office. His Space Shuttle experience is as pilot of Columbia on STS-4, June 1982; commander of Discovery on 41-D in August, 1984; and commander of Challenger's Mission 61-A, October 1985.

Brandenstein replaces John W. Young, Chief Astronaut since 1974, who was recently appointed Special Assistant to the Center Director. Brandenstein has served as Deputy Director of Flight Crew Operations for the past year. He flew as pilot of Challenger on STS-8 in August 1983, and then as commander of Discovery on Mission 51-G, June 1985. He was also capsule communicator in Mission Control during the ascent and on-orbit phases of the first Space Shuttle flight in April 1981.

Bobko's newly-created position of Assistant for Operations carries responsibility for overseeing issues in the Space Transportation System during the effort to return to flight and the subsequent period of increasing operational activities.

Hawley replaces Hartsfield as Deputy Chief of the Astronaut Office. He flew as mission specialist on 41-D with Hartsfield in 1984, and aboard Columbia on Mission 61-C in January 1985.

The appointments are effective immediately and the astronauts concerned remain on flight status.

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NASA News

National Aeronautics and
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Sarah Keegan
Headquarters, Washington, D.C.
(Phone:202/453-8536)

For Release:

May 20, 1987
2:30 p.m. EDT

RELEASE:87-80

NASA PLANS NEXT SHUTTLE FLIGHT

NASA Administrator Dr. James C. Fletcher today announced June 1988 as the new target date for the next Space Shuttle launch. The exact date will be selected by the Administrator based upon the results of expanded testing of Shuttle systems, revised launch crew procedures and actual hardware deliveries.

This new target date reflects the decision, announced in April, to perform two major systems tests prior to flight. These tests are a "wet" countdown demonstration test, in which the external tank is filled with fuel for a simulated launch countdown, and a flight readiness firing in which the three main engines will be fired for about 20 seconds.

These two tests, which will be conducted approximately 6 weeks prior to launch, will provide engineering data to evaluate various systems modifications and provide an opportunity to exercise the launch and mission control teams and the revised procedures. The plan also permits acquiring new fabrication tooling to improve the tolerance on the redesigned solid rocket motor insulation J-seal.

Current plans are for two additional flights in 1988 and seven flights in 1989. Admiral Richard H. Truly, NASA associate administrator for space flight, indicated that necessary adjustments to the Shuttle manifest published in October 1986, will be worked out over the next few months.

In establishing the target for launch, Dr. Fletcher stated, "Safely returning the Space Shuttle to flight is NASA's highest priority. Our revised plan for Space Shuttle recovery is ambitious and assumes that we will successfully complete our test and processing objectives. I know I can count on the whole NASA team -- and, of course, I include our contractor partners -- to move out enthusiastically toward this new goal."

-end-

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Edward Campion
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

For Release
May 26, 1987
2:00 p.m. EDT

RELEASE NO: 87-84

ASTRONAUT RIDE WILL LEAVE NASA FOR STANFORD UNIVERSITY

Dr. Sally K. Ride will leave NASA in early autumn to assume the position of Science Fellow at the Stanford University Center for International Security and Arms Control, Palo Alto, Calif., the agency announced today.

"Sally Ride departs NASA with a superb record of accomplishment for which the nation owes her a debt of gratitude," said Dr. James C. Fletcher, administrator of the agency.

"Her flight as the first American woman in space firmly established an equal role for women in the space exploration program. Today, the assignment of women to Shuttle crews is a routine matter based on ability and need and is no longer a cause for notice.

"Her assignments in Shuttle systems development, mission control activities and Shuttle flights, in the Challenger accident investigation and in managing studies that will help the nation choose its next major goal in space mark her career as one of the most varied and productive in agency history.

"The country is fortunate that her energy, intelligence and good sense will continue to be focused on matters of vital public interest - security and arms control," Dr. Fletcher said.

Ride joined NASA as an astronaut candidate in 1978. During her career in NASA, she participated in development of the Shuttle remote manipulator system, served as capcom (capsule communicator) in Mission Control for four Space Shuttle flights, and participated in two flights - STS-7, launched in June 1983, and STS-41G, launched in October 1984.

- more -

Following the Challenger accident President Reagan appointed her as the astronaut member of the Rogers commission that investigated the tragedy.

Upon completion of the investigation she was assigned to NASA Headquarters as special assistant to the administrator for long range and strategic planning. She will remain at NASA Headquarters until August 15 to continue the assessment of NASA's long-range goals.

Ride earned a B.S. (1973), M.S. (1975) and Ph.D. (1978) in physics from Stanford Univerity. She will work as a physicist in her new position.

- end -

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Steve Nesbitt
RELEASE NO. 87-028

For Release
Immediate

NASA SELECTS 15 NEW ASTRONAUT CANDIDATES

The National Aeronautics and Space Administration today announced the selection of 15 new astronaut candidates for the Space Shuttle program.

Seven are pilot astronaut candidates and eight are mission specialist candidates. They will report to NASA's Johnson Space Center in Houston Aug. 17 to begin a year-long program of training and evaluation. Subsequently, successful candidates will begin training assignments leading to selection for Space Shuttle flight crews.

The candidates include five civilians and 10 military officers. Two of the mission specialist candidates are women, including one minority. Of the five civilians selected, three are current employees of the Johnson Space Center and one is employed by NASA's Marshall Space Flight Center.

NASA received 1,962 applications, from which 117 persons were interviewed and given medical examinations at the Johnson Space Center.

A listing of candidates and their biographical data follows:

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LIST OF ASTRONAUT CANDIDATES

Capt. Thomas D. Akers	U.S. Air Force	Mission Specialist
Capt. Andrew M. Allen	U.S. Marine Corps	Pilot
Lt. Kenneth D. Bowersox	U.S. Navy	Pilot
Capt. Curtis L. Brown, Jr.	U.S. Air Force	Pilot
Maj. Kevin P. Chilton	U.S. Air Force	Pilot
Dr. Jan D. Dozier	Civilian	Mission Specialist
Dr. C. Michael Foale	Civilian	Mission Specialist
Gregory J. Harbaugh	Civilian	Mission Specialist
Dr. Mae C. Jemison	Civilian	Mission Specialist
Maj. Donald R. McMonagle	U.S. Air Force	Pilot
Lcdr. Bruce E. Melnick	U.S. Coast Guard	Mission Specialist
William F. Readdy	Civilian	Pilot
Lcdr. Kenneth S. Reightler,Jr.	U.S. Navy	Pilot
Lcdr. Mario Runco, Jr.	U.S. Navy	Mission Specialist
Maj. James S. Voss	U.S. Army	Mission Specialist

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Steve Nesbitt
RELEASE 87-035

For Release:
August 6, 1987

STATUS UPDATE: MISSION CONTROL CENTER WATER LEAK

The main computer complex at the NASA Johnson Space Center's Mission Control Building is expected to be back in operation Monday following cleanup of water which leaked from a broken pipe fitting Thursday morning.

A fitting on a chilled water line in the crawlspace between floors of the JSC Mission Control Center/Mission Operations Wing was broken around 9 a.m. Thursday by workers installing cables into the space.

Water leaked onto the first floor Real-Time Computer Complex where support personnel immediately covered computer equipment with plastic sheeting. The equipment was powered down as a precautionary measure.

It is not known whether there was any damage to the computer equipment which supports data processing for Space Shuttle missions and simulations.

After the equipment racks have been inspected to ensure they are dry, the computers will be powered up and tested beginning Friday morning. Integrated systems testing will begin as soon as individual units have been checked. Full operation of the control center is expected by Monday morning.

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NASA News

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Terry White
RELEASE NO. 87-042

For Release:
September 14, 1987

NASA SELECTS RCA FOR SCIENCE SPACE PAYLOADS CONTRACT

The NASA Johnson Space Center, Houston, has selected RCA Government Services of Cherry Hill, New Jersey for negotiations leading to award of a contract covering science payloads development, engineering and operations.

The contract, with a proposed cost of $46 million over a five-year period, will be a follow-on to a current RCA research and development contract with the Center. The contract will start November 1, 1987 and run through October 31, 1992.

Under terms of the new contract, RCA will be responsible for Space Shuttle and Space Station science payload engineering, integration, planning, technical management, operational support and equipment acquisition. Dedicated and carry-on payloads aboard manned and man-tended missions are covered by the contract.

Other bidders were Lockheed Engineering and Management Services Company, Inc., Boeing Aerospace Operations, Northrop Services, Inc., and Systems Management and Engineering Corporation, all of Houston; and Grumman Technical Services, Inc., Titusville, Florida.

- 30 -

NASA News

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Jack Riley
RELEASE NO. 87-043

For Release
September 15, 1987

STS-27 CREW NAMED

NASA today announced five crewmembers for STS-27, a Department of Defense Space Shuttle mission targeted for early fall 1988, aboard the orbiter Atlantis.

They are: Robert L. Gibson (Cdr., USN), commander; Guy S. Gardner (Lt. Col., USAF), pilot; and mission specialists Richard M. Mullane (Col., USAF), Jerry L. Ross (Lt. Col., USAF) and William M. Shepherd, (Cdr., USN).

Gibson was pilot of STS-41B in February 1984, and commander of STS-61C in January 1986. He was born October 30, 1946, in Cooperstown, NY, but considers Lakewood, CA, his hometown.

STS-27 will be Gardner's first space flight. He was born January 6, 1948, in Alta Vista, VA, but considers Alexandria, VA, his hometown.

Mullane flew as a mission specialist on STS-41D in August 1984. He was born September 10, 1945, in Wichita Falls, TX, but calls Albuquerque, NM, his hometown.

Ross was a mission specialist on STS-61B in November 1985. He was born January 20, 1948, in Crown Point, IN.

Shepherd will be making his first space flight. He was born July 26, 1949, in Oak Ridge, TN.

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NASA News

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Kyle Herring
RELEASE NO. 87-044

For Release:
September 25, 1987

WARD NAMED DEPUTY DIRECTOR OF PUBLIC AFFAIRS

Douglas K. Ward has been named Deputy Director of Public Affairs at the Johnson Space Center effective Monday, Sept. 28. He has been Chief of the Media Services Branch at JSC since January 1985.

In making the announcement, Harold S. Stall, director of public affairs, said that John E. Riley, Deputy Chief of Media Services, will serve as acting chief of the branch pending the selection of Ward's replacement.

In his new position, Ward will assist the Director of Public Affairs in the development of public affairs plans, policies and procedures, and will exercise direct supervision through channels of the activities of the Media Services and Public Services Branches.

Ward, a native of Idaho Falls, ID, received a bachelor of arts degree in political science in 1964 from the University of Colorado. From 1964 to 1966, Ward was a news writer and editor for the U.S. Information Agency, Voice of America, in Washington, D.C. before joining NASA at the Johnson Space Center as a public information specialist. He served as a mission commentator until 1972 when he was named Audio Visual Manager for the Public Affairs Office. From 1979 to 1981, he served as Assistant Executive Officer in the Office of the Administrator at NASA Headquarters. Ward returned to JSC in 1981 where he served as Deputy Director of Public Affairs until 1985.

# # #

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David Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

For Release:
September 25, 1987

RELEASE: 87-142

ORGANIZATION OF NASA OFFICE OF COMMUNICATIONS COMPLETED

The organization of the new NASA Office of Communications has been completed. The office is in charge of agency relations with the general public and the mass media. It also is responsible for television development, employee and other internal communications and Freedom of Information Act activity. The structure of the organization follows:

OFFICE OF THE ASSOCIATE ADMINISTRATOR

The Associate Administrator for Communications establishes agency public affairs policy, provides guidance for NASA offices and officials and provides direction to the NASA-wide public affairs organization and organizational units in television development, employee communication and Freedom of Information Act.

William Sheehan, Associate Administrator for Communications.
Shirley Green, Deputy Associate Administrator for Communications.

MEDIA SERVICES DIVISION

The Media Services Division manages relations with representatives of news organizations including daily publications, periodicals, radio and television. Media Services Division is a primary source of agency public information and coordinates NASA-wide informational activities.

James W. McCulla, Director, Media Services.
David W. Garrett, Chief, News and Information Branch.
Joseph L. Headlee, Chief, Broadcast and Audio Visual Branch.

- more -

PUBLIC SERVICES DIVISION

The Public Services Division manages appearances of the Administrator, Deputy Administrator and astronaut; manages graphic, fine arts and exhibits programs; and manages public mail responses and NASA special events and mission guest operations.

James M. Funkhouser, Director, Public Services
Eugene A. Marianetti, Chief, Special Events Branch
Robert Schulman, Chief, Special Services Branch

TELEVISION DEVELOPMENT DIVISION

The Television Development Division develops television policy and capabilities at NASA installations and aboard NASA spacecraft, which serve media and general public interests. The division also guides modification and expansion of the NASA Select television system.

Robert J. Shafer, Director, Television Development.
Walter A. Maull, Manager, Planning and Implementation.

INTERNAL COMMUNICATIONS SECTION

The Internal Communication Section establishes policy and develops and produces programs to enhance NASA internal employee communications.

James F. Kukowski, Special Assistant to the Associate Administrator (Internal Communications).

FREEDOM OF INFORMATION SECTION

The Freedom of Information section receives and processes requests for information filed under the Freedom of Information Act.

Patricia M. Riep, Freedom of Information Act Officer.

PUBLIC AFFAIRS OFFICERS

Each major NASA program office or function is served by a public affairs officer specializing in that organization's programs and activities. The public affairs officers and their organizations are as follows:

Sarah G. Keegan, Office of Space Flight
Mark S. Hess, Office of Space Station
Charles Redmond, Office of Space Science and Applications.

Debra J. Rahn, International Relations Division
William Ball, Office of Commercial Programs and
Office of Safety, Reliability, Maintainability and
Quality Assurance
Edward S. Campion, Office of Exploration
Les Reinertson, Office of Aeronautics and Space Technology
and Office of Space Operations (effective mid-October)

A Media Guide and Public Affairs Contacts publication, covering Headquarters and all field centers, is available from NASA Headquarters (Code LM), Washington, D.C. 20546 (Phone: 202-453-8400).

- end -

NASA News

National Aeronautics and
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AC 713 483-5111

Jim Ball
Headquarters, Washington, D.C.
(Phone: 202/453-1922)

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-1175)

For Release:

October 20, 1987

NOTICE TO BUSINESS EDITORS

INDUSTRY EXECUTIVES TO CONSIDER COMMERCIAL USE OF SPACE STATION

A group of senior corporate executives representing diverse industries will gather in Nashville, Tenn., Nov. 3-5 to discuss the potential commercial uses of the Space Station.

More than 200 participants, representing a broad variety of American industrial concerns, will attend the NASA-sponsored meeting and exchange ideas with space agency officials on how the Space Station can help serve the future needs of industry.

While many companies attending the workshop have initiated space-related research programs, others that have had little or no past involvement with space are interested in exploring the potential offered by the Space Station.

Input from the industry representatives will be used in formal NASA reviews of Space Station user requirements as work proceeds towards detailed design and development of the orbital facility.

Because of the widely varied commercial interest in the Space Station, the business media are invited to attend the workshop. All plenary sessions and social events also will be open for news media attendance.

A press conference is scheduled for 10:30 a.m., Nov. 3 at the workshop press room, Vanderbilt Plaza Hotel, 2100 West End Ave., Nashville.

- more -

Participants will include Andrew Stofan, NASA associate administrator, Office of Space Station; James Rose, NASA assistant administrator, Office of Commercial Programs; and Edward Donley, chairman, Business - Higher Education Forum and chairman of the executive committee of the Board of Directors, Air Products and Chemicals, Inc.

News media representatives also are invited to attend a press briefing on NASA's Centers for the Commercial Development of Space at 2 p.m., Nov. 4, in the press room.

Providing an overview of these unique research institutions, sponsored and supported by both NASA and industry, will be Dr. William Oran, NASA, and representatives of the Center for the Space Processing of Engineering Materials, located at Vanderbilt University, Nashville, and the Center for Advanced Space Propulsion, located at the University of Tennessee Space Institute, Tullahoma.

A workshop agenda and listing of industry working groups are attached. Those interested in attending the conference should contact NASA for further details.

WORKSHOP AGENDA

NOVEMBER 2 INFORMAL REGISTRATION AND RECEPTION

NOVEMBER 3

8:30	Introductory Remarks	Richard E. Halpern
8:40	Space Station Overview	Andrew J. Stofan
9:10	Office of Commercial Programs	James T. Rose
9:40	Industry Perspective	Edward Donley
10:10	Break	
10:30	Attributes of Space	David C. Webb
(10:30 - 11:00	Press Conference)	
11:10	International Activities	Hans E.W. Hoffman
12:00	Lunch - Competitiveness & The Space Frontier	

1:30	Extraction Industry Working Group	
2:30	Frabrication Industry Working Group	
3:30	Break	
3:40	Service Industry Working Group	
4:40	3M Experience	Dr. Chris Podsiadly
5:00	Astronaut Experience	Bonnie Dunbar
5:45	Cocktail Reception	

NOVEMBER 4

8:30	Introductory Remarks	Richard E. Halpern
8:40	Space Station Technical Overview	Dr. John-David F. Bartoe
9:40	Materials Processing Panel	Kathryn F. Schmoll
10:30	Break	
10:40	Earth & Observation Panel	Shelby G. Tilford
11:20	Industrial Services Panel	Earle Huckins
12:00	Lunch - A Congressional Perspective	The Hon. Robert S. Walker
1:30	Space Station Utilization	Richard E. Halpern
2:00	Working Sessions	
2:00	Press Briefing on NASA Centers for Commercial Development of Space	
5:00	Break	
6:00	Dinner	

NOVEMBER 5

8:30 - 11:15 Working Sessions

11:15 Break

11:30	Materials Processing Summary	Kathryn Schmoll
11:50	Earth and Ocean Observation Summary	Shelby Tilford
12:10	Industrial Services Summary	Earle Huckins
12:30	Wrap-Up Summary	

INDUSTRY WORKING GROUPS
(Preliminary)

EXTRACTION

Dr. Frederick Henderson, III	The GEOSAT Committee
Mr. William A. Griffith	Helca Mining Company
Dr. Norm Johnson	Weyerhauser Company
Dr. Ted Jones	Chevron Research
Mr. James Van Hoften	Bechtel National, Inc.

FABRICATION

Dr. Edward Trachman	Rockwell International
Dr. J. Lawrence Fox	Abbott Laboratories
Mr. Lewis Lherbier	Cyclops Industries
Dr. David McGee	Biosource Genetics Corp.
Mr. John Rehnberg	The Perkin Elmer Corporation
Mr. Simon Yin	Square D Co.
Mr. Gordon Starr	Cummins Engine Company

SERVICES

Dr. Robert Bell	Consolidated Edison Co. of NY
Dr. Thomas Frist, Jr.	HCA
Mr. Samuel Fuller	Digital Equipment Corporation
Dr. Lou Lanzerotti	AT&T
Dr. Peter Vardy	Waste Management Inc.

- end -

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For Release:

Brian Welch
RELEASE NO. 87-046

October 20, 1987

BOLDEN, GREENE ASSUME NEW DUTIES

Two veteran managers have assumed new positions at the Johnson Space Center.

Astronaut Charles F. Bolden Jr., Chief of the Safety Division at the Johnson Space Center, has been named lead astronaut for vehicle test and checkout at the Kennedy Space Center, Florida. As lead for the Astronaut Office's Vehicle Integration Test Team, Bolden will continue to be stationed in Houston but will work closely with Space Shuttle Orbiter processing personnel at KSC.

Jay H. Greene, a former Space Shuttle Flight Director, will succeed Bolden as Chief of the Safety Division. Both assignments are effective immediately.

Bolden, a Colonel in the U.S. Marine Corps, was selected as an astronaut candidate in May 1980. He served as pilot on STS 61-C in January 1986 and has logged 146 hours in space. His other assignments have included Astronaut Office Safety Officer, Technical Assistant to the Director of Flight Crew Operations, Special Assistant to the Director of JSC and Astronaut Office laison to the Safety, Reliability and Quality Assurance Directorate at the Marshall Space Flight Center. Bolden was named Chief of the Safety Division at JSC in March 1987.

Greene's most recent assignment was as coordinator for the mission analysis aspects of JSC's contributions to Dr. Sally K. Ride's recent report, "Leadership and America's Future in Space." Prior to that, Greene was a Space Shuttle flight director from 1982 to 1987. He served as ascent flight director for seven Shuttle missions, and as lead flight director for the STS 41-C Solar Max repair flight, the STS 51-I Leasat salvage mission, and for STS 61-C. From 1980 to 1982, Greene was Chief of the Mission Operations Branch. He also served as a flight dynamics officer in Mission Control for several Apollo and Shuttle flights.

-more-

During his tenure as Chief of the Safety Division, Bolden supervised a major reorganization and helped reshape the focus of the division, according to Charles Harlan, JSC Director of Safety, Reliability and Quality Assurance.

"Charlie has provided strong leadership in the reorganization of the division at the same time as the focus of the organization moved more toward a disciplined systems safety engineering process," Harlan said. "He has really provided some inspirational leadership for the folks in that division and we expect that Jay Greene will pick up right where Charlie left off."

# # #

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For Release

Steve Nesbitt
RELEASE NO. 87-047

October 16, 1987

STS-26 ASTRONAUT CREW TO PARTICIPATE IN 56-HOUR SIMULATION

The astronaut crew for the first post-Challenger Space Shuttle flight, STS-26, will participate Oct. 20-22 in a 56-hour simulation at the Johnson Space Center in Houston.

The practice in which the astronaut crew will "fly" the Shuttle Mission Simulator in Bldg. 5 at JSC and flight control teams will operate from the Mission Control Center begins at approximately 9 a.m. Oct. 20 with a simulated launch. The simulation is scheduled to conclude at approximately 5 p.m. Oct. 22.

Astronauts Frederick H. Hauck, commander; Richard O. Covey, pilot; and mission specialists John M. Lounge, George D. Nelson and David C. Hilmers will remain in the simulator during scheduled crew wake times, but return home during the crew sleep period.

The primary payload on STS-26 is the Tracking and Data Relay Satellite.

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Kyle Herring
RELEASE NO. 87-52

For Release:
Nov. 10, 1987

RILEY NAMED JSC MEDIA SERVICES BRANCH CHIEF

John E. Riley has been named Chief of the Media Services Branch, Office of Public Affairs, at the Johnson Space Center, Houston, effective Nov. 22. He has served as deputy branch chief since 1981.

As chief of the branch, Riley is responsible for planning, developing, directing and supervising programs designed to disseminate information about JSC to the news media. He replaces Douglas K. Ward who was recently named Deputy Director of Public Affairs at JSC.

Riley, a native of Trenton, MO., has a bachelor of science degree in journalism from the University of Kansas. He has served in the JSC Public Affairs Office since 1963 with increasing degrees of responsibility. From 1963 to 1977, Riley was the public affairs representative to the Gemini and Apollo Program Offices, Flight Crew Operations and Flight Operations Directorates, and the Apollo-Soyuz Test Project. From 1978 to 1981, he was executive assistant to the Director of Public Affairs. He also has served as a mission commentator for the Gemini, Apollo, Skylab and Space Shuttle programs.

Prior to his NASA experience, Riley served in the U.S. Navy and worked as a reporter and editor of several newspapers in Kansas, Ohio and Missouri. Immediately prior to joining NASA, he worked as a public relations representative with General Dynamics Astronautics in San Diego, CA.

While with NASA, Riley has received the JSC Superior Achievement Award and the NASA Exceptional Service Medal.

Riley and his wife, the former Patricia C. Pray of Kansas City, KS, reside in La Porte, TX. They have five children.

-30-

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Barbara Selby
Headquarters, Washington, D.C.
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Barbara Schwartz
Johnson Space Center, Houston
(Phone: 713/483-5111)

For Release
November 12, 1987

RELEASE: 87-170

SHUTTLE CREW ESCAPE SYSTEMS TO BE TESTED THIS MONTH

Two concepts to provide crew egress capability during Space Shuttle controlled gliding flight are being tested this month at the Naval Weapons Center, China Lake, Calif.

The two escape methods are tractor rockets that would extract the astronauts through the open hatch and a telescoping pole that would extend through the hatch for the crew members to slide down using a lanyard attached to the rod.

Tractor rocket testing will begin Nov. 19, 1987. A series of 12 tractor rocket tests will be conducted using life-like dummies that will be pulled from a Convair-240 aircraft modified to simulate the hatch opening of an orbiter.

The first six tests will be developmental tests conducted approximately 2 weeks apart, and results of each test will be thoroughly analyzed so modifications can be made prior to the next test if necessary. After the six developmental tests, there will be two design verification tests. The last four tests will use dummies that are fully outfitted with Shuttle flight gear and equipment for the certification tests.

"Objectives of the tests are to establish performance margins and to certify the tractor rocket system for flight," Robert R. Rice, manager of the Tractor Rocket Test Program, said.

Telescoping pole tests are scheduled to begin Nov. 30, 1987. There will be a total of 14 tests. The pole concept will be tested using volunteer Navy parachutists to slide along the rod extending from a Buffalo aircraft and then later from a C-141 aircraft.

- more -

The jumpers will attach a lanyard to the pole, exit the aircraft in a tucked position, release at the end of the pole and parachute to the ground. Objectives of the test are to establish the feasibility of this concept and to determine the margins on orbiter wing clearance.

After completion of the two test programs, data will be evaluated and presentations will be made to NSTS managers who will make a decision early next year on which of the two egress methods may be incorporated into Discovery. The test and evaluation period will allow the addition of either system prior to STS-26.

NOTE TO EDITORS/NEWS DIRECTORS:

Hurricane Mesa, Utah, tractor rocket test video, #VCL-1208, is available at Johnson Space Center, 713 483-8643.

-end-

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Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-1175)

For Release:
December 1, 1987
EMBARGOED Until 2 p.m. EST

RELEASE: 87-177

NASA SELECTS AEROSPACE FIRMS TO DESIGN AND DEVELOP SPACE STATION

NASA today announced selection of four aerospace firms for final negotiations leading to award of cost-plus-award-fee contracts to design, develop, test and evaluate and deliver the components and systems comprising the permanently manned Space Station to be placed into Earth orbit in the mid-1990's.

The work to be performed is broken down into four packages each containing a unique but interdependent portion of the Space Station. Each work package is divided into 2 phases. Phase I covers the currently approved elements of the Space Station program. Phase II is an option for possible future enhancement of the Space Station's capabilities.

The four companies selected for the Phase I effort are:

- o Work Package 1
  Boeing Aerospace Company, Huntsville, Ala.

- o Work Package 2
  McDonnell Douglas Astronautics Co., with locations in Huntington Beach, Calif., and Houston

- o Work Package 3
  General Electric Company, Astro-Space Division, with locations in Valley Forge, Pa., and East Windsor, N.J.

- o Work Package 4
  Rocketdyne Division, Rockwell International, Canoga Park, Calif.

Total cost proposed by the four companies is approximately $5 billion for the Phase I effort and approximately $1.5 billion for the Phase II priced-option effort. The combined work package prime contractor cost, should the Phase II option be exercised, would be approximately $6.5 billion.

- more -

All selected offerors had technically superior proposals and proposed the lowest cost for their work package. The total cost proposed by all four proposers is within NASA's cost estimate for the Space Station program.

The critical interdependency of the work packages creates an unusual situation where, because of the unique interrelationships and interfaces between the work packages and the need for intercenter equipment deliveries, significant cost negotiations and adjustments are expected as part of contract negotiation.

Each firm was selected after an exhaustive review of their technical and cost proposals received in response to the four Space Station request for proposals. Aproximately 300 people participated in each work package review. Together, the contractors will work closely, under the direction of the Space Station program office, in designing, building and integrating the Space Station.

The contracts include two program phases. Phase I will cover the approximate 10-year period from contract start through 1 year after assembly of the Space Station is completed. Phase II is a priced option which, if exercised, will enhance the capabilities of the Space Station configuration by addition, in the 1991-1999 time frame, of an upper and lower truss structure, additional external payload attachment points, a solar dynamic power system, a free-flying co-orbiting platform and a servicing facility.

Phase I of the Work Package 1 contract, managed by the Marshall Space Flight Center, Huntsville, Ala., calls for Boeing to provide the U.S. laboratory and habitation modules, logistics elements, resource node structures, airlock systems, environmental control and life support system, internal thermal, audio and video systems and associated software.

Overall management, systems engineering and integration, and operations and logistics support of these elements also will be performed by Boeing. Boeing's proposed cost for performance of the Work Package 1, Phase I effort is approximately $750 million. Boeing's proposed cost for the Work Package 1, Phase II priced option is approximately $25 million.

Major Boeing subcontractors and their places of performance are: Teledyne Brown Engineering, Huntsville, Ala.; Lockheed Missiles and Space Co., Sunnyvale, Calif.; Hamilton Standard, Windsor Locks, Conn.; Garrett Airesearch, Torrance, Calif.; Grumman Aerospace Corp., Houston; ILC Space Systems, Houston; and Fairchild-Weston Systems Inc., Syossett, N.Y.

The unsuccessful offeror is Martin Marietta Corp., New Orleans, with major subcontractors McDonnell Douglas Astronautics Co., Huntsville, Ala.; Hamilton Standard, Windsor Locks, Conn.; General Electric, Valley Forge, Penn.; Honeywell, Inc., Clearwater, Fla.; Wyle Laboratories, Huntsville, Ala.; United Space Boosters Inc., Huntsville, Ala.; and Hughes Aircraft Co., Irvine, Calif.

Phase I of the Work Package 2 contract, managed by Johnson Space Center, Houston, calls for McDonnell Douglas Astronautics Co. to provide the integrated truss structure, mobile servicing system transporter, airlocks, resource node outfitting, hardware and software for data management system, the communications and tracking system, the guidance, navigation and control system, extravehicular activity systems, the propulsion system, the thermal control system and associated software.

McDonnell Douglas' proposed cost for performance of the Work Package 2, Phase I effort is approximately $1.9 billion. McDonnell Douglas' proposed cost for the Work Package 2, Phase II priced option is approximately $140 million.

Major McDonnell Douglas subcontractors and their place of performance are: IBM, Houston and Owego, N.Y.; Lockheed Missiles and Space Co., Houston and Sunnyvale, Calif.; RCA Corp., Camden, N.J.; Honeywell, Clearwater, Fla.; and Astro, Carpinteria, Calif.

The unsuccessful offeror was Rockwell International Corp., Downey, Calif., with major subcontractors Grumman Corp., Bethpage, N.Y. and Houston; TRW, Redondo Beach, Calif.; Intermetrics, Huntington Beach, Calif.; Sperry Corp., Phoenix, Ariz.; Harris, Melbourne, Fla., and UTC, Arlington, Va.

Phase I of the Work Package 3 contract, managed by Goddard Space Flight Center, Greenbelt, Md., calls for General Electric (GE) to provide a free-flying, unmanned, polar-orbiting platform which will carry scientific experiments in sun-synchronous or other near-polar inclination orbits, and two attach points, including a pointing system, for accommodating scientific instruments on the manned base.

GE also is responsible for integration of the flight telerobotic servicer to the Space Station, appropriate Space Station information system activities, associated software and for planning NASA's role in satellite servicing. Additionally, GE is responsible for defining requirements and interfaces for a satellite servicing facility. GE's proposed cost for performance of the Work Package 3, Phase I effort is approximately $800 million.

Included in the Phase II option is a free-flying unmanned co-orbiting platform, three additional attach points including another pointing system and a satellite servicing facility. GE's proposed cost of the Work Package 3, Phase II priced option is approximately $570 million.

GE was the sole offeror on Work Package 3. GE's team member is TRW Corp., Redondo Beach, Calif.

Phase I of the Work Package 4 contract, managed by the Lewis Research Center, Cleveland, calls for Rocketdyne to design and fabricate the Space Station electric power system. This system includes power generation and storage, management and distribution of electrical power and associated software. The electric power system, using photovoltaic solar arrays and batteries, is required to have the capability to deliver 75 kw of electric power.

In Phase I, Rocketdyne also is responsible for providing solar arrays, battery assemblies and common power management and distribution components for the polar platform and for performing a proof-of-concept test for a possible future solar dynamic power system utilizing the Brayton cycle system. Rocketdyne's proposed cost for performance of the Work Package 4, Phase I effort, utilizing the Brayton cycle proof-of-concept test, is approximately $1.6 billion.

Included in the Phase II option is a 50 kw solar dynamic power system. Rocketdyne's proposed cost for the Work Package 4, Phase II priced option is approximately $740 million.

Rocketdyne was the sole offeror on Work Package 4. The Rocketdyne team members and their places of performance are: Ford Aerospace and Communications Corp., Palo Alto, Calif.; Harris Corporation, Melbourne, Fla.; The Garrett Corporation, Tempe, Ariz.; General Dynamics Corp., San Diego, Calif.; and Lockheed Missiles and Space Inc., Sunnyvale, Calif.

The Space Station will be a permanently-manned base in Earth orbit for conducting scientific research and development of new technologies and will accommodate private sector research and development activities. In the future, the Space Station will serve as the staging base for continued manned and unmanned exploration of the solar system. The Space Station will be placed in orbit in the mid-1990's and will be capable of growth both in size and capability and is intended to operate for several decades, well into the 21st century.

- end -

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Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

For Release
January 27, 1988

RELEASE: 88-11

NASA ANNOUNCES NEW SPACE SHUTTLE LAUNCH DATE

NASA today announced a target of August 1988 for launch of the next Space Shuttle mission, STS-26. This new launch target was selected following a major program assessment, subsequent to the most recent full-scale firing of the redesigned solid rocket motor (SRM) in December 1987.

An internal planning date of Aug. 4 will be used to focus the schedules for individual program elements. This planning date, although for internal purposes only, is consistent with the above August target.

The SRMs flown with orbiter Discovery on STS-26 will use the nozzle outer boot ring configuration tested successfully during the Development Motor-8 firing in August 1987. No modifications to that configuration of this component will be included. The STS-26 aft SRM segments, which contain the outer boot ring, will arrive at Kennedy Space Center (KSC), Fla., in early March.

Three full-scale, full-duration test firings are planned prior to the August launch of STS-26. Qualification Motor (QM) -6 will incorporate "manufacturing-type" flaws into the test hardware and is planned for April 7.

Plans do not include any test flaws in the QM-7, targeted for firing June 9. QM-7 will be fired on the new test stand at Morton Thiokol's Wasatch Facility in Utah and will include dynamic sideloading as part of its test objectives.

Production Verification Motor-1, scheduled for July 6, will be a constraint to the STS-26 launch and will purposely contain necessary test flaws to demonstrate design margins of the redesigned case-to-case and case-to-nozzle joints.

- more -

Test flaws introduced into all full-scale motors will have been tested previously in joint demonstration test articles at the Joint Environment Simulator Facility at Morton Thiokol and/or the Transient Pressure Test Article Facility at Marshall Space Flight Center, Huntsville, Ala.

In support of the new target launch date, it is planned that Discovery will be rolled out to KSC Launch Pad 39B on May 13. A Flight Readiness Firing of Discovery's main engines and liquid propulsion system is targeted for June 13.

Announcement of this launch target was slightly delayed to allow time for an initial assessment of recent ultrasonic weld inspections of solid rocket booster aft skirt hardware at KSC. On Tuesday, prior to establishing this new schedule, a recently instituted weld inspection had detected a small void in a low-stress area of the left-hand STS-26 SRB aft skirt hardware. Structural analysis performed since that time has validated program officials' early optimism about the situation, and both skirts are in the process of being cleared for flight with no additional schedule impact.

In announcing the new target launch date for STS-26, Rear Admiral Richard H. Truly, NASA associate administrator for space flight, indicated that he was very pleased with the progress of the Shuttle program toward resuming flight. "The performance of the entire NASA/contractor team over the past month, during the conduct of this major review of the entire Shuttle recovery program, has been outstanding. It has clearly demonstrated that we have struck the proper balance between our first priority of safety and quality, while still maintaining our commitment to return the Space Shuttle to flight just as quickly as we can reliably do so," he said.

- end -

NASA News

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Kyle Herring
Release No. 88-002

For Release

Feb. 8, 1988

NEW INITIATIVES OFFICE FORMED AT JOHNSON SPACE CENTER

NASA Johnson Space Center has formed a New Initiatives Office, Director Aaron Cohen has announced.

The office will be the initial JSC focal point for NASA Headquarters, other agencies and private industry in the activation and development of all new initiatives. It is responsible for supporting all JSC elements in the development and management of science and technology projects and flight demonstrations. It also will support headquarters in forming strategies for exploration of space.

"The exploration and exploitation of space by American astronauts will force us to develop new solutions to old problems and create new technologies to meet new challenges," Cohen said. "The New Initiatives Office will focus JSC's activities in that area and help translate ideas into full-scale approved projects."

William Huffstetler, previously assistant director of engineering, has been assigned as manager of the New Initiatives Office. Other personnel assignments within the organization are:

Jerry Craig, manager of the Crew Emergency Return Vehicle (CERV) Office. He previously was deputy manager of the Space Station Projects Office. CERV will be used should an emergency evacuation of the Space Station be required.

William Milligan, Jr., manager of the Advanced Projects Definition Office. He has been deputy manager, Flight Projects Engineering Office.

Harry Erwin, Jr., manager Technology and Commercial Projects Office. He was manager of the Flight Projects Engineering Office.

Curtis LeBlanc, manager, Flight Projects Office. He has been manager, Project Implementation Office.

Mark Craig, manager, Lunar and Mars Exploration Office. He was special assistant to the director of engineering.

Assignments of Senior Executive Service members Huffstetler and J. Craig will be on an acting basis until approved by NASA Headquarters.

# # #

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For Release:

Terry White
RELEASE NO: 88-003

February 12, 1988

NOTE TO SCIENCE EDITORS:

NASA JOHNSON SPACE CENTER HOSTS 19TH

LUNAR & PLANETARY SCIENCE CONFERENCE

Almost 700 scientific and technical papers will be presented at the 19th Lunar and Planetary Science Conference March 14-18, 1988 at the NASA Johnson Space Center in Houston.

Concurrent sessions begin each morning at 8:30 in the JSC Gilruth Recreation Center. The conference will have 27 technical sessions and one evening special session. A total 696 papers will be presented.

Session topics cover geology and geophysics of Mars and Venus, planetary impact cratering; and meteorites, asteroids and comets. The evening special session Tuesday March 15 is on noble gases and solar system history.

Media covering the conference should register in Gilruth Center Room 201 where conference abstract volumes will be available.

- 30 -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Kyle Herring
RELEASE NO. 88-004

February 29, 1988
9:00 a.m. CST

ASTRONAUT GROUP PROVIDES INTERFACE WITH SPACE SHUTTLE CUSTOMERS

Astronauts at NASA's Johnson Space Center have created an Astronaut Science Support Group to provide direct interaction with prospective experimenters on Space Shuttle and Space Station missions.

Members of the group and their specialties are Franklin Chang-Diaz, plasma and space physics; Mary Cleave, biological materials processing; Bonnie Dunbar, materials processing; Jeff Hoffman, astrophysics and remote sensing; Jerry Ross, extravehicular activity, satellite servicing and space construction; and Rhea Seddon, life sciences.

The group focuses on increasing scientific and engineering flexibility of experiments in space without violating Shuttle operational guidelines.

Based on experience gained from Space Shuttle missions, the group believes that increasing crew involvement in the design, development and operation of experiments will improve the return of data and simplify repair of equipment in space. This is particularly important in maximizing the scientific return from each experiment.

The group considers its primary goals to be:

- Transmitting operational experience gained from Shuttle missions to the science and technology user community to optimize the use of Orbiters as test beds for scientific and engineering research.

- Utilizing the crew as a critical element, both on the ground and in flight, in more efficient experiment operation while giving the experiment an added degree of flexibility for real-time repair and fine tuning.

- Serving as advisors to the National Space Transportation System and the Space Station programs on science and technology issues.

-more-

• Maintaining a group of scientists and engineers to do research and interact with potential experimenters in a wide variety of areas.

Since many Shuttle experiments are being designed for possible use on the Space Station, the group is working with the Space Station program to ensure proper transition from one to the other. To do this, the group is working with NASA organizations responsible for manifesting and integrating science and technology payloads including the Payload Integration Office, Crew Integration Office, Space Station Office, and Flight Training Branch.

In order to enhance scientific return by balancing automation with crew involvement in Shuttle experiments, the group meets with potential customers and principal investigators in three formats:

First, a highly informal and interactive one which meets once a week and focuses on specific Shuttle-related experiments seeking to identify operational issues early in the design process.

Second, a bi-monthly astronaut science colloquium which involves multiple presentations and scientific exchanges with invited lecturers from particular disciplines. This is a more formal two-way exchange lasting half a day.

Third, a 30-minute film developed by the group entitled "Shuttle Science Operations: Lessons Learned" is used by astronauts during speaking engagements and other presentations to scientific and technical groups.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

February 29, 1988

Jeffrey Carr
RELEASE NO. 88-005

NASA TO ADD SECOND SHUTTLE CARRIER AIRCRAFT TO FLEET

NASA today announced plans to acquire a Boeing 747-100 jetliner to serve as a second Shuttle Carrier Aircraft (SCA) for the Space Transportation System.

A letter contract has been signed with Boeing Military Airplane Co., a division of The Boeing Company to reserve the aircraft for NASA use. The additional SCA will provide increased ferrying capability and eliminates a potential single-point failure in the Space Transportation System.

The 231-foot long aircraft will be modified to carry Shuttle orbiter vehicles from landing sites to orbiter processing facilities at the Kennedy Space Center. Modifications will be made by Boeing at their manufacturing facilities in Wichita, Kansas. The 747-100 is nearly identical to the original SCA, and was selected in order to minimize costs associated with modifications and operation.

The original SCA has transported orbiters since 1977 when the orbiter Enterprise was first used for unpowered atmospheric flight tests. Since then, Columbia, Challenger, Discovery, and Atlantis have all been ferried coast to coast atop the SCA.

Total cost of the aircraft and the required modifications is currently under negotiation. That figure is expected to be available this summer.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

March 1, 1988

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

Clifford Beale
AIAA, Washington, D.C.
(Phone: 202/646-7432)

NOTE TO EDITORS: SPACE STATION UTILIZATION CONFERENCES

The American Institute of Aeronautics and Astronautics, with the support of NASA, is sponsoring the first in a series of Space Station utilization conferences on March 7-9 at the Hyatt Regency Crystal City Hotel, Arlington, Va.

Media representatives are invited to attend the conference which is designed to provide prospective Space Station users an opportunity to discuss with the designers their requirements for utilization of the orbiting research facility.

NASA and its contractors will outline plans for the Space Station's pressurized laboratory facilities, attached payload accommodations, polar-orbiting free flying platforms, tethered payloads and use of the Space Station as a transportation node.

All sessions are open. Media representatives, with appropriate identification, should register during the conference at the AIAA/NASA registration desk.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release

Jeffrey E. Carr
RELEASE NO. 88-006

March 1, 1988

ASTRONAUT PARKER TO HEAD SPACEFLIGHT/SPACE STATION INTEGRATION

Veteran astronaut Robert A.R. Parker, Ph.D. has been assigned temporary duty at the Office of Space Flight, NASA Headquarters in Washington D.C. effective immediately.

Parker will serve as Director of the Space Flight/Space Station Integration Office, reporting directly to the Associate Administrator for Space Flight, Rear Adm. Richard H. Truly.

The Space Flight/Space Station Integration Office was established in 1987 to facilitate the integration of the Space Station and its unique requirements into the Space Transportation System. The office coordinates the exchange of information between the two programs and serves as a forum for presenting and resolving technical and programmatic issues.

Prior to his selection as a scientist-astronaut in 1967, Parker was an associate professor of astronomy at the University of Wisconsin. After joining NASA, he served as a member of the astronaut support crews for Apollo 15 and 17. Parker also served as Program Scientist during the three manned Skylab missions. In November and December of 1983, he made his first space flight as mission specialist on STS-9, the first Shuttle/Spacelab mission.

He has received the NASA Exceptional Scientific Achievement Medal (1973) and the NASA Outstanding Leadership Medal (1974).

Parker replaces former director E. William Land who retired in January.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
RELEASE NO. 88-008

March 17, 1988

NASA ANNOUNCES THREE NEW SHUTTLE CREWS

NASA today named crew members for three Shuttle missions scheduled to fly in 1989. This announcement concludes crew selection activities planned prior to the resumption of Shuttle flights in August of this year.

Shuttle mission STS-29, scheduled for launch January 19, 1989 will be commanded by Capt. Michael L. Coats (USN). Pilot for the mission aboard Discovery will be Col. John E. Blaha (USAF). Col. James F. Buchli (USMC), Col. Robert C. Springer (USMC), and James P. Bagian, M.D., have been assigned as mission specialists.

The primary mission objective will be to deploy a third Tracking and Data Relay Satellite (TDRS-D). Based on the current Shuttle flight manifest, STS-29 is scheduled to fly after STS-27 and before STS-28.

A five-member crew has also been named for Shuttle mission STS-30, slated for launch April 27, 1989. Commanding the four-day mission aboard Atlantis will be Capt. David M. Walker (USN). The pilot will be Col. Ronald J. Grabe (USAF). Norman E. Thagard, M.D., Mary L. Cleave, Ph.D., and Maj. Mark C. Lee (USAF), have been named as mission specialists.

Their mission objective will be to deploy the planetary probe Magellan. Magellan is scheduled to arrive at Venus in mid-1990, and will map the entire surface of Venus for the first time, using specialized radar instruments.

STS-31 will feature deployment of the Hubble Space Telescope and is targeted for launch June 1, 1989. Col. Loren J. Shriver (USAF) will command the mission. Pilot will be Col. Charles F. Bolden (USMC). Steven A. Hawley, Ph.D., Capt. Bruce McCandless II (USN), and Kathryn D. Sullivan, Ph.D., will fly as mission specialists.

-more-

From its position in orbit 373 miles above the earth, HST will be used to gather astronomical data with resolution 7 to 10 times greater than that of Earth-bound telescopes.

STS-29

Coats has flown as pilot on mission STS 41-D in August 1984. Coats was born January 16, 1946 in Sacramento, CA, but considers Riverside, CA, to be his hometown.

Blaha will make his first space flight since his selection in 1980. He was born August 26, 1942 in San Antonio, TX.

Buchli will make his third Shuttle flight. His first was as a mission specialist aboard Discovery for the first Department of Defense mission, STS 51-C in January 1985. He also served as mission specialist on STS 61-A (Spacelab D-1) in October 1985. He was born June 20, 1945 in New Rockford, ND, but considers Fargo, ND, his hometown.

Springer was selected by NASA in 1980, and will make his first space flight. He was born May 21, 1942 in St. Louis, MO, but considers Ashland, OH, to be his hometown.

Bagian will make his first space flight since his selection in 1981. He was born February 22, 1952 in Philadelphia, PA.

STS-30

Walker flew previously as pilot aboard Discovery on mission STS 51-A in November 1984. Walker was born May 20, 1944 in Columbus, GA, but considers Eustis, FL, to be his hometown.

Grabe will make his second space flight also. He flew as pilot on STS 51-J, a Department of Defense mission. Grabe was born June 13, 1945 in New York, NY.

Thagard makes his third space flight after serving as mission specialist on STS-7 in June 1983 and on STS 51-B in April 1985. Thagard was born July 3, 1943 in Marianna, FL, but considers Jacksonville, FL, to be his hometown.

Cleave flew previously as mission specialist on STS 61-B in November 1985. She was born February 5, 1947 in Southampton, NY.

Lee makes his first flight in space since his selection in 1984. He was born August 14, 1952 in Viroqua, WI.

--more--

STS-31

Shriver has flown previously as pilot on Department of Defense mission STS 51-C in January 1985. Shriver was born September 23, 1944 in Jefferson, IA, but considers Paton, IA, to be his hometown.

Bolden was pilot on STS 61-C in January 1986, and makes his second space flight. Bolden was born August 19, 1946 in Columbia, SC.

Hawley makes his third flight after serving as mission specialist on STS 41-D in August 1984 and again on STS 61-C in January 1986. Hawley was born December 12, 1951 in Ottawa, KS, but considers Salina, KS, to be his hometown.

McCandless flew previously as mission specialist on STS 41-B in February 1984. McCandless was born June 8, 1937 in Boston, MA.

Sullivan served as mission specialist on STS 41-G in October 1984, and makes her second space flight. She was born October 3, 1951 in Paterson, NJ, but considers Woodland Hills, CA, to be her hometown.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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AC 713 483-5111

Billie Deason
Release No. 88-012

For Release
March 24, 1988

JOHNSON SPACE CENTER TO HOST SAFETY SEMINAR

The Gulf Coast Chapter of the American Society of Safety Engineers will sponsor a safety seminar titled "Hazard Communication Standard: An Update" at the Gilruth Recreation Center, Johnson Space Center on Friday, April 1.

The seminar will review: Federal revisions to Hazard Communication Standard; user inventory systems for chemicals and MSDS's; community right-to-know and emergency planning; and effective industry and community planning in local chemical emergency.

Jay H. Greene, Chief, Safety Division, JSC, will deliver the keynote address.

The American Society of Safety Engineers seeks to promote the advancement of all safety disciplines.

Registration and additional information may be obtained from Arthur D. Shenoi at 713-483-6370 or Kim Gray at 713-483-6366.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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Cynthia Buck
NASA Headquarters, Washington, D.C.
(Phone: 202/453-8400)

Jay P. Goldman
Council of Chief State School Officers
(Phone: 202/393-8161)

For Release

March 30, 1988

RELEASE: 88-46

SHUTTLE ORBITER-NAMING COMPETITION ANNOUNCED

The National Aeronautics and Space Administration in cooperation with the Council of Chief State School Officers (CCSSO) today issued the announcement of opportunity for America's students to participate in a national competition to name NASA's replacement Space Shuttle orbiter, scheduled to make its premiere flight in early 1992.

The announcement invites teachers to enter their students in the orbiter-naming competition and provides an order form for obtaining an entry packet. Entry packets with instructions, describing competition rules and judging criteria, will be available in early May.

The new orbiter, designated OV 105, is under construction by Rockwell International in California and is scheduled for completion in April 1991.

The announcement states, "The Orbiter-Naming Program responds to a basic human impulse to name things.... NASA's first orbiters were named after sea vessels used in research and exploration.... The tradition of naming an orbiter after an exploratory or research sea vessel will be continued with OV 105."

The name chosen should not only identify an American spacecraft but also should capture the spirit of America's mission in space. In honor of the seven crew members lost in the Challenger accident, the name Challenger has been retired.

- more -

To enter, elementary and secondary school students will form teams and research a name. Each team will prepare a related classroom project to support and justify the name selected.

The team's project must be interdisciplinary and may serve as a pilot project for future classroom activities. Orbiter-naming projects are to be completed during the 1988 fall semester, and entries must be postmarked by Dec. 31, 1988.

Each team will have a coordinator who must be a member of the school faculty and will be responsible for directing the team's activities and submitting the official program entry packet for judging.

There will be two entry divisions: Division one will include kindergarten through 6th grade and Division two 7th through 12th grade.

Students in public and private schools in the United States and U.S. territories, Department of Defense overseas dependents' schools, Department of State schools and Bureau of Indian Affairs schools are eligible to participate.

Each state, territory and agency will announce one winner in each division in March 1989. NASA will announce the final winner from each division and the name selected for the orbiter in May 1989.

Each entry will receive recognition for the team's participation. State, territory and agency division winners will receive special Awards of Recognition. Representatives of the national winning teams will receive an expense-paid visit to a NASA-related event.

In addition, NASA's Educational Affairs Division will conduct a School Involvement Program for each of the winning schools. NASA personnel will visit the schools and classrooms, and special events will honor the students and their team coordinators, the faculty, parents and community members who guided and assisted their orbiter-naming projects.

House Joint Resolution 559, introduced March 10, 1986 by Congressman Tom Lewis (R-Florida), called for the name of the replacement orbiter to be selected from suggestions submitted by students.

On June 8, 1987, Dr. James C. Fletcher, administrator of NASA, announced the program for students to recommend names to NASA for the Space Shuttle orbiter to replace the Challenger.

On Oct. 30, 1987, Congress authorized the NASA Administrator to select a name for the new orbiter "from among suggestions submitted by students in elementary and secondary schools."

Announcements of opportunity will be distributed to elementary and secondary teachers and principals. The announcements also will be distributed to educators on NASA's Educational Affairs mailing list, to educational organizations and professional associations and to NASA field center education offices and Teacher Resource Centers.

To request an entry packet for the Orbiter-Naming Program, teachers should contact:

NASA Orbiter-Naming Program
Council of Chief State School Officers
Suite 300
400 North Capitol Street, N.W.
Washington, D.C. 20001

(Phone: 202/783-5109)
(202/783-5113)

- end -

NOTE: Photographs to illustrate this news release and a 3/4 inch videotape of OV 105 assembly work (3 min. 50 sec.) will be distributed without charge to media representatives. Photographs and videotape may be obtained by writing to or phoning:

Broadcast & Audio Visual Branch
LMD/NASA Headquarters
Washington, D.C. 20546

Phone: 202/453-8383

Photo Numbers:
B & W - 88-H-96, 88-H-97, 88-H-98, 88-H-99
Color - 88-HC-61

This release and other NASA information is available electronically through DIALCOM, INC. For access to NASA NEWS through this system, contact the NASA NEWS representative, DIALCOM, INC. at 202/488-0550.

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release
April 7, 1988

Barbara Schwartz
Johnson Space Center, Houston
(Phone: 713/483-5111)

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-2352)

RELEASE: 88-014

TELESCOPING POLE CHOSEN FOR CREW ESCAPE SYSTEM

A telescoping pole has been chosen as the egress method for the Space Shuttle's new crew escape system to be incorporated into the orbiter Discovery prior to the STS-26 flight in August.

The selection of the telescoping pole, over an alternative tractor rocket extraction system, was made at NASA Headquarters by National Space Transportation System Director Arnold D. Aldrich following a review of system design, test performance and flight hardware status.

"The NASA-contractor team has done a fantastic job in providing both the tractor rocket and telescoping pole systems to support the next Shuttle flight," Aldrich said. "The telescoping pole was selected as it has shown to be safer, simpler to operate, lighter weight and easier to support than the tractor rocket system, while meeting all escape system performance requirements."

Tests conducted in February and March, using a fixed pole extending through a hatch-like opening in a C-141 aircraft, demonstrated that the pole would provide adequate orbiter clearance in an emergency egress situation.

Navy parachutists, approximating the sizes of astronauts from the smallest to the largest, completed a total of 66 jumps using a lanyard attached to their parachute harness to slide down the pole and descend to a safe landing. Analysis of aerodynamic and photographic data showed that all the jumps provided the necessary clearance margins.

- more -

The telescoping pole, designed and manufactured at NASA's Johnson Space Center, Houston, is made of light-weight aluminum and steel and weighs 241 pounds. It is about 70 pounds lighter than the tractor rockets system. The rockets also have a 5-year operational shelf life limitation and additional processing requirements between flights.

The pole housing attaches to the orbiter's middeck ceiling and is 126.75 inches long. The primary extension is 112.54 inches (arched length), and the end extension is 32.65 inches.

For launch and landing, the unextended pole will be oriented toward the closed crew hatch. During on-orbit operations, the pole will repositioned toward the middeck lockers and stowed on the ceiling such that it will not interfere with the various flight crew activities in the middeck area.

This decision completes the crew escape system package. Already approved and implemented are the orbiter primary crew hatch jettison capability and crew support equipment -- a partial pressure suit, oxygen equipment, a parachute, a life raft and survival equipment for each crew member.

The escape system provides crew escape capability from the orbiter during controlled, gliding flight following failures or difficulties during ascent or entry where landing at a suitable landing field cannot be achieved. Previous procedures for ascent contingency aborts, where no landing site could be reached, required orbiter ditching in the ocean, a condition which has been shown by structural analysis to be extremely hazardous.

The side hatch jettison system also can be highly beneficial for certain ground contingencies following non-normal landings. A crew escape slide, similar to those provided on commercial airliners, has been implemented in conjunction with the jettisonable hatch to support rapid post-landing contingency egress.

-end-

NOTE TO EDITORS/NEWS DIRECTORS: Still photographs and video are available at Johnson Space Center. Call 713/483-4231 for photographs and 713/483-8643 for video.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey E. Carr
RELEASE NO. 88-018

May 11, 1988
3:00 pm CDT

NASA ANNOUNCES 2-YEAR ASTRONAUT SELECTION CYCLE

NASA has announced plans to conduct astronaut candidate selections on a two-year cycle, and has scheduled the next class of candidates for 1990. NASA has, in the past, selected astronauts as needed with selections in 1978, '80, '84, '85 and '87.

The two-year process will moderate the demand on NASA resources required for candidate selection and training, while maintaining the manpower levels necessary to meet mission requirements.

The next selection cycle will begin July 1, 1989, with the cutoff date for applications. Applications received after that will be eligible for consideration in the next cycle. Nominees will also be submitted by the military services at the same time. After six months of screening, medical evaluation, and interviews, selections will be announced in January 1990, and candidates will report to the Johnson Space Center in July.

The selection process will begin again in July 1991 with the cutoff for applications to be considered in the 1992 selection. The number of selections made every two years will be based on projected requirements.

NASA will continue to accept and review applications from the general public on an ongoing basis. Applicants for the Astronaut Candidate Program must be citizens of the United States.

Applications can be obtained by writing to the following address:

NASA, Lyndon B. Johnson Space Center
Astronaut Selection Office
ATTN: AHX
Houston, Texas 77058

# # #

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

June 2, 1988

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-2351)

Lisa Fowler
Kennedy Space Center, Fla.
(Phone: 407/867-2468)

EDITORS NOTE: NASA ACCREDITATION REQUESTS FOR STS-26 MISSION

NASA is accepting accreditation requests for news media to cover the Space Shuttle Discovery mission (STS-26) currently targeted for launch in August.

Requests for accreditation must be made by a supervisory official other than the applicant on company letterhead, clearly indicating the assignment (reporter, photographer, technician, etc.) and social security number of each individual. Freelance writers and photographers must offer proof of assignment or evidence of professional activity. The accreditation will be valid for all NASA news centers.

Requests should be submitted no later than 30 days before launch to:

NASA, John F. Kennedy Space Center
PA-PIB Accreditation
Kennedy Space Center, Fla. 32899

Please indicate from which NASA location(s) you plan to cover the mission. The news center will open at Kennedy 5 days prior to launch, at the Johnson Space Center, Houston, 3 days before launch and at the Dryden Flight Research Facility, Edwards, Calif., 1 day prior to launch.

NASA ground rules for newspersons covering the mission are:

o NASA can make no travel or housing arrangements.

o Only working newspersons will be accredited at the news centers. Publishers and other news and advertising executives will not be accredited. These individuals should apply to NASA Public Services Division (LP), NASA Headquarters, Washington, D.C. 20546.

- more -

o Friends, dependents or relatives not covering the mission will not be accommodated. Special arrangements can be made only at the Kennedy news center for dependents to view the launch at a special dependent's site.

o No one under 16 years of age will be allowed at the press site under any circumstances. Violation of this rule will result in cancellation of press site privileges for responsible parties.

o Philatelic publications must meet the criteria of general publications or be national publications of recognized philatelic organizations. Representatives of catalogs, newsletters, local clubs or profit seeking projects will not be accredited. Conducting philatelic business, other than reporting, will not be tolerated.

o College news media are limited to two accredited correspondents.

o You must present your letter of acceptance and a photo identification to obtain a news badge at the appropriate center.

o Violation of the rules will result in the loss of press badges and press site privileges.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
Johnson Space Center, Houston
RELEASE NO: 88-020

June 3, 1988
FOR IMMEDIATE RELEASE

ASTRONAUT SPRING REASSIGNED TO ARMY SPACE POST

NASA astronaut Sherwood "Woody" Spring (Col., USA) has announced that he will leave NASA in August of this year to accept an assignment as Director of the U.S. Army Space Program Office in Fairfax, VA.

Spring will report for duty September 1 for nine months of familiarization and training before assuming his responsibilities as director in June of 1989.

Spring was selected as an astronaut in May 1980. He served as mission specialist on Shuttle mission STS 61-B launched in November 1985. During that mission, Spring assisted in deploying three communications satellites and performed two spacewalks, totaling 12 hours, which investigated large structure assembly techniques in orbit. Spring logged 165 hours in space on that mission.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Steve Nesbitt

July 5, 1988

NOTE TO EDITORS: ELECTRONIC NEWS SERVICE AVAILABLE

A 24-hour electronic news service providing NASA press releases and other information is now available to news organizations, information services and aerospace industry public affairs representatives.

The service, called the Johnson Space Center Electronic Newsroom, is accessible by personal computer users through dial-in phone lines. It is open to accredited organizations and individuals only and not to the general public.

The electronic newsroom may be reached using most PC-based communications software. The main data line access number at the Johnson Space Center is (713) 483-2500. When connection is established, press RETURN twice. The system will ask for a data number. Enter 60213 or 60214 and press RETURN. Wait for a response from the newsroom computer and follow the prompts This will provide an introductory look at what the Electronic Newsroom contains. For full accreditation, follow the on-line instructions given to new users.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

James Hartsfield
Johnson Space Center, Houston, Tx.
(Phone: 713/483-5117)

June 6, 1988

RELEASE: 88-021

JSC SPECIAL ASSISTANT TO DIRECTOR CHARLESWORTH RETIRES

JSC Special Assistant to the Director Clifford E. Charlesworth retired effective Friday, June 3, 1988, completing a 26-year NASA career at JSC he began as a flight controller for the Mercury Program and later a flight director for the Gemini and Apollo programs.

Charlesworth came to JSC in 1962 as a flight dynamics officer. He became a flight director during the early Gemini Program and continued in that capacity through the Apollo missions. He was the lead flight director, involved in all aspects of flight control from launch to splash down, for Apollo 11, man's first landing on the Moon.

From 1970 to 1972, he served as deputy manager of the Skylab Program, and from 1972 to 1976, he assumed duties as manager of the Earth Resources Program, overseeing all Earth resources functions assigned to JSC.

In 1976, Charlesworth became acting manager of the Shuttle Payload Integration and Development Office, and was assigned as manager of that office in 1977. In 1979, he became acting deputy director of JSC and was assigned as deputy director from 1980 to 1983. He served as director of space operations from 1983 to 1986.

Charlesworth has held his current post since 1986, assisting the director with the technical and administrative management of center programs, projects and resources.

"Cliff's career has been exemplary of the kind of dedication and motivation needed to advance man's exploration of space," JSC Director Aaron Cohen said. "During his years here, manned space flight became a reality. He has been an integral part of the achievements of NASA and JSC since the beginning, and I've worked closely with him on many projects. He will be missed."

Charlesworth, 56, is a resident of Friendswood. His many awards and honors include: the NASA Exceptional Service Medal, January 1969 and October 1969; the Manned Spacecraft Center Flight Operations Directorate Group Achievement Award for Apollo 11, July 1969; NASA Group Achievement Award for Skylab, February 1974 and April 1974; NASA Outstanding Leadership Medal, 1981; NASA Distinguished Service Medal, 1983; and the Presidential Rank of Meritorious Executive in the Senior Executive Service, May 1983.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Jeffrey Carr
RELEASE NO. 88-022

June 15, 1988
9 a.m. CDT

ASTRONAUT ENGLAND ACCEPTS POSITION WITH UNIVERSITY OF MICHIGAN

NASA astronaut Anthony England, Ph.D., will leave NASA in October this year to accept a position with the University of Michigan as professor of electrical engineering. England will head up the university's space remote sensing research for the Electrical Engineering and Computer Sciences Department at Ann Arbor.

England was selected as an astronaut in August 1967. He served as support crewman for Apollo missions 13 and 16 before taking a position as research geophysicist for the U.S. Geological Survey in 1974.

In 1979, he returned to the Johnson Space Center and was subsequently assigned to Shuttle mission STS-51F (Spacelab-2) as a mission specialist. During that flight, which featured experiments in astronomy, solar physics, life sciences, and atmospheric research, England was responsible for operating the Spacelab Instrument Pointing System. England logged 188 hours in space on that mission.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/453-1549)

July 15, 1988

Peter W. Waller
Ames Research Center, Mountain View, Calif.
(Phone: 415/694-5091)

RELEASE: 88-100

PIONEER DATA REVEALS NATURE OF THE OUTER HELIOSPHERE

As NASA's Pioneer 11 and Voyager 2 pass through the outer reaches of the solar system and NASA's Pioneer 10 speeds far beyond the planets, these distant spacecraft are measuring drastic changes in the flow patterns of the solar wind -- a million-mile-an-hour stream of charged particles which constantly boil off the Sun.

NASA scientists have discovered a connection between the speed changes in the solar wind (near the spacecraft) and periodic changes in the Sun itself. The Sun's constant variations are manifested in shifts of its magnetic field and movements in the hot gases of its corona. Streams of faster wind particles tend to flow from thin areas, called corona holes, in the corona. Solar wind changes also are triggered by movements of a vast electromagnetic structure, called the current sheet, which bisects the Sun's field. Particles slow down as this sheet "flaps" toward them.

-more-

Over the last 3 years, the Sun has been going through a phase called solar minimum -- a turning point in its 11-year cycle. "No one knew what happened during solar minimum in the farthest reaches of the solar system and beyond until the Pioneers and Voyager sent back their measurements. This is the first solar minimum for which we have been able to see what's going on in the solar wind out past Pluto," says NASA astrophysicist John Mihalov.

The solar wind streams out from the Sun and envelops the entire solar system in charged particles, mostly electrons and protons. No one knows exactly how far this five-particle-per cubic-centimeter flow of particles extends. One recent guess is about 18 billion miles, or four times the distance of Neptune from the Sun.

Before 1985, Pioneer 10 and Voyager 2, both positioned near the equatorial plane, measured periodic gusts in the solar wind called "high speed streams." The particles would speed up and then slow down about once every 27 days. In June 1985, the wind stream pattern stopped and the winds slowed down dramatically at Voyager 2's distance -- two billion miles from the Sun. There was no slowing measured at Pioneer 11, about the same distance as Voyager 2, but 15 degrees higher in latitude. Pioneer 11 measured the usual pattern of high speed streams. Eventually, the winds were flowing only about half as fast at Voyager 2 as they were at Pioneer 11.

Three months later, in August, the solar wind slowed and the high speed streams also stopped at Pioneer 10, which is out twice the distance of the other two probes and in the equatorial region. Mihalov believes this change is connected to the earlier wind speed decrease at Voyager 2. The first slower particles, which were blowing past Voyager 2 in June, would have just reached Pioneer 10 by August. Solar winds actually sped up at the higher altitude position of Pioneer 11.

The Sun's slower particles, that first reached Voyager and Pioneer 10, were boiling off in March of 1985. Mihalov and Aaron Barnes, Ames' senior scientist, proposed that changes in the Sun at this time, set off the changes in the far solar wind, which reached the vicinity of the distant probes months later.

The changes in the Sun were part of a regular variation that it undergoes in 11-year cycles, or sunspot cycles. This cycle affects the number of sunspots, the configuration of the magnetic field, and the distribution of the 2-million-degree gas making up the solar corona.

The coronal holes are located around the Sun's North and South poles. When the Sun approaches the part of its most active phase, called solar maximum, these coronal holes creep toward the equator by extending "tongues" 10 or 20 degrees in longitude. In the last 3 years, the Sun has been near the opposite condition, called solar minimum, when the holes retreat back toward the direction of the poles.

The wind blows out fastest from these lower density holes. Barnes explains that holes form in areas where strong winds have blown the coronal particles away. As the holes retreat toward the poles, the high-speed streams migrate along with them.

The Sun's magnetic field also influences the solar wind. The Sun's field, like the Earth's, has basically a North and South magnetic pole, but the Sun's more complex magnetic field deviates from this dipolar structure during parts of the solar cycle, becoming most complicated during solar maximum, when the two magnetic poles swap places.

In the Earth's simpler magnetic field, field lines (the lines following the direction of force the Earth would exert on a magnetic object) wrap around the planet, connecting the North and South magnetic poles. In the Sun's field, the solar wind stretches the Sun's field lines near the equator far out into space. One region, corresponding loosely with one hemisphere, has more field lines pointing out from the Sun, and is called the positive sector, while the remaining region, with more field lines coming in, is called the negative sector. These sectors are divided by an equator, so at the Sun's surface, a point 15 degrees North of the equator would be above this equator in some areas and below it in others.

Away from the Sun, the positive and negative sectors are bisected by an imaginary wavy curtain called the current sheet, which extends from this buckled equator. (It is called the current sheet because laws of physics state that there must be an electric current at the boundary between opposite magnetic fields and, indeed, there is a net flow of positive charges outward and negative particles inward in this region.) During the present solar cycle, the region above the current sheet is the negative sector and, below it, the positive sector.

Back in early 1985, Pioneer 11 -- 15 degrees above the equatorial plane -- would sometimes be above and beneath the "current sheet" as the Sun rotated. Normally, as the Sun approaches solar minimum and the coronal holes retreat toward the poles, the current sheet's ridges flatten out. As the Sun approached solar minimum in 1985, Pioneer 11 was located above the current sheet, in the negative sector more of the time. By mid-1985, Pioneer 11 was always in the negative sector, indicating that the current sheet had flattened out beneath it.

The closer you go to the current sheet, the slower the solar wind. As the current sheet "flapped" down toward the equator, even with Voyager 2 and Pioneer 10, the solar winds slowed in this region and sped up near the poles. The equatorial winds slowed as far as Pioneer 10, showing that the Sun's magnetic field and the associated current sheet are exerting powerful control over the solar wind even at great distances.

"The Sun, its corona and magnetic fields, and the solar wind are all part of one system," says Barnes. And even well past Pluto, the solar winds are apparently still under the control of the rest of the system.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

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Headquarters, Washington, D.C.
(Phone: 202/453-8536)

Carolynne White
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/286-8956)

For Immediate Release
July 15, 1988

RELEASE: 88-101

SHUTTLE EMERGENCY MISSION CONTROL CENTER MOVES TO WHITE SANDS

NASA's Space Shuttle Emergency Mission Control Center (EMCC), formerly located at the Goddard Space Flight Center, Greenbelt, Md., has been moved to NASA's Tracking and Data Relay Satellite Ground Terminal in White Sands, N.M.

In the past, an emergency evacuation of the Mission Control Center (MCC) at Johnson Space Center, Houston, would have sent a 14-member flight control team to Goddard's Greenbelt facility. There they would have maintained communications with the Shuttle, calculated data necessary for immediate return of the crew and relayed that data to the Shuttle commander. Now, the MCC flight control team will fly to White Sands and conduct the same operations from that site.

THE Goddard Network Director will communicate with the Shuttle commander through Goddard's ground network or the Tracking and Data Relay Satellite System (TDRSS) while the MCC team flies to New Mexico. "GSFC, in concert with the Shuttle commander, assumes mission control during the flight control team's transition from JSC to White Sands," said Morse.

From White Sands, the MCC team has communications with the Shuttle crew through Goddard's ground network or the TDRSS.

In addition to the improved voice and data capability provided by the ground and satellite links at White Sands, the new site is physically closer to JSC. Time required to transfer mission control is shorter, according to Morse.

"The weather also is better at White Sands," he said. "If a hurricane hits JSC and everyone flies to Goddard, the storm is just as likely to sweep east and hit Goddard. But hurricanes tend not to hit the Southwest."

- end -

NASA News

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For Release

Jim Ball
Headquarters, Washington, D.C.
(Phone: 202/453-8604)

July 19, 1988

NOTE TO EDITORS:

COMMERCIAL PROGRAMS ADVISORY COMMITTEE COMMENCES ACTIVITIES

Earlier this year, NASA announced the establishment of a high-level advisory committee to advise the agency on its program to encourage the commercial development of space.

The Commercial Programs Advisory Committee held its initial meeting last week in Washington D.C. and is expected to convene quarterly.

"Coming from the private sector, I have long felt that industry should have a greater voice in influencing the establishment of commercial policies," said Jim Rose, NASA assistant administrator for commercial programs, in addressing the group. "I feel confident that with your help and guidance, we can assure that NASA is proceeding in the most appropriate direction in this area."

Rose initiated the establishment of the committee shortly after his appointment to the Office of Commercial Programs last year.

The enclosed Fact Sheet describes the function of the advisory group and a current list of its membership, comprised of senior corporate and university executives representing a diverse cross section of U.S. industry and business.

-end-

Jim Ball
Headquarters, Washington, D.C.
(Phone: 202/453-8604)

July 19, 1988

COMMERCIAL PROGRAMS ADVISORY COMMITTEE

To ensure diverse, high-level input from U.S. industry and business, NASA has established a committee of senior corporate and university executives to advise the agency in its activities to encourage the commercial development of space.

Responsible for implementing national space policy objectives to stimulate a strong U.S. commercial presence in space, NASA began forming the advisory panel in late 1987 as a new initiative.

Formed as a subcommittee of the NASA Advisory Council, the new group will assist NASA by reviewing policies and programs, and recommending strategies to implement the national space policy goals to promote greater investment and participation by the U.S. private sector in America's civil space program.

Specifically, the advisory panel will be concerned with the overall NASA program supporting the commercial development of space. The committee will address policies and issues related to space industrial research and technology development; use of the microgravity environment for manufacturing; government and private infrastructure supporting commercial space activity; business financing and insurance requirements; and the respective roles and responsibilities of government and the private sector.

-more-

The group also will review current and proposed programs, offering advice on how to optimize industry participation and effectively stimulate and support commercial space endeavors. This will include recommendations on research priorities, NASA-industry relationships and cooperative agreements and industry access to research facilities and space transportation.

The Commercial Programs Advisory Committee, which held its first meeting in July and will convene quarterly, is chaired by Edward Donley, chairman, executive committee, Air Products and Chemicals, Inc. Other members are:

Mr. Robert Anderson
Chairman, Executive Committee
Rockwell International Corp.

Mr. Rand V. Araskog
Chairman and Chief Executive Officer
ITT Corp.

Mr. James K. Baker
Chairman and Chief Executive Officer
Arvin Industries, Inc.

Mr. Paul Bancroft, III
Retired President and CEO
Bessemer Securities Corp.

Dr. Thomas A. Bartlett
Chancellor
The University of Alabama System

Mr. Robert K. Campbell
Chairman, President and CEO
Pennsylvania Power & Light Co.

Mr. John L. Clendenin
Chairman and Chief Executive Officer
BellSouth Corp.

Mr. Peter M. Flanigan
Managing Director
Dillon, Read and Company, Inc.

Mr. Larry D. Horner
Chairman and CEO
Peat Marwick Main & Co.

Mr. Charles E. Hugel
President and CEO
Combustion Engineering, Inc.

Dr. H. Bryce Jordon
President
Pennsylvania State University

Mr. Lewis W. Lehr
Retired Chairman and CEO, 3M

Mr. John C. Rennie
President
Pacer Systems, Inc.

Dr. Roland Schmitt
President
Rensselaer Polytechnic Institute

Mr. David W. Thompson
President and CEO
Orbital Sciences Corp.

Dr. Joe B. Wyatt
Chancellor
Vanderbilt University

Mr. Fred L. Hartley
Chairman and Chief Executive Officer
Unocal Corp.

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For Release

Ed Medal
Marshall Space Flight Center
Huntsville, AL
(Phone: 205/544-0034)

July 20, 1988

RELEASE NO: 88-97

MORTON THIOKOL TO CONDUCT SHUTTLE NOZZLE JOINT HYDROBURST TEST

Morton Thiokol, NASA's prime contractor for the Space Shuttle solid rocket motor, will conduct a motor Nozzle Joint Environment Simulator hydroburst test July 26 at its Space Operations facility in Utah.

The burst test utilizes water to pressurize the motor nozzle joint test article. It will be the last in a series of 20 pressurization test cycles. The overall objective of the series is to evaluate the strength and reusability of the motor's steel forward and aft domes, the case-to-nozzle joint and the nozzle fixed housing.

On July 20, Morton Thiokol engineers will begin the series of hydrotests on the test article. Water pressure inside the test article will reach 1,030 psi for 15 to 20 seconds to simulate the

-more-

hydroproof test performed on Shuttle motor cases after flight. Immediately afterwards, the chamber will be pressurized to 920 psi for 120 to 125 seconds to simulate flight. This two-phased process will be repeated four more times and the data will then be evaluated.

Over the next several days, additional series of five, five and four tests will be conducted, with a data evaluation following each series, before the final hydroburst. The 20 test cycles are designed to verify Morton Thiokol's plan to reuse Space Shuttle steel motor cases for up to 20 flights.

On the 20th test cycle, engineers will pressurize the chamber to 1,030 and then 1,288 psi for 15 to 30 seconds. A level of 1,288 psi is 1.4 times the maximum pressure expected during a Shuttle flight.

After the water pressure remains at 1,288 for 15 to 30 seconds, engineers will increase the pressure until one or more components of the test article fails. Determining the pressure at failure will establish the margin of safety for the parts and the joint.

NASA News

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For Release

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(Phone: 202/453-2754)

July 20, 1988

Paula Cleggett
Headquarters, Washington, D.C.
(Phone: 202/453-1547)

James H. Wilson
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

Release: 88-102

SPECIAL COMMUNICATIONS SYSTEM PREPARED FOR NEPTUNE ENCOUNTER

Scientists and engineers from NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., and the National Radio Astronomy Observatory (NRAO), Socorro, N.M., are working together in the high plains of central New Mexico to improve the ability to receive spacecraft signals from the vicinity of planet Neptune. The researchers are currently testing a new deep-space communications system with NASA's Voyager 2 spacecraft, which will fly past the eighth planet next year.

When Voyager 2 reaches Neptune in August 1989 to take close-up pictures and thousands of other measurements, the spacecraft will be nearly three billion miles from home. Its signal received on Earth will be extremely faint.

Adding the 27 radio telescopes of the NRAO's Very Large Array (VLA) to JPL's Deep Space Network (DSN), which communicates with interplanetary spacecraft, will more than double the ability to capture Voyager's signal. The signal will be received eight hours per day for 40 days of the encounter -- the period that Voyager and Neptune will be above the horizon at the New Mexico desert site.

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Under an agreement between NASA and the National Science Foundation, which sponsors NRAO, engineers are installing new receivers and microwave horns, tuned to Voyager's X-Band radio frequency, on all the 82-foot dish antennas at the VLA. Special signal-processing and communication equipment has been added so that the VLA will be linked by satellite to the DSN's Deep Space Communications Complex at Goldstone, Calif.

The new X-Band receiver systems were designed and built cooperatively by JPL, VLA, and NRAO's Central Development Laboratory at Charlottesville, Va. Like those of the DSN, the advanced receiver circuits are kept chilled with liquid helium to suppress internal electronic noise. NASA also has provided an independent power generator for the array, which has suffered power failures from summer lightning storms.

This month's system test is the first chance to preview Neptune operations with the whole worldwide communication system, including elements at the VLA. The Voyager spacecraft, now 2.4 billion miles from Earth, will transmit in its planetary encounter mode, at data rates up to 21,600 bits per second (the rate used for Voyager's encounter of Uranus in 1986). Linked electronically, the two systems -- 23 VLA antennas that now have their X-Band receivers, and the 112-foot and 230-foot dishes at Goldstone -- will function as a single receiving system.

The VLA, located about 100 miles southwest of Albuquerque, has, since 1980, enabled radio astronomers to study distant stars, nebulae and galaxies by collecting and analyzing radio emissions from these objects.

The 27 mobile dishes are arrayed along a Y-shaped railroad track and can be rearranged for different observations. William D. Brundage, VLA project engineer, is responsible for Voyager preparations at Socorro.

Voyager 2 was launched in August 1977, and has subsequently explored the planetary system of Jupiter, Saturn, and Uranus.

The DSN has been developing and operating as a NASA system for nearly 30 years. It has communicated with spacecraft and astronauts on the Moon; tracked and commanded Earth-orbiting, unmanned spacecraft, and those sent to explore comets and six of the nine planets; and to probe the outer reaches of the solar system.

-more-

Besides the Goldstone complex, the DSN includes stations in Spain and Australia, where Australia's Parkes Radio Telescope was linked with the DSN's antennas in 1986 to support Voyager 2's encounter of Uranus. This link will be made again for next year's encounter. JPL's Donald W. Brown is interagency arraying manager for the DSN, with overall responsibility for the Socorro link.

A contact at the VLA is Terry Romero, Box 0, Socorro, N.M. 87801, telephone: 505/772-4284.

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For Release

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

July 21, 1988

Bob Lessels
Marshall Space Flight Center, Huntsville, Ala.
(Phone: 205/544-0034)

RELEASE: 88-103

PROPOSALS SOUGHT FOR SPACE-BASED LASER TO STUDY GLOBAL WINDS

NASA's Marshall Space FLight Center, Huntsville, Ala., today issued a request for design proposals for a new, space-based remote sensing instrument to measurement wind characteristics, thereby permitting scientists to better understand and contribute to weather predictions on Earth.

The Laser Atmospheric Wind Sounder will be an advanced light detection and ranging (LIDAR) instrument. Just as radar operates by bouncing radio waves off distant objects and sonar bounces sound waves off underwater objects, LIDAR bounces light waves, generated by a laser, off atmospheric particles. Analysis of the reflected light will reveal the direction and speed of the winds and provide information on the amount of particulate matter, known as "aerosols", suspended in the atmosphere.

The sounder will provide real-time global wind profiles for the lowest weather-producing layer of the Earth's atmosphere. Whether obtained globally using the polar-orbiting Earth Observing System platform or from the tropics and subtropics using the manned Space Station, the wind profiles will provide essential data to improve understanding of the global biogeochemical and hydrologic cycles and understanding of large scale atmospheric circulation and climate dynamics. This new information also can be used by weather forecasters worldwide as an aid in improving their numerical predictions.

According to Carmine E. De Sanctis, chief of the Space Science and Applications Group at the Marshall center, the sounder could be operational by 1996 as one phase of NASA's larger Earth Observing System initiative.

- more -

The sounder would enable meteorologists at the National Oceanic and Atmospheric Administration to develop more accurate 5-day weather forecasts. At present, severe weather warnings can be issued only for broad areas of the United States.

A major problem is an inability to obtain global wind velocity measurements. "Most atmospheric wind velocity data is obtained using sounding balloons," Dr. Vernon Keller, the sounder's assistant project manager, said. "Unfortunately, most of these balloons are, of necessity, launched from land. More than two-thirds of the Earth's surface, however, is water, thus there exist large areas of the globe -- particularly in the southern hemisphere -- which receive only minimal measurement coverage."

The sounder will allow worldwide coverage with special emphasis given to tropical and subtropical areas where, previously, measurements have been sparse to non-existent.

According to Richard Beranek, the sounder's project manager, "It will enable forecasters to obtain wind velocity data from ground level up to an altitude exceeding 40,000 feet. Preliminary concepts involve using a proven carbon dioxide coherent laser, operated at an eye-safe infrared wavelength, to survey winds over Earth's entire surface at least once a day. Data would be provided to meteorologists worldwide to assist in developing weather projections to benefit all mankind."

In addition to weather projections, researchers anticipate the data will assist in analyzing the impact natural occurences, such as volcanic eruptions, and human activity, such as the slash and burn land clearing now under way in many developing countries, are having on the global environment, Beranek said.

Dr. Keller said the earliest work on the sounder began at the Marshall center in 1967 with various designs being tested on the ground. In 1981, tests began using a laser atmospheric wind sounder-like system aboard an aircraft. Results obtained during the last 21 years have left Marshall engineers feeling confident in proposing the space-based system.

"We hope to see a design emerge which will be flexible enough to permit us to incorporate state-of-the-art advances in lasers, optics and other related systems as they emerge over the sounder's projected lifespan," De Sanctis said. "The beneficial impact it will have on enhancing our understanding of the environment is certain to be very significant."

- end -

NASA News

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For Release

July 22, 1988

Steve Nesbitt
RELEASE NO. 88-027

NOTE TO EDITORS: STS-26 BACKGROUND BRIEFINGS RESCHEDULED

The background briefings and astronaut press conference for the 26th Space Shuttle mission have been rescheduled to August 22 at the Johnson Space Center in Houston.

The briefings originally were planned for August 1, but possible conflict with other pre-flight events necessitates a schedule change. The August 22nd date will be maintained whether an early September launch is planned or a later date is required.

Background briefings will cover an overview of the flight, hardware and software changes to the shuttle system made since the Challenger accident, the crew escape system and associated equipment, the launch decision process and organizational changes in NASA, and the payloads to be carried on the flight.

The briefings begin at 8 a.m. CDT and should be complete by 5 p.m. The astronaut crew press conference will begin at 1 p.m. All events will take place in the Olin E. Teague Visitor Center auditorium at JSC.

The briefings and astronaut press conference will be carried on NASA Select Television (Satcom F2R, transponder 13, 72 degrees west longitude) with two-way question and answer capability.

# # #

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NASA News

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

For Immediate Release
August 10, 1988

Ed Medal
Marshall Space Flight Center, Huntsville, Ala.
(Phone: 205/544-0034)

EDITORS NOTE: SHUTTLE SOLID ROCKET MOTOR TEST FIRING PLANNED

The fifth and final full-duration test firing of NASA's redesigned Space Shuttle solid rocket motor, prior to resumption of Shuttle flights, is scheduled for Aug. 18 at Morton Thiokol's Space Operations facility in Utah.

Activities available to the news media on test day include a motor photo opportunity (10 to 10:30 a.m. MDT), pre-test briefing (11 a.m. to noon MDT), the motor test firing (1 p.m. MDT) and a post-test briefing (2 to 3 p.m. MDT).

Live video coverage of the test firing, provided by Morton Thiokol, will be carried on NASA Select television (RCA Satcom F2R, transponder 13, located at 72 degrees west longitude). Video coverage will begin about 30 minutes prior to the test firing. Audio-only coverage of the pre- and post-test briefings also will be carried on NASA Select.

Media may receive NASA Select coverage directly from the satellite or view it in newsrooms at NASA Headquarters, Marshall Space Flight Center, Kennedy Space Center or Johnson Space Center. Two-way question and answer capability during the briefings will be available in these newsrooms. A direct telephone audio feed of the briefings and the test firing will be available by calling Marshall Center Communications at 205/544-5300.

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A joint NASA/Morton Thiokol newscenter will be in operation from 8 a.m. to 4:30 p.m. (MDT) on the day prior to the test, Aug. 17, and again on test day. The pre- and post-test briefings will originate from this newscenter, located at the Morton Thiokol test observation area, about 22 miles west of Brigham City, along Utah Highway 83. NASA and Morton Thiokol representatives will staff the newscenter. The telephone number is 801/863-6880.

No advanced accreditation is required for media representatives planning to attend the test-day activities at Morton Thiokol. A courtesy call to the Morton Thiokol Public Relations Office, 801/863-3955 or 3956, is requested to confirm the number of reporters and crew members planning to attend. Current media credentials will be required for access to the newscenter and test observation site.

For additional information call Rocky Raab, Morton Thiokol, 801/863-2747, or Ed Medal, NASA Marshall Space Flight Center, 205/544-0034.

-end-

NASA News

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For Release

Jeffrey E. Carr
RELEASE NO. 88-030

August 10, 1988
9:30 CDT

NASA BUYS SECOND SHUTTLE CARRIER AIRCRAFT

The NASA Johnson Space Center has signed a definitive contract with Boeing Military Airplanes of Wichita, KS to modify a Boeing 747-100 for use as a second Shuttle Carrier Aircraft (SCA).

Space Shuttle orbiters are ferried "piggy-back" atop the SCA from any Shuttle landing site to orbiter processing facilities at the Kennedy Space Center. The additional SCA will provide backup ferrying capability and eliminate a potential single-point failure in the Space Transportation System.

NASA announced plans to acquire a backup SCA in February of this year. The airplane selected is nearly identical to the original SCA which will minimize costs associated with modifications.

The work will be accomplished at Boeing facilities in Wichita and will include structural modifications to enable attach pylons to be mounted atop the aircraft and additional changes to permit better flight control during ferry flights. The agreement calls for delivery of the backup SCA in October of 1990.

The cost-plus-fixed fee contract is valued at $55 million.

# # #

NASA News

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
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Ed Medal
Marshall Space Flight Center, Huntsville, Ala.
(Phone: 205/544-0034)

FOR IMMEDIATE RELEASE
August 10, 1988

RELEASE: 88-113

LAST SHUTTLE MOTOR TEST SCHEDULED PRIOR TO DISCOVERY LAUNCH

The fifth and final test firing of NASA's redesigned Space Shuttle solid rocket motor, prior to resumption of Shuttle flights, is scheduled for 1 p.m. MDT Thurs., Aug. 18, at Morton Thiokol's Space Operations facility near Brigham City, Utah.

The 126-foot-long, 1.2-million-pound motor, designated Production Verification Motor-1 (PVM-1), will undergo a full duration, horizontal test firing of 2 minutes. The motor will be extensively flawed to demonstrate the fail-safe characteristics of the redesign.

The verification and qualification test program to certify the motor redesign consists of six full-duration. One more full-duration test will be conducted after Shuttle flights resume. That test, designated Qualification Motor-8, will be a cold-weather motor firing planned for late December.

Morton Thiokol is NASA's prime contractor for the solid rocket motor, and the Marshall Space Flight Center, Huntsville, Ala., manages the motor program for NASA.

- end -

PVM-1 FACT SHEET

PVM-1 is a full-scale, Space Shuttle solid rocket motor, approximately 126-feet long and 12 feet in diameter. The motor weighs 1.2 million pounds, including 1.1 million pounds of propellant.

The three field joints, connecting the motor, segments are of the flight configuration, capture feature tang and clevis design with three Viton (TM) o-rings. The mating insulation surfaces at each field joint are bonded with an adhesive and include a J-shaped deflection relief slot which reduces stresses and increases the sealing action of the bonded surfaces under motor pressure. Heaters, mounted around the motor case at each field joint location, are thermostatically controlled to maintain joint temperature at a minimum of 75 degrees F.

The motor case-to-nozzle joint on PVM-1 is the flight configuration which incorporates 100 radial bolts, adhesively bonded insulation surfaces, a shaped relief slot and an added Viton "wiper" o-ring designed to keep the adhesive away from the primary o-ring and on the insulation surfaces during assembly.

The PVM-1 motor is fitted with nearly 400 instruments to measure acceleration, pressure, deflection, thrust, strain, temperature, electrical properties and other conditions.

The deliberate flaws incorporated into the PVM-1 motor include:

IGNITER-TO-CASE-JOINT: There are two 5" by 0.4" artificial edge separations (unbonds) in the motor forward dome insulation where the igniter is bolted into the motor. At the same locations, there are deliberate 1" gaps in the zinc chromate putty packed between the igniter body and case insulation.

FORWARD FIELD JOINT: There are no intentional flaws incorporated into this joint.

CENTER FIELD JOINT: There is a 0.125" by 0.05" channel-type flaw cut into the J-seal bonded insulation to assure pressure as far as the capture feature o-ring. In addition, there is a 10" by 1.7" area of artificial edge separation in the case clevis insulation located 1.5" counterclockwise from the pressure-assuring flaw; plus a 5" by 0.175" artificial edge separation in the case tang at the end of the capture feature located 1.5" clockwise from the pressure-assuring flaw.

-more-

AFT FIELD JOINT: There is a 0.5" by 0.1" channel-type flaw cut into the J-seal bonded insulation which is in turn aligned with a flawed capture feature o-ring. The two flaws will assure pressure as far as the primary o-ring.

CASE-TO-NOZZLE JOINT: There is an hourglass-shaped 0.125" by 0.05" minimum area blowhole-type flaw cut through the polysulfide adhesive which, in turn, is aligned with a flawed wiper o-ring. The two flaws will assure pressure as far as the primary o-ring. In addition, there are two 10" by 0.40" areas of edge separations in the case insulation located 30" from and on either side of the pressure-assuring flaw.

NOZZLE INTERNAL JOINT #5: There is a 9" by 0.087" intentional void in the room temperature vulcanizing rubber sealant incorporated in this joint which will assure pressure from the flexible boot cavity to reach the primary o-ring.

- end -

NASA News

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For Release

Kari Fluegel
RELEASE No. 88-031

Aug. 15, 1988

NOTE TO EDITORS: STS-26 MEDIA WORKSPACE STILL AVAILABLE AT JSC

Media workspaces at the Johnson Space Center still are available for the 26th Space Shuttle mission through the JSC Public Affairs Office-Media Services Branch in Houston.

During STS-26, mission commentary and change-of-shift briefings will originate at JSC. Contractor representatives also will be present at the JSC News Center during the flight.

Workspace for media representatives will be available in four trailers located near the Olin E. Teague Visitor Center and, if demand merits, inside the Visitor Center Exhibit Hall.

Accreditation, which is required, must be arranged through the Kennedy Space Center no later than 30 days before flight, and is valid at all NASA centers. To assure workspace at JSC, however, requests should be forwarded to Kari Fluegel in the JSC media services office at (713) 483-5111.

Space is limited. Phone service must be ordered through Southwestern Bell no later than three to five working days prior to launch.

-end-

NASA News

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For Release:

Kari Fluegel
RELEASE NO. 88-032

Immediate

NASA BEGINS NEGOTIATIONS WITH LOCKHEED FOR WHITE SANDS SUPPORT

NASA's Johnson Space Center will begin negotiations with Lockheed Engineering and Sciences Company of Houston that will lead to the awarding of a contract for NASA White Sands Test Facility (WSTF) site support services.

The cost-plus-award-fee contract, at a proposed cost of approximately $152 million over a five-year period, will be an add-on to the current Lockheed contract for the same effort at WSTF. The contract performance will be from Feb. 1, 1989, to Jan. 31, 1994.

Under terms of the contract, Lockheed will provide technical, managerial, and administrative support services for WSTF for the functional areas of propulsion and power systems testing, laboratory test activities, technical support services, and management and administrative services. The contract will be mananged by NASA-WSTF.

In addition to Lockheed, NASA received a proposal from EC III, Inc., of Albuquerque, N.M., a joint venture of EG&G and Cortez III.

- end -

NASA News

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For Release
August 25, 1988

Terri Sindelar
Headquarters, Washington, D.C.
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RELEASE: 88-119

NASA ANNOUNCES UPCOMING SATELLITE VIDEO CONFERENCES FOR TEACHERS

NASA's Educational Affairs Division, Washington, D.C., through Oklahoma State University, Stillwater, will transmit via satellite a series of four educational, video conferences. The 1988-89 series theme is advanced technology.

The conferences will feature NASA project personnel and educational specialists and, in some cases, will highlight NASA field centers.

These live, 1-hour, interactive, video conferences are designed to update teachers on NASA programs, demonstrate aerospace activities for the classroom and announce new programs, products and activities available to classroom teachers. The nation's participating school districts will receive transmissions from 2:30 to 3:30 p.m. Eastern time.

NASA's education satellite, video-conference series, now in its third year, have been highly praised by educators throughout the nation. This year more than 20,000 educators in 50 states are expected to participate.

The first video conference, scheduled for Sept. 28, 1988, will discuss NASA's role in aeronautics research including programs and projects such as the National Aerospace Plane, vehicle technology, composite materials, noise reduction, and wind tunnel testing. Roy Harris, director of aeronautics at Langley Research Center, Hampton, Va., will be the featured speaker.

The full schedule of 1988-89 video conferences is:

Aeronautics - Sept. 28, 1988
Living in Space - Nov. 15, 1988
Future Explorations - Jan. 24, 1989
Technology for Your Classroom - Mar. 21, 1989

- more -

The Sept. 28 conference will be transmitted on Westar IV, transponder 6D, channel 11. There is no charge for registration or participation in the video conference.

To register for the series, interested teachers should write to NASA Aerospace Education Services Project, Videoconference Site, 300 North Cordell, Oklahoma State University, Stillwater, OK, 74078-0422, or call 405/744-7015. Registration ensures that announcements, publications and other materials for teacher-participants are received at the school.

Media and organizations interested in participating can access the satellite or view the event from NASA Headquarters, 400 Maryland Ave., S.W., room 6004.

- end -

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
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James Hartsfield
RELEASE: 88-33

For Release
August 29, 1988
FOR IMMEDIATE RELEASE

NASA'S T-38 FLEET TO SOON SURPASS 200,000 FLYING HOURS

Beauty is simplicity, speed and grace as far as NASA's fleet of 27 T-38 Talon jets is concerned, and this week the fleet will surpass a total of 200,000 flying hours, equal to 23 years in the air, 24 hours a day, seven days a week.

The supersonic jets are used by NASA as spaceflight readiness trainers for pilot astronauts, among other tasks. Ask NASA pilots what the charm of the T-38 is, and you'd better be ready to listen.

"It's handling characteristics, the way it flies, are part of it--it's an extraordinarily honest airplane," says Astronaut Dr. Story Musgrave, the man who has flown more in a T-38 than anyone on Earth "and maybe in the universe"--about 6,100 hours. Musgrave, like almost all T-38 pilots, becomes a bit sentimental as he speaks.

"It's like a really sensitive polo pony, move the reins over a little bit and it responds perfectly. Whenever it does something, you know why it did it, you know why it got that way," he says. "You become attached to airplanes because they become an extension of yourself, your body and mind, especially a plane that's so responsive, so extraordinarily agile. The plane and the pilot become one."

The first T-38 was manufactured in 1958, and the plane became the advanced trainer for Air Force pilots. Whenever the time comes to replace the T-38s, NASA may never do better, pilots say. NASA got its first T-38 24 years ago, and the fleet is still going strong because of a crew of about 230 workers at Ellington Field in Houston, headquarters for the NASA fleet, that provide "the best maintenance in the world," Musgrave says. "Our engines are better kept and better tuned than anyone's."

As supersonic jets go, maintenance on the T-38 is relatively easy, says Ace Beall, former T-38 project pilot and now a Shuttle carrier aircraft pilot. "It was built with ease of maintenance in mind," Beall says. "It's got simple systems, and if something breaks, it's easy to fix."

The two 2,900-pound thrust engines in a T-38 can slide in and out, and if an engine needs work, it is quickly replaced with one of 15 spares on hand. "They're totally interchangeable in all the airplanes," Beall says. "That's a common concept in planes now, but when the T-38s were built, it was just coming into being." About 70 percent of the T-38s NASA owns fly daily.

But the basic reason for the superb performance of NASA's T-38s comes down to the hands that work on them. Many of the mechanics at Ellington have worked on NASA's T-38s since they first came into existence. "They know those airplanes," explains Henry Hartsfield, deputy director of Flight Crew Operations at the Johnson Space Center. "We're very fortunate to have a lot of maintenance people who've been with us for years and years. These guys are really good."

Maintenance standards at Ellington are far above any other such standards for T-38s in the world, explains Jose Rengau, T-38 maintenance officer. "We've added more preflight items that are critical to our checklist than the Air Force or anyone," Rengau said. "We're really perfectionists. You know, one engine problem is too many."

From flight to flight, turnaround maintenance on NASA's T-38s is usually not extensive. "Almost all you've got to do is check the oil, put in gas and go," says Hartsfield. "It's almost that simple."

And what keeps it that simple is a rigorous program of built-in inspections. Each T-38 undergoes a two-day inspection every 150 hours of flying time; a three-week inspection every 450 hours; and is virtually completely taken apart during a month-long inspection every 900 hours, Rengau says. The extensive inspections keep day-to-day problems in check.

The T-38 is lightweight for a trainer, about 12,500 pounds with two crew members. It cruises at nine-tenths of the speed of sound, and it can leave sound far behind at only 5,000 feet, a speed and altitude that's enough "to pin your hair back to your ears," in the words of Ken Cockrell, current T-38 project pilot.

In the early 1960s, the T-38 set a host of records for quick climbs, closed-course speed and short-distance speed. It's maneuverability and simplicity make it perfect for NASA's needs.

"It's a good, stable, forgiving airplane. Its twin engines make it reliable," Hartsfield says. "From handling a high-performance airplane you learn the man-machine characteristics you use on the Orbiter. Night flying, formation flying, acrobatics, the kind of flying that makes you a good pilot, we do all of that. It does a super job."

"It is primarily a flying machine," Musgrave says. "The simplicity of its systems means you can concentrate on flying."

The T-38 is a good spaceflight readiness trainer, adds Beall. "It's good just to get you used to that 18-degree glide slope of the Orbiter. We had to bolt on special speed brakes to get the steep descent necessary to chase the Orbiter. It's just too sleek."

NASA's T-38 fleet is now undergoing a renovation program that will be completed in 1993. One by one, the planes are being modified by strengthening the wings, improving the skin and reinforcing their structural backbone, the dorsal longeron, to extend their operable lifetimes.

The Air Force has announced plans to continue using T-38s, which have not been manufactured since 1972, until 2010. And NASA may do the same. "They're cost-effective. They're all paid for and the maintenance is not that high," says Hartsfield. " We've looked at others, but we've never gotten far."

For one thing, most trainers today aren't supersonic. And the more modern the airplane, often the more complex are its systems and its maintenance.

"Whenever we do have to replace the T-38s, it's going to cost more and we're going to get less," Cockrell says.

With their blue paint and logo, the T-38s have the "classic fast-jet look," Beall says. And the look doesn't lie.

"It's beauty isn't only skin deep," explains Musgrave. "There's a direct relationship in the world of airplanes between beauty and performance."

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NASA News

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For Release

August 29, 1988

Kelly Humphries

Release No. 88-034

NEW WAYS OF USING COMPUTERS TO EVALUATE FLIGHT DATA TESTED

Johnson Space Center flight controllers and engineers will look at several new methods of using computers to evaluate flight data during a Long-Duration Simulation Aug. 30 through Sept. 1 and the next Space Shuttle mission, STS-26.

The test methods will allow one set of flight controllers in the Mission Control Center to use graphic displays of the data being sent back to Earth by Discovery, and allow some flight controllers and engineers to review real-time and near real-time flight data in a "control room of the future" and their own offices.

In Mission Control, the Instrumentation and Communications Systems Engineer (INCO) will be able to evaluate the performance of an INCO Expert System Project being developed by the Mission Operations Directorate (MOD) in parallel with its usual data processing methods. The expert system uses artificial intelligence methods to reduce data, automate fault detection routines and display data in graphic schematic form.

In using the existing text display format, flight controllers must first evaluate the data to construct a mental "picture" of the system before attempting to evaluate the configuration. The expert system is designed to display the information in "picture" form, allowing the controller to concentrate on problem solving. The expert system also is able to highlight for the controller where anomalies are located within a system.

The Mission Support Directorate (MSD) and eight backup flight controllers will monitor real-time flight data in a control room of the future, the Transition Flight Control Room (TFCR), using four programmable workstations. The programmable

-more-

workstations allow controllers to display actual flight data in graphic form by providing a variety of graphs, charts, imitation analog gauges and pictures of the Space Shuttle -- all computer generated -- and to arrange them in any combination required. The new workstations allow individual flight controllers to tailor data displays to their own disciplines and preferences.

Outside Mission Control, both MOD and the Engineering Directorate will evaluate a new method of distributing computerized data to other buildings in the JSC complex. Subsystem experts will be able to review and experiment with data from the spacecraft on a real-time or near real-time basis in their offices. They will evaluate whether the ability to distribute data outside the MCC can allow more productive use of personnel.

The data will be for evaluation only by flight controllers and subsystem engineers on the ground, and no altered data will be sent back to Mission Control or the spacecraft.

In MOD, distributed data processing systems are being evaluated as a means of reducing the number of full-time staffers in the Multipurpose Support Rooms (MPSR) who perform periodic support and systems checks on current flights, respond quickly to any in-flight contingency and provide planning expertise for future flights.

In Engineering, distributed systems are being evaluated as a means of enhancing support for the Mission Evaluation Room (MER) and eventually reducing the number of full-time dedicated staffers needed in the MER. Engineers in the MER monitor system performance 24 hours a day using real-time and near real-time flight data to support Mission Control response to contingencies. They also evaluate systems in relation to upcoming missions, pinpointing the causes of malfunctions and identifying equipment that needs to be replaced before the vehicle's next flight.

Through the use of a newly installed "gateway" that allows the Engineering Directorate's Digital Equipment Corp.-based computer network to "talk" to the MCC's IBM equipment, near real-time data may be distributed to engineers at their workstations in other buildings. There, they will be able to manipulate the data using their engineering computer terminals and recommend system changes in a matter of hours instead of days, speeding the orbiter processing flow at Kennedy Space Center.

The expert systems work in MOD is being funded through the Office of Aeronautics and Space Technology at NASA Headquarters.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

For Release
August 30, 1988
Embargoed until 1:00 p.m. EDT

RELEASE: 88-120

NASA ISSUES UPDATED, MIXED-FLEET MANIFEST

NASA today issued the newest update of its mixed-fleet manifest reflecting current planning for primary payloads for Space Shuttle missions and expendable launch vehicles (ELV's) through Fiscal Year 1993.

The manifest is for planning purposes only. Firm Shuttle payload assignments are made during the formal integration process approximately 19 months prior to launch. The next Shuttle launch (STS-26) is currently targeted for late September 1988. The new manifest reflects NASA's current assessment of the rate at which Shuttle flights can be resumed during 1989.

In addition to supporting Department of Defense mission requirements, this mixed-fleet manifest continues to reflect the high priority assigned to civil space science and applications payloads and the commercial space initiatives.

The Hubble Space Telescope has been moved 7 months until 1990. The reasons are:

- the delayed initial launch of STS-26;
- an orderly flight rate buildup in 1989;
- maintaining the planetary launch opportunities and avoiding the long mission slippages incurred when planetary windows are missed; and
- preserving important DOD missions

A top priority in revising payload schedules has been to maintain the fixed launch window opportunities of three interplanetary missions:

- Magellan -- a mission to map the planet Venus, scheduled to be launched in 1989;

- o Galileo -- a cooperative project with Germany to survey Jupiter and its moons, scheduled to be launched in October 1989; and

- o Ulysses -- a cooperative project with the European Space Agency to investigate the properties of the sun and its environment, scheduled to be launched in October 1990.

The DOD mission on the first flight of the orbiter Columbia has been moved from February to July 1989, following the launch of Magellan. Launch of NASA's U.S. Microgravity Laboratory (USML-1) remains scheduled to be launched in March 1992. The first step in extending mission durations beyond 9 days is planned for the USML-1 flight. All other payloads manifested on Columbia have later launch dates than those published in the March 1988 manifest.

With the move of the Hubble Space Telescope from its June 1989 launch to February 1990, the DOD mission, which had been scheduled for February 1990, moved to July 1990. To accommodate this series of changes, one of the two DOD Shuttle missions, previously slated for FY 1991, is now scheduled on a DOD ELV.

Seventeen Space Shuttle missions are planned through the Ulysses launch (STS-42) in October 1990. Of these, seven are DOD, one carries both a DOD and NASA payload (STS-32) and the remaining nine are NASA missions. In each of the fiscal years beyond 1991, there are two DOD dedicated flights. This approach is consistent with the National Mixed Fleet concept. This mixed-fleet manifest reflects NASA's plans to use ELV's for those payloads not requiring the capabilities of the Space Shuttle. Twenty-eight ELV launches are planned through FY 1993.

The manifest continues to support the commercial space initiatives announced with the National Space Policy, Feb. 11, 1988.

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For Release

James Hartsfield
RELEASE: 88-035

September 9, 1988
FOR IMMEDIATE RELEASE

SECOND-GENERATION SET OF ONBOARD FLIGHT COMPUTERS AT JSC

The first complete ship's set of an updated version of the Space Shuttle orbiter's five onboard flight computers, more than twice as powerful but half the size of those now flying, is being tested at the Johnson Space Center (JSC) and may fly in 1990.

Every flight control function aboard an orbiter is initiated by or through the five onboard general purpose computers (GPCs), including the movement of all aerodynamic surfaces and control of the main engines. "The computers now flying were designed in the 1960s, using 1960s' technology," explained Ned Trahan, chief of the Data Processing Section at JSC. "The new ones have 1980s' technology."

The rapid advance of technology during that period is evident in the appearance of the new GPCs now in the JSC Avionics Engineering Laboratory (JAEL). The new computers are half the size of the current orbiter GPCs, made up of a single unit as compared to two units for the current computers.

And the new GPCs operate three times as fast; have more than twice the memory capability; and weigh half as much as those now flying, Trahan said. "They also have an error correcting code, you could have a failure in one of the memory chips and the code would automatically correct the data," Trahan said.

It all adds up to what will be a tremendous boost in reliability and performance, plus an open road for innovation. The current GPCs operate at 80 percent of their capability during periods of highest activity. Using the same software, those same periods will push the new GPCs to only 40 percent of their capacity.

"We want to run the old software in the new machines with a minimum of changes. It's proven reliable," Trahan said. "But eventually we'll modify it over a period of time to take advantage of the extended capabilities."

Development of the second-generation GPCs began in 1983, but the race with the rapid evolution of high technology never ends. "You can see that from development to machine takes a long time," Trahan said.

Improved integrated circuits cut down the size of the new GPCs, and instead of the iron core memories in the current flight computers, the new ones have a complementary metal oxide silicon (CMOS) memory.

IBM, manufacturer of the current GPCs, also manufactures the new GPCs and began delivery of the actual flight-types to JSC in February. The JAEL had been working with pre-production prototypes of the computers since 1986, refining the design and operations.

Now the JAEL has six GPCs actually designated for flight, and they differ from the prototypes very little except in their parts. Prototypes were built with off-the-shelf, commercial hardware; flight GPCs are built with high-reliability, space-qualified components.

"With the actual flight units, and the first flight set of five, we're now doing what we call burning them in," Trahan said. "It's a process where we put as many operating hours on them as we can, hoping that any weak components in the system will fail." JAEL workers plan to put at least 500 hours on each GPC.

While the flight computers are burning in, the prototypes are being used in simulated flights via a link between the test bays in the JAEL and the high-fidelity Orbiter simulator in the Shuttle Avionics Integration Laboratory (SAIL). So far, the new GPCs have lived up to their billing. "In preliminary testing, they've performed as well as advertised," Trahan said.

At least 19 more of the second-generation GPCs will be delivered to the JAEL, enough to outfit four orbiters plus a spare flight set. The lab should continue to receive about one new GPC a month, Trahan said.

-30-

NASA News

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For Release:

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

September 12, 1988
2:00 p.m. EDT

RELEASE: 88-125

NASA & AIR FORCE ANNOUNCE RANGE SAFETY CRITERIA FOR STS-26

NASA and the Air Force, which has responsibility for range safety, have mutually determined that the number of persons who will be permitted access to the Kennedy Space Center for the launch of the Space Shuttle Discovery, STS-26, will be greatly reduced for safety reasons.

The risk of loss of the shuttle and the crew have been substantially reduced through redesign of the solid rocket motor and other improvements. At the same time, studies of the Challenger accident in January 1986 and the loss of an Air Force Titan 34D the following April have shown that the danger to persons on the ground is much greater than was understood should an accident occur.

Under certain conditions a solid rocket booster released from the vehicle as a result of an accident would follow an unknown ballistic trajectory rather than begin to tumble on course as had been previously thought. In addition, it was learned that upon destruction, the boosters fragmented into thousands of pieces, and the explosive properties of unburned solid motor propellant were greater than orginally determined in laboratory tests.

Because of this new information, NASA and the Air Force have determined that the prudent action is to minimize the population at the close-in viewing areas. All credentialed media will be able to work from the LC-39 press site except for the hours just before launch and the launch itself. During that period, media with an immediate need for the facilities at the press site will be allowed, and all others will view the launch from the Causeway which will be equipped with countdown clock, audio commentary and video monitors. Immediately following the launch, all media will be permitted on the press site to file their stories and attend the post-launch briefing.

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A joint NASA/Air Force press conference is scheduled for Tuesday, September 13, at 2:00 p.m. EDT at NASA Headquarters to explain both the safety analysis method and conclusions as well as the criteria for press coverage. The press conference will be carried live on NASA Select television (Satcom F2R, transponder 13, 72 degrees west longitude) with two-way question and answer capability.

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For Release

James Hartsfield
Release No. 88-043

Oct. 24, 1988

JSC DEVELOPING AN IN-HELMET COMPUTER MONITOR FOR SPACESUITS

During future spacewalks, astronauts may have more than just the universe before their eyes--they may have just about any information they require from a transparent, television-quality computer monitor on their visors.

That's the goal of a team at the Johnson Space Center (JSC) working on a helmet-mounted display for spacesuits. And the difference that a helmet-mounted view screen can make could be essential to the demanding orbital work that will be required for America to build its permanently manned space station in the 1990s.

Heads-up displays, where images are projected onto a windshield, have already been developed and are in use in some jet aircraft. But the helmet-mounted display would be far different, projecting an image onto a visor only inches away from the astronaut's eyes, and such a display must be extremely compact.

During an extravehicular activity (EVA) now, astronauts have one 12-character liquid crystal display at the top of a large, cumbersome control module attached to the chest of their spacesuit. The 12-character strip displays vital suit information, such as suit pressure, available oxygen, available water and available power, in an abbreviated form. And the tiny readout is inconveniently located, where astronauts must strain to read it.

But outside the vehicle at work in space, convenience and quick access to information are the difference between a task completed and a task made impossible. The helmet-mounted display under development has resolution comparable to a television, said Jose Marmolejo, a project engineer in JSC's Crew Systems Branch. Among the items it can display are a quick, easily read graphic of the spacesuit's status; all of the pages of a bulky wrist checklist now worn during spacewalks; and just about any other data item, including video, Marmolejo said.

"During space station operations, astronauts could be outside nearly every other day, three times a week, for 90 days. That's about 36 EVAs," he said. "I believe a helmet-mounted

display is the only way to go."

The helmet would be linked to the spacesuit's computer, providing a capability to display information on the vital functions of the suit or transmitted data from other computers, originating from the space station or from the ground. Checklists, schematics, even video could be shown on the monitor, and a possible voice-controlled system could let the astronaut choose displays and use video-displayed controls hands-free. However, manual switches would still be used to control critical suit functions, Marmolejo said.

Progress toward an operational helmet-mounted display is well under way since the work began in 1984. Two demonstration units have been studied at JSC. The first, delivered in March 1987, was built in conjunction with Wright-Patterson Air Force Base and featured 1-inch cathode ray tubes that projected a binocular image onto a semi-transparent, curved plate. The second, delivered in June, is more advanced.

Built by Hamilton-Standard, the demonstrator projects a liquid crystal display image through five lenses onto a plate that serves as a screen, folding the image back to the viewer, Marmolejo said. The screen is partially transparent, and it can be seen through easily when the liquid crystal projector is off. The display serves as a black-and-white, binocular monitor that has a resolution high enough to show low-quality video, Marmolejo said. "Most people have been very pleased with this. It's very easy to view, and there's virtually no eye strain."

The next version of the display, to be built by April 1989, will employ holographic elements and be constructed in a helmet that may be close to the project's final form. Special, holographic materials will be deposited directly on the pressure helmet, the innermost visor, and the protective visor, the second visor of a helmet. A third, moveable, gold-plated sun visor completes the makeup of the helmet, he explained.

The image will be projected by being bounced between the holographic deposits on the two surfaces. Such a system could reduce the packaging size, Marmolejo said. The team is aiming at developing a display in a helmet that would be only 1.5 inches taller than the current pressure helmets. The display would not be a holographic, three-dimensional display, and holography will be used only in creating the special reflective deposits needed.

One of the biggest attributes of the holographic deposits is that such a view screen could reflect 90 percent of the projected light back to the viewer and, at the same time, be 90 percent transparent when the projector is off, he said. The screen should present close to a 30-degree diagonal field-of-view image and be located just above the normal line of sight.

"The helmet-mounted display is not a weight-critical item,"

Marmolejo said. "Its size and the power it uses are the main concerns."

Training astronauts for the large demands of space station EVAs will be extensive. But a helmet-mounted display could minimize that training by having virtually unlimited checklists at the beck and call of the astronaut during EVAs. "I've seen the amount of training that the astronauts go through for just one pair of Shuttle EVAs. And there's no way you can do all that training here on the ground to get a guy totally ready for 90 days worth of work," Marmolejo said.

The helmet-mounted display also could be used as a television monitor to show astronauts using a television camera the video they're sending back to Earth.

Marmolejo and his team also are working with other software that could be used in the display, including a graphic informational aid for astronauts flying the manned maneuvering unit. "If we can prove that the holographic display is feasible, there's really not a whole lot left to work on except reducing the volume and increasing the resolution," Marmolejo said.

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For Release

Lisa Fowler
Kennedy Space Center, Fla.
(Phone: 407/867-2468)

October 28, 1988

Nancy Lovato
Ames-Dryden Flight Research Facility, Edwards, Calif.
(Phone: 805/258-8381)

EDITORS NOTE: STS-27 NEWS MEDIA ACCREDITATION

NASA is accepting accreditation requests from news media representatives wishing to cover the Space Shuttle Atlantis mission (STS-27) currently targeted for launch in late November.

News organizations, planning to send representatives to cover STS-27, must send a letter requesting accreditation for the mission. STS-26 credentials do not apply to subsequent missions, thus new requests must be submitted.

Requests for credentials, launch through landing, should be submitted to:

NASA John F. Kennedy Space Center
PA-PIB/Accreditation
Kennedy Space Center, FL 32899

Please indicate from which NASA location(s) you plan to cover the mission. Media planning to cover the landing only should submit their requests for accreditation to:

NASA Ames-Dryden Flight Research Facility
Attn: DXI/Public Affairs
P.O. Box 273
Edwards, CA 93523

Requests for accreditation must be made by a supervisory official, other than the applicant, on company letterhead, clearly indicating the assignment (reporter, photographer, technician, etc.) and social security number of each

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individual. Freelance writers and photographers must offer proof of assignment or evidence of past professional activity. The accreditation will be valid for all NASA news centers.

The news center will open at Kennedy Space Center 5 days prior to launch; at Johnson Space Center, Houston, 3 days prior to launch; and at Ames-Dryden Flight Research Facility, 1 day prior to launch.

NASA ground rules for newspersons covering the mission are:

- o NASA will not make travel or housing arrangements.
- o Only working newspersons will be accredited at the news centers. Publishers and other news and advertising executives will not be accredited. These individuals should apply to NASA Public Services Division (LP), NASA Headquarters, Washington, D.C., 20546.
- o Friends, dependents or relatives not covering the mission will not be accommodated.
- o No one under 16 years of age will be allowed at the press site under any circumstances.
- o Philatelic publications must meet the criteria of general publications or be national publications of recognized philatelic organizations. Representatives of catalogs, newsletters, local clubs or profit seeking projects will not be accredited. Conducting philatelic business, other than reporting, is not permitted.
- o College news media are limited to two accredited correspondents per college.
- o Media representatives must present their letter of acceptance and a photo identification to obtain a news badge at the appropriate center.
- o Violations of the rules will result in loss of press badge and press site privileges.

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NASA News

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For Release

Kari Fluegel
Johnson Space Center
(Phone: 713/483-5111)

Oct. 28, 1988
3 p.m. CDT

Release No. 88-045

NASA, NORTHROP TO NEGOTIATE FINAL AIRCRAFT MAINTENANCE CONTRACT

The National Aeronautics and Space Administration recently selected Northrop Worldwide Aircraft Services Inc. (NWASI), a subsidiary of the Northrop Corporation of Lawton, Okla., with which to begin final contract negotiations for the Aircraft Maintenance and Modification Program (AMMP).

Total proposed cost of the five-year effort beginning March 1, 1989, is approximately $72 million. The award will be a continuation of the aircraft maintenance and modication support currently being performed by NWASI.

The contracted work will performed at the Lyndon B. Johnson Space Center facility at Ellington Field in Houston, Texas; Forward Operating Locations in El Paso, Texas; and Edwards Air Force Base, California.

The contractor will manage, direct, and perform organizational, intermediate and depot level maintenance. Contractor operations will include maintaining and servicing aircraft and engines, and providing engineering support, logistics support and quality control. The contractor also will provide the servicing of transient aircraft and maintenance of any additional aircraft assigned to JSC during the contract time.

The agreement provides for a one-year base performance period and four one-year options.

Also submitting proposals for the AMMP effort were Hawthorne Services Inc., Charleston, Calif.; Lear Siegler Management Services Corp., Oklahoma City, Okla.; and Serv-Air, Inc. Greenville, Texas.

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For Release

Pam Alloway
RELEASE No. 88-046

Nov. 4, 1988

NOTE TO EDITORS: GRAND OPENING OF NASA'S SPACE STATION FREEDOM MOCKUP AND TRAINER FACILITY, BUILDING 9B.

NASA's Johnson Space Center will open its newly constructed Space Station Mockup and Trainer Facility during a grand opening ceremony at 2:30 p.m. Wednesday, Nov. 9.

Clarke Covington, manager of the Space Station Projects Office, and astronauts who are working with the project will be available for media interviews in the new building from 10 a.m. to noon Wednesday. News media also may walk through the mockups during that time.

News media planning to attend either the interview session or the grand opening ceremony must have NASA media badges which can be obtained in the JSC news center, Building 2.

The grand opening ceremony will begin at 2:30 p.m. with remarks from JSC Director Aaron Cohen, Dr. Carolyn Huntoon, director of Space and Life Sciences, Covington, and Akira Kubozono, executive director of the National Space Development Agency of Japan.

News media attending the opening ceremony should be in place by 2 p.m. There will be designated seating and camera spaces for media.

Following a ribbon cutting, guests may tour the mockups and trainers until 5 p.m. Contractors also will have exhibits on display. Ceremony organizers have invited all NASA and contract employees and expect more than 300 other invited guests to attend the ceremony.

Signs directing visitors and guests to building 9A/9B, located on the north end of the center, will be along the main entrance road off NASA Road 1.

Media should park in designated spots located on the north side of the building. Security officers will be at the building to direct traffic and answer questions. All guests and visitors should enter the building through the east door.

-end-

NASA News

National Aeronautics and
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For Release

James Hartsfield
Release No. 88-047

Nov. 14, 1988

JSC TEAM BATTLES EFFECTS OF WEIGHTLESSNESS WITH EXERCISE

A bicycle that can think for itself. Four healthy people confined to bed for more than four months. A group of six who run on a treadmill inside an airplane flying a stomach-churning trajectory. And a group of 10 that exercises to music or selected videos, supervised by a computer.

All are soldiers, soldiers in a war declared by NASA against what historically has been one of man's most valuable assets--his natural, marvelous but troubling ability to adapt.

A team of scientists, doctors and engineers from a variety of areas at the Johnson Space Center (JSC) in Houston is confident it will win that war, and that victory will allow humans living in space to remain as physically fit, or even better so, than they are on Earth.

"Man adapts in space. It's something that occurs naturally," explained Dr. Bernard Harris, a member of JSC's Space Biomedical Research Institute. "If we didn't want to come back to Earth, adaptation probably wouldn't be a problem. Our goal is to retard or prevent that adaptive process."

Harris heads a team of workers from various disciplines that is developing the Exercise Countermeasure Project. Exercise, Harris said, has already proven itself to be the most powerful weapon in the arsenal used to battle the effects of weightlessness on the body.

In weightlessness, muscles lose their strength, the cardiovascular system becomes lazy, bones can degenerate. That process must be stopped if Americans are going to construct a space station in orbit, if they're going to live in zero-gravity and if Shuttle pilots are going to be fully fit to land their crafts after extended stays in space.

"We have to maintain the pilots' health so they're capable of flying down," he said. "Flying in the Shuttle is much more strenuous than Apollo; the crew is sitting up, not lying down. And they must have the strength to use the flight controls to

(more)

successfully land." Also, there is no room for dizziness, a problem that could occur when gravity is first felt during a Shuttle descent.

Two main products are to result from the work now under way: an Exercise Countermeasure Facility for Space Station Freedom, a permanently manned station to be built in orbit during the 1990s, and an Exercise Countermeasure System for an extended duration version of the Space Shuttle. The Shuttle's exercise system will be different from the space station's facility mainly because of a lack of room, Harris explained.

For America's space station, the exercise facility may have to be one of the first things in orbit. Astronauts involved in construction of the station will have to remain in good physical condition to perform their work.

Harris is confident that the right amount of the right exercise can do the job--keep astronauts nearly as fit as they were when they left Earth. "We'd like to maintain their preflight level of fitness, and it could be possible that some people could actually improve," he said. "But, in reality, we'll probably just maintain their fitness, and we may see some loss, but not a significant one."

But how much exercise is required to meet these goals? What muscles need to be exercised? And how can you do that? Those are the questions the team has to answer.

Those answers don't come easily, especially for people involved in current studies relating to the Exercise Countermeasure Project. Four different JSC laboratories are working on the project: the Exercise Development Lab, the Exercise Physiology Lab, the Artificial Intelligence Lab and the Anthropometry and Biomechanical Lab. Each lab is now involved with various studies of test subjects.

In a study under way by the exercise development and exercise physiology labs, four subjects were confined to bed for 17 weeks at Hermann and Methodist Hospitals in Houston. Strict bed rest can simulate the effects of prolonged weightlessness, Harris said.

The subjects are now going through a six-week reconditioning period, working out one hour a day on a strict exercise prescription. The study, headed by Dr. Victor Schneider, will determine if the exercise can bring the subjects back up to their previous level of fitness.

"The theme is to see if we can do what we need to do with just one hour of exercise a day," Harris explained. "Can exercise be effectively done in that short period of time? Can we build up

(more)

muscle in an hour? Can we help the cardiovascular system in an hour?"

A second study under way, overseen by Dr. Mike Greenisen of the biomechanical lab, is researching the fine points of running on a treadmill in zero gravity. Six people have been running on a treadmill in normal gravity with electrodes attached to their leg muscles, an attempt to determine the exact movements of muscles during the exercise.

Next, the six will run on a treadmill aboard NASA's KC 135 aircraft as it flies a parabolic path that simulates weightlessness for about 30 seconds during each arch. The runners will be filmed as well as have their leg muscle movements recorded electronically in a "locomotion study." The results will help in designing the restraint system needed for a space treadmill, determining how much simulated weight must be put on the body as it runs in zero-G to get the same results as a normal terrestrial workout, Harris said.

A third study has 10 subjects exercising three times a week on prototypes of equipment that may eventually be part of the Exercise Countermeasure Facility. The equipment includes a stationary bicycle, a treadmill, a rowing machine and a resistive exercise device, essentially a machine that simulates weightlifting.

But these machines are far from the run-of-the-mill versions found in health clubs. They are being trained to think for themselves, to decide for themselves when their users aren't working hard enough--and, based on that decision, to increase or decrease the workload.

The study is helping Project Engineer Laurie Webster and Software Engineer Wanda Pratt design what will basically be the brain of the Exercise Countermeasure Facility in the Artificial Intelligence Lab. Exercise prescriptions have been written for the 10 test subjects by Exercise Physiologist Dr. Steve Siconolfi, himself one of the subjects. Those prescriptions have been fed into the computers that control the exercise devices, and the test subjects work out on their choice of the bike or treadmill three times a week.

Basically, Webster and Pratt are building a computerized fitness instructor. "We're trying to capture the decision-making techniques of the expert," Webster explained. "We want to design a machine that would behave in a way similiar to the way an expert would behave in the same situation."

The artificial intelligence will allow the computer to rewrite the exercise prescription needed to keep a crewmember in shape, compensating for the continuing effects of zero-G. "It

(more)

changes the prescription day to day," Webster said. "If it didn't change it, the person would still just decondition--there would be no compensation for the deconditioning effects of weightlessness on his body."

[redacted] machines keep the person's heart rate within a specified target zone. For instance, if the heart rate is too low, the bike will automatically make it more difficult to push the pedals. The treadmill can speed up and create a 5-degree slope to make the runner work harder.

What will eventually be aboard Space Station Freedom will probably be a product of those devices now being tested, Webster said. A combination bicycle and rowing machine and a combination treadmill and simulated weightlifting device are two possibilities, and the lab may receive such combination prototypes in the near future, he added. And day after day, the devices would track the condition of the crew and adjust the amount of exercise they need accordingly. The facility also would be able to transmit that log of data on each crew member's physical condition to Earth.

The devices also may include a voice synthesizer so they can tell exercisers when to begin working out, when to stop, and other information. Motivational items are already being studied as part of the prototype machines. Subjects in the study group can exercise to either music or video of their choice, including scenes that give the appearance of an actual bike ride or jog down a country road.

"Eventually, we may try a video game as motivation, a game situation," Siconolfi said. "They could play the game as part of their exercise."

Exercise in space is more than just staying in condition to return to Earth's gravity, it is a key to good health over a prolonged period of weightlessness, Harris said. "Exercise can keep the muscles toned and the cardiovascular system in shape," he said. "And we think that by keeping the right muscles toned, we can affect the bones. The astronauts must have some way up there of maintaining their physical condition, and, in turn, their health."

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Jeffrey Carr
RELEASE NO. 88-048

November 09, 1988

VETERAN ASTRONAUT BOBKO TO RETIRE FROM NASA

Col. Karol J. "Bo" Bobko (USAF) has announced plans to retire from NASA and the U.S. Air Force on January 1, 1989 after a career which includes three space shuttle missions.

In April 1983, Bobko served as pilot on Shuttle mission STS-6, the maiden voyage of the Space Shuttle Challenger during which the first Tracking and Data Relay Satellite was deployed, and which featured the first spacewalk of the Shuttle era.

In April of '85, Bobko served as commander of his second mission, STS 51-D, which featured the deployment of two communications satellites and a dramatic attempt to revisit and activate one of those satellites which had malfunctioned. He also commanded STS 51-J, the first flight of the Space Shuttle Atlantis and the second Department of Defense STS mission, in October of 1985.

Bobko, an astronaut since 1970, was a member of the Skylab Medical Experiments Altitude Test (SMEAT) in 1972. He also served on astronaut support crews for the Apollo-Soyuz Test Project in 1975 and for the Space Shuttle Approach and Landing Tests conducted at Edwards Air Force Base in California.

Bobko will be joining the Space Systems Division of Booz, Allen & Hamilton Inc. He will be directing their activities in the Houston/Johnson Space Center area with initial emphasis on Space Station program support. Bobko's last day at JSC will be November 30.

# # #

NASA News

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

November 10, 1988

Dick Young
Kennedy Space Center, Fla.
(Phone: 407/867-2468)

RELEASE: 88-156

SHUTTLE ORBITER LOGISTICS CONTRACT EXTENDED

An agreement, designed to enhance the efficiency of Space Shuttle logistics operations by consolidating them at the Florida launch site, has been negotiated with Rockwell International Corporation's Space Transportation Systems Division.

NASA's John F. Kennedy Space Center has awarded a cost-plus-fixed-fee/award fee contract extension for $419,187,597 to the Rockwell division. The contract covers the 3-year period beginning Oct. 1, 1988. The award does not represent any new work but is an extension and consolidation of existing functions managed by the Kennedy Space Center.

The present plan will consolidate Rockwell's Space Shuttle orbiter logistics operation now on the west coast with its Launch Support Operations facilities at the Kennedy Space Center and Cape Canaveral, Fla.

Under the contract, Rockwell's orbiter logistics operations in Downey, Calif., will be transferred to its existing Launch Support Operations activity at KSC. During this same period, Rockwell's component overhaul and repair activities will be moved from its network of original Shuttle equipment manufacturers across the nation to the Rockwell Services Center at Cape Canaveral, Fla. The move will complete a consolidation begun in 1985.

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The co-location of these activities will increase the efficiency and responsiveness of the company's Shuttle flight support operations, according to NASA and Rockwell officials.

Rockwell's orbiter logistics operation covers all functions associated with the purchase of orbiter ground support equipment (GSE) spares and the repair of existing orbiter and GSE hardware assigned to the Shuttle program. The consolidation will transfer in total all program management, logistics, material, quality assurance and business management functions to the company's KSC area facilities.

The consolidation is expected to create 400 to 450 new jobs in Florida. About 100 to 125 experienced personnel will be transferred from Downey or other Rockwell divisions to the Florida operation. The company's orbiter logistics support complement in Florida presently numbers approximately 200.

The Rockwell Services Center in Cape Canaveral will assume full responsibility for orbiter component overhaul and repair, as well as provide engineering support for repair activities. Certain engineering design support and manufacturing tasks will continue to be performed at the company's Downey, Calif., facilities.

- end -

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For Release

Ken Atchison
Headquarters, Washington, D.C.
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November 14, 1988

RELEASE: 88-159

CANTUS RESIGNS FROM NASA

H. Hollister Cantus, associate administrator for external relations, has resigned from NASA effective Nov. 19 to return to private industry. Cantus has accepted a position as vice president for government requirements with Lockheed's Missile and Space Systems Group. He will be located in Washington, D.C.

Cantus became associate administrator in February 1987 after retiring as group vice president from United Technologies Corp. His previous government positions included deputy assistant secretary of defense, director of congressional relations for the Energy Research and Development Administration, and professional staff member of the House Armed Services Committee. Cantus also served 10 years on active duty as a naval flight officer and retired from the Naval Reserve as a captain in 1984.

Cantus came to NASA after the Challenger tragedy. In response to the recommendations of the Phillips' Committee, NASA consolidated functions relating with Congress; other agencies of the federal government; foreign, state and local governments; industry and the educational community into the Office of External Relations. Cantus was the first incumbent of this consolidated activity.

In accepting his resignation, NASA Administrator Dr. James C. Fletcher said, "As you leave, you can be satisfied that a good measure of our progress can be attributed to your good work."

- end -

NASA News

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For Release

Jeffrey E. Carr

January 4, 1989
11:00 CST

RELEASE NO. 89-01

NOTE TO EDITORS: STS-29 BACKGROUND BRIEFINGS AT JSC

A series of pre-flight background briefings and a press conference with the STS-29 astronaut crew are scheduled for January 11 at the Johnson Space Center in Houston.

Background briefings will include an overview of the flight given by lead flight director Charles W. Shaw as well as briefings on the primary payload, TDRS-D, secondary payloads, and other mission objectives.

The briefings will begin at 8 a.m. CST and should be completed by 4 p.m. Round robin interviews with the flight crew will be conducted the following day. News media who wish to participate in the interviews should contact Jeffrey Carr at 713/483-5111.

All briefings and the crew press conference will be carried live on NASA Select television which can be accessed via Satcom F2R, transponder 13, at 72 degrees west longitude. Two-way question and answer capability with other NASA centers will be provided.

-end-

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For Release

Jeff Vincent
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

January 4, 1989

NOTE TO EDITORS: NASA FY 90 BUDGET BRIEFING SCHEDULED

A press briefing on NASA's fiscal year 1990 budget request will be held Jan. 9 at 3 p.m. EST in the 6th floor auditorium, NASA Headquarters, 400 Maryland Ave., S.W., Washington, D.C.

Participants include NASA Administrator Dr. James C. Fletcher, Deputy Administrator Dale D. Myers and Comptroller Thomas Campbell.

The briefing will be carried on NASA Select television (Satcom F2R, transponder 13, frequency 3960 MHz, 72 degrees west longitude) with two-way question and answer capability from participating NASA centers.

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For Release

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

February 28, 1989
Embargoed until 11 a.m. EST

Jerry Berg
Marshall Space Flight Center, Huntsville, Ala.
(Phone: 205/544-0034)

RELEASE: 89-25

SHUTTLE TILE DAMAGE STUDY COMPLETED; "GO" FOR DISCOVERY FLIGHT

A NASA review panel, investigating the damage to the orbiter Atlantis' thermal protection system during the STS-27 mission, found that the most probable cause was ablative insulating material from the righthand solid rocket booster nose cap dislodging and striking the orbiter about 85 seconds into flight.

The Shuttle was traveling at approximately two and one-half times the speed of sound. At that speed, tests and analyses have demonstrated that material breaking away from forward portions of the vehicle can result in debris striking the orbiter with enough force to damage the tiles.

Following its landing on Dec. 6, 1988, inspection revealed that Atlantis had sustained slightly more than 700 individual tile impacts. The damage was concentrated on the lower surface tiles of the righthand side. One complete tile was found missing from the damaged area below the crew compartment, and an insulation panel was missing from the right orbital maneuvering system (OMS) pod.

In its effort to understand how the damage occurred, the review team gathered extensive physical evidence by examining the Atlantis vehicle, reviewing prelaunch inspection records and procedures, assessing tracking camera footage and interviewing Atlantis' flight crew. They studied the flight hardware design and build records and conducted laboratory tests on the damaged tiles, looking for bits of the damaging debris material.

In addition to such tests and analyses, the finding concerning the most probable cause was based on:

o A determination that several manufacturing process variables on the right booster nose cap were very near their specification limits; and,

o The discovery of minute bits of the booster nose cap insulation material and paint embedded in the damaged tiles and OMS pod blankets.

The review team also reported that debris from other sources, including repaired external tank insulation and cork material covering the solid rocket motor joints, may have caused minor tile damage.

The team's findings do not pose any constraint for launching Discovery on the STS-29 mission, according to the report. A major reason for concluding that the STS-29 hardware is ready to fly stems from an improvement made to the suspect insulating material covering the booster nose caps.

The suspect material, known as Marshall Sprayable Ablator (MSA), was used in its original formulation for nose caps up to and including the STS-27 mission. Following fabrication of the STS-27 nose caps, changes were made in the material's properties, manufacturing process and application. The result was an improved product designated MSA-2. The changes have been shown to produce stronger bonds between the insulating material and the surface on which it is applied.

The first boosters to be fabricated with the improved material are those for the upcoming STS-29 flight. This new material recently was subjected to additional strength tests, called "pull tests," and successful completion of those tests has further bolstered confidence that the material will perform successfully.

Despite the team's belief that the change in nose cap insulation material will prevent severe tile damage in the future, the report recommended several other steps toward further understanding and to minimize minor damaging debris on future flights. The recommended steps include:

o Expanding an existing operations team to monitor and report on this critical area for all future flights;

o Selectively performing the pull tests on SRB nose cap insulation material prior to future flights;

o Inspecting the joint cork material which externally covers solid rocket motor field joints to make sure there are no low density inclusions in the material (such inclusions, if found, normally are repairable);

o Reviewing design criteria and searching for process enhancements to further minimize debris potential; and,

o Assigning more data-gathering sources, such as additional cameras, for future flights. If and when tile damage does occur, such additional sources would yield more data and other evidence, thus providing a better basis for establishing the causes.

The review panel was chaired by John W. Thomas of Marshall Space Flight Center. Other members include Jay Honeycutt of the NSTS Program Office, NASA Headquarters (alternate chairman); Jack Nichols, James Earle, James Hester, Keith Henson and Dewey Channell of the Marshall Space Flight Center; Marion Coody, Robert White, Gary Coen and Don McMonagle of the Johnson Space Center; and Charles Stevenson and Judith Kersey of the Kennedy Space Center.

- end -

NASA News

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For Release
March 7, 1989

Pam Alloway
RELEASE NO.: 89-006

NOTE TO SCIENCE EDITORS: NASA JOHNSON SPACE CENTER HOSTS 20TH LUNAR & PLANETARY SCIENCE CONFERENCE

More than 700 scientists from throughout the world will attend the 20th Lunar and Planetary Science Conference March 13-17, 1989 at the NASA Johnson Space Center in Houston.

Concurrent sessions will begin each day at 8:30 a.m. in the JSC Gilruth Recreation Center. The conference will feature 28 technical sessions and one special session in addition to a March 15 reunion banquet for the scientists, engineers, astronauts and managers who participated in the Apollo science programs.

The reunion banquet will be at the South Shore Harbor Hotel. Dr. George E. Mueller, who was Associate Administrator for Space Flight through the Apollo 11 mission, will speak at the banquet. Tickets are $25 per person and are available from Pam Jones at the Lunar and Planetary Institute (713-486-2150).

Scientists and scholars will present more than 350 papers during the conference. A special session from 8-10 p.m. March 14 is titled "Opportunities in Solar System Exploration" and will involve both U.S. and U.S.S.R. conference participants. A special review session is scheduled from 1:30-5 p.m. March 15 that will recapitulate the past 20 years of lunar science. The session will feature five scientists who will compare the understanding of the Moon as it was in 1969 and what it is today. They also will discuss remaining questions concerning lunar science. Both of these sessions will be held in JSC's Teague Auditorium in building 2.

Technical session topics will cover such subjects as cosmic dust, Mars geology, Venus geophysics and geology, the nature and effects of impact cratering, cosmic rays, planetary physics and the outer solar system.

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Media interested in covering the conference should register in Gilruth Center Room 201 from 8 a.m. to 5 p.m. March 13-16. Conference abstract volumes will be available at the Gilruth Center or on request from JSC's newsroom.

A separate conference on related topics also will be held at 8 p.m. March 13 in JSC's Teague Auditorium. Dr. Michael Duke, chief of JSC's Solar System Exploration Division, and other scientists will give presentations related to this separate conference titled "Science and Applications Topics in Lunar Base Planning." The public is invited.

-30-

NASA News

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For Release

Brian Welch
Release No. 89-007

March 7, 1989

FLIGHT CONTROL OF STS-29

Flight control for STS-29, the twenty-eighth voyage of the Space Shuttle, will follow the same procedures and traditions common to all U.S. manned space flights since the Mission Control Center was first used for Gemini IV in 1964.

As on past flights, responsibility for conduct of the mission will revert to the Mission Control Center (MCC) in Houston once Discovery clears the tower of Launch Pad 39-B at the Kennedy Space Center. Mission support will begin in the MCC at 2:30 a.m. CDT on the morning of launch and will continue around the clock through the landing and post-landing activities.

The mission will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC, which is located in Bldg. 30 at Johnson Space Center.

All of the traditional hallmarks of Shuttle missions will be available to news media covering the flight. Throughout the mission, NASA will continue its practice of providing around-the-clock, live release of air-to-ground transmissions between the spacecraft and the MCC. Live views of the activities within FCR-1, alternating with views of the large situation map in Mission Control, will be fed continuously on NASA Select television.

NASA also will hold change-of-shift press conferences with offgoing flight directors, approximately every eight hours, as warranted by mission events and media interest. The press conferences will originate from JSC's News Center in Bldg. 2, Room 135, and will be carried live on NASA Select, with two-way question and answer capability available at Kennedy, the Marshall Space Flight Center and the Dryden Flight Research Facility.

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As in the past, four teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities at JSC. The handover between each team takes about an hour and allows each flight controller to brief his or her oncoming colleague on the course of events over the previous two shifts. Change-of-shift press conferences generally take place 30 minutes to an hour after the shift handovers have been completed.

The four flight control teams are referred to as the Ascent/Entry team and the Orbit 1, Orbit 2 and Planning teams. Generally, the STS-29 crew's working day is split between the Orbit 1 and Orbit 2 shifts.

The Ascent/Entry team, led by Flight Director Alan L. (Lee) Briscoe, will conduct the launch and landing phases of the flight. While Discovery is in orbit, this same shift, operating from about midnight to 9 a.m. CST each day, is known as the Orbit 1 team and will be led by Flight Director Granvil A. (Al) Pennington. Because the shifts overlap in this manner, some of the flight control positions will be staffed by the same personnel for both Ascent/Entry and Orbit 1 operations. Other positions will alternate between specialists in launch/landing activities and orbital operations.

The Orbit 2 team, led by Flight Director Charles W. (Chuck) Shaw, will be on-console each day from around 8 a.m. to 5 p.m. The Orbit 2 team has primary responsibility for the deploy of TDRS-D on Flight Day One at approximately 6 hours into the mission. Two additional deploy opportunities, at approximatley 7 hours, 45 minutes elapsed time and again at around 10 hours elapsed time, will be available on Flight Day One. Although the Orbit 2 team specializes in TDRS deploy activities, the Orbit 1 team also has been extensively trained for this phase of the mission. That additional expertise would come into play only if a Flight Day Two backup deploy opportunity for TDRS-B were to become necessary. This final deploy window will occur during the Orbit 1 shift on Flight Day Two, at approximately 21 hours, 15 minutes into the flight.

The Planning Team, led by Flight Director Ron Dittemore, will be on-console from about 4 p.m. to 1 a.m. CST each day. The Planning shift, which for the most part operates during the crew's sleep period, has the dual responsibility for monitoring the systems aboard Discovery and updating schedules or coordinating any changes in the flight plan as may be dictated by real-time mission events.

MCC POSITIONS AND CALL SIGNS FOR STS-29

The flight control positions in the Mission Control Center, their call signs and their functions are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter traffic to vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Electrical, Environmental & Consumables Manager (EECOM)

Responsible for all life support systems, power management, heating and cooling systems, transducers and vehicle lighting; monitors fuel cells; manages consumables.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

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Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational ystems hardware; monitors radio navigation and digital autopilot hardware systems.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

EVA Specialist (EVA)

Another specialty position, activated for planned or contingency extra-vehicular activity; operates from the MMACS console; monitors timeline and all preparations leading up to an EVA; monitors spacesuit parameters and provides ready reference on procedures during an EVA.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

STS-29 FLIGHT CONTROL TEAM STAFFING

Position	Ascent/Entry	Orbit 1	Orbit 2	Planning
FLIGHT	Alan L. Briscoe (A) Ron Dittemore (E)	Al Pennington	Charles W. Shaw	Ron Dittemore
CAPCOM	John. O. Creighton Frank Culbertson	Pierre Thuot Marsha Ivins	Katherine Sullivan Mike Baker	David Low Ken Cameron
FAO	Gail A. Schneider	Gail A. Schneider	Robert L. Schaf	Stephen S. Gibson
INCO	Jay. E. Conner	Jay. E. Conner	Harry Black	Roberto Moolchan
FDO	Edward Gonzalez (A) Bruce Hilty (E)	John D. Rask	Kerry M. Soileau	Matthew R. Abbott
EECOM	Charles W. Dingell	Charles W. Dingell	Leonard J. Riche	Ray O. Miessler
PAYLOADS	Neilan E. Cook	Neilan E. Cook	Ben L. Sellari	Nellie N. Carr
DPS	Roberto S. Galvez	Roberto S. Galvez	Terry W. Keeler	David D. Tee
PROP	Richard D. Jackson	Richard D. Jackson	Keith A. Chappell	Sarah A.V. Kirby
BOOSTER	Thomas Kwiatkowski	/////	/////	/////
GNC	Jeffrey W. Bantle	Jeffrey W. Bantle	Charles K. Alford	Stephen J. Elsner
GC	Norman Talbott John Snyder	Chuck Capps Al Davis	Julius Conditt Robert Culbertson	John Wells V. Lucas

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STS-26 FLIGHT CONTROL TEAM STAFFING
(Continued)

Position	Ascent/Entry	Orbit 1	Orbit 2	Planning
MMACS	R. Kevin McCluney	R. Kevin McCluney	Robert C. Doremus	Paul F. Dye
SURGEON	Richard Jennings	John Schulz	/////	/////
PAO	Brian Welch (A/E)	Brian Welch	Billie A. Deason	Jeffrey E. Carr

(A) = Ascent; (E) = Entry

NASA News

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Lyndon B. Johnson Space Center
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For Release

James Hartsfield
March 14, 1989
RELEASE NO: 89-011

DISCOVERY'S RETURN-TO-FLIGHT PHOTOGRAPHS RECORD MANY FIRSTS

Earth observations photographs taken by Discovery's crew during America's return to manned space flight in 1988 were among the clearest in more than 20 years, and they captured a variety of environmental conditions.

Included in the astronauts' photography from September 1988 is an at least 1.044 million square-mile smoke cloud over South America's Amazon River basin and, in Africa, evidence of flooding in areas that have experienced a lengthy drought.

Due to an unexpected improvement in atmospheric clarity over the Northern Hemisphere, the Discovery crew could distinguish ground details about 700 miles away from their spacecraft, much farther than has been usual for Space Shuttle flights. Visibility over the Northern Hemisphere during STS-26 was the best since the flights of the Gemini Program in the 1960s.

In total, the crew took 1,505 photographs of Earth during the four-day mission. Discovery was launched into an orbit that kept it above only the tropical and subtropical regions of Earth. That orbit took the spacecraft over about half of Earth's surface, covering parts of 122 nations and regions that hold about 75 percent of the world's population.

Photographs show a dense, white smoke cloud, the result of tropical forest, pasture and croplands being cleared and burned, completely obscuring the ground over much of South America's Amazon River basin. If placed over the United States, the same cloud would cover an area of the country more than three times the size of Texas. It is the largest and thickest accumulation of smoke ever photographed by astronauts, much larger than the previous largest smoke cloud photographed by astronauts over the same region in 1984.

STS-26 also photographed smoke clouds over Sumatra and Borneo, Indonesia, Madagascar, eastern Africa, northern Australia and Bolivia. Some photographs show apparent irrigation features in the tropics -- in areas that normally receive 100 inches of annual rainfall.

In Africa, the "green line" of vegetation that generally marks the southern boundary of the Sahara Desert had moved the farthest north it has been in astronaut photography since 1965. Also, standing water was photographed in the Sahara.

For the first time in Shuttle history, Africa's Niger river was photographed in full flood and out of its banks. Photographs of the Blue and White Nile rivers also showed evidence of recent flooding.

Throughout eastern Africa, the landscape was tinted with green, a condition never before seen in this region during the Shuttle program. Still, Africa's Lake Chad and Lake Nasser, two lakes that have long been studied by space photography, were at the lowest levels ever photographed by astronauts. Since 1960, Lake Chad's surface area is estimated to have declined by more than 90 percent.

The extreme atmospheric clarity over the Northern Hemisphere during the mission was due, at least in part, to the absence of major global duststorms. Duststorms of million-square mile dimensions over northern Africa, even extending halfway across the Atlantic Ocean, were photographed during 1984 and 1985 Shuttle flights. But no such African duststorms were seen during STS-26, nor were major duststorms observed elsewhere.

A lack of recent major volcanic eruptions, which cause dust in the upper atmosphere, also may have contributed to the extreme clarity.

As a result, the STS-26 photographs captured details not usually seen in Shuttle photography: for the first time, an aircraft was photographed generating a contrail; individual buildings could be seen in the Canary Islands; a line of electrical transmission pylons was seen in southern Sudan; and oil platform flares were seen in the Gulf of Campeche.

STS-26 also photographed the effects of Hurricane Gilbert on the Mexican Gulf Coast and five volcanoes with signs of eruptive activity.

Earth photography from the Space Shuttle is handled by the Space Shuttle Earth Observations Office at the Johnson Space Center. The office trains Shuttle crews in Earth photography, selects targets for photography for each mission and analyzes the resulting photographs. In addition, research is conducted by specialists in environmental sciences, biology, climatology, geology and other fields using data obtained with Shuttle photography.

NASA photos to illustrate this release can be obtained through the JSC Still Photography Library at (713) 483-8602. Photograph numbers include: SL-2-5-325; S26-38-014T; S26-43-80; S26-40-66; S26-33-061; S26-46-052; S26-38-014U; S26-35-087; S26-35-091; S26-40-047; S26-39-068; S26-35-048; S26-44-049.

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Billie Deason
RELEASE NO. 89-017

March 27, 1989

JSC ANNOUNCES KEY EXECUTIVE REASSIGNMENTS

John Aaron has been appointed Manager of the Space Station Projects Office at the Johnson Space Center, Director Aaron Cohen announced today. He succeeds Clarke Covington who becomes Special Assistant to the Director.

Aaron joined JSC in 1964 and has held key positions in mission support. He served as manager of the level B space station activity at JSC, and recently was Manager of the Lunar and Mars Exploration activity at NASA Headquarters.

Covington joined JSC in 1962 and has held key positions in engineering and space station activities. In his new assignment, he will provide Cohen with added capability to conduct technical and management reviews of the center's programs and organizations. He will help shape the JSC organization as the center enters a new phase of space station and as new programs develop.

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For Release

Jeffrey Carr
RELEASE NO. 89-018

4/05/89
1:30 p.m. CDT

ASTRONAUTS NAMED TO SPACE SCIENCE MISSIONS (STS-37, STS-40)

Astronaut crew members have been named for two scientific Space Shuttle missions scheduled in 1990.

Commanding the Space Shuttle Discovery on mission STS-37 will be USAF Col. Steven R. Nagel. USMC Lt. Col. Kenneth D. Cameron will serve as the pilot. Mission specialists are USAF Lt. Col. Jerry L. Ross, Jay Apt, Ph.D., and Linda M. Godwin, Ph.D.

Following their launch in April of next year, the crew will deploy the Gamma Ray Observatory (GRO) from the payload bay of Discovery using the Shuttle's robot arm. The GRO will explore gamma ray sources throughout the universe, studying the origin of our own galaxy and others, examining quasars, pulsars, and supernova remnants from an altitude of 243 miles above the Earth.

USMC Col. Bryan D. O'Connor has been named to command STS-40, the space and life sciences-dedicated mission, SLS-1. Serving as pilot aboard the Space Shuttle Columbia will be USAF Col. John E. Blaha. Also named as a mission specialist is Tamara E. Jernigan.

SLS-1 mission specialists M. Rhea Seddon, M.D., and James P. Bagian, M.D., and payload specialists F. Drew Gaffney, Ph.D., and Robert W. Phillips, Ph.D., were named previously.

Inside a pressurized laboratory fixed in Columbia's payload bay, the SLS-1 crew will conduct more than two dozen life sciences investigations in the microgravity environment. Launch is currently set for June 1990.

Nagel has flown twice in space as a mission specialist on Shuttle mission STS 51-G in June 1985 and as pilot on STS 61-A in October 1985. He was born October 27, 1946, in Canton, IL.

Cameron will make his first space flight. He was born November 29, 1949, in Cleveland, OH.

Ross has previously flown on two Shuttle missions, STS 61-B in November 1985 and STS-27 in December of last year. Ross was born January 20, 1948, in Crown Point, IN.

Apt will make his first space flight. He was born April 28, 1949, in Springfield, MA but considers Pittsburgh, PA to be his hometown.

Godwin will make her first flight in space, also. She was born July 2, 1952, in Cape Girardeau, MO.

O'Connor has flown previously as pilot on STS 61-B in November 1985. After the Challenger accident, he was named Chairman of NASA's Space Flight Safety Panel. O'Connor was born September 6, 1946, in Orange, CA but considers Twentynine Palms, CA to be his hometown.

Blaha made his first space flight last month as pilot of STS-29. He was born August 26, 1942, in San Antonio, TX.

Jernigan will make her first flight in space. She was born May 7, 1959, in Chattanooga, TN but considers Santa Fe Springs, CA to be her hometown.

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NASA News

National Aeronautics and
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For Release

Kari Fluegel
Release No. 89-019

April 6, 1989
Immediate

JSC DEVELOPMENT RECOGNIZED BY SPINOFF HALL OF FAME

Space technology covering the Detroit Lion's Silverdome and a Saudia Arabian airport has made its way to the Cooperstown of space spinoffs.

A fabric developed by the National Aeronautics and Space Administration at the Johnson Space Center for use as Apollo astronauts' space suits and later transferred to the private sector as a lightweight roofing material has been placed into the Space Technology Hall of Fame in the U.S. Space Foundation Building in Colorado Springs.

"Our nation's investment in space is continually paying benefits to all of us," said Dean Glenn, technology utilization officer at JSC. "Not only do space program spinoffs make our lives easier and more useful, but our whole economy benefits as new products, new businesses and new jobs are constantly being derived."

Recognition of the fabric, developed by Dr. Frederic Dawn, special assistant in JSC's Crew and Thermal Systems Division, is the second JSC spinoff placed in the Hall of Fame in its first two years of existence. In 1988, the Firefighters' Breathing Apparatus, a system developed from astronaut breathing equipment advances, was inducted. Award recipients are selected by a committee of leaders in Congress and pioneers in the commercialization of space.

"Recognition of JSC personnel by these groups and individuals is high praise, indeed," Glenn said.

During the Apollo era, NASA needed a fabric that was durable, yet thin, light and flexible for astronauts' space suits. Most importantly the fiber had to be non-flammable in an oxygen-rich environment. Dawn, who had been developing such a fiber since before he joined NASA is 1962, met the need. Under NASA contract, Owens-Corning Fiberglas Corporation in Toledo, Ohio, wove the ultrafine glass fiber called Beta yarn into a

-more-

fabric and coated it with Teflon TFE manufactured by the Du Pont Company in Wilmington, Delaware, tailoring it for astronaut use. Beta yarn now is used extensively in the shuttle and on many satellites, Dawn said.

"I felt a spinoff would have tremendous benefits for commercial applications," he said. "I think the Technology Utilization Office did a very good job on this."

To adapt the fabric for construction, Owens-Corning thickened the yarn, Chemical Fabrics Inc. of Bennington, Vermont, wove it into stronger and more porous fabric and applied a heavier coating of Teflon TFE.

"NASA has done an outstanding job in space," Dawn said. "I think now we are getting the advantages of the space program."

The fabric roof of Pontiac Stadium, the first structure to use the material, emits light while protecting the playing field and 80,000 fans from the weather. The Teflon TFE-coated Beta Fiberglas material is virtually impervious to weather and sunlight. It will not stretch, shrink, mildew or rot; is strong, lightweight and flame-resistant; and does not require periodic cleaning because dirt does not stick to the surface of the Teflon TFE. The cost was about only 30-40 percent as much as conventional roofing.

The King Abdulaziz International Airport in Jeddah, Saudia Arabia, used the fabric on a colossal facility built to ease entry formalities for the massive influx of Moslems making pilgrimages to the holy city of Mecca. Each structure at the terminal has a multi-tented fabric roof spanning more than 50 acres. Together. the structures contain 210 individual tent units and cover an area roughly equivalent to 80 football fields.

"The fabric domes were nominated for the first Hall of Fame award in 1988," Glenn said. "They are an outstanding example of how United States space technology can benefit mankind around the world and change the very shape and texture of our lives."

The Space Technolgy Hall of Fame was initiated in 1988 at the Fourth National Space Symposium as part of the U.S. Space Foundation's commitment to increase public support for the nation's space effort and to motivate and educate the country's youth about the opportunities and challenges of space, Glenn said.

-30-

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For Release

Kyle Herring
RELEASE NO. 89-019

4/10/89
Immediate

EXECUTIVE ASSIGNMENTS IN NSTS, INTEGRATION AND OPERATIONS OFFICES

Leonard S. Nicholson has been named deputy manager of the National Space Transportation System Program at the Johnson Space Center. He was formerly manager of the NSTS Integration and Operations Office. Lawrence G. Williams will serve as acting manager of that office.

Nicholson succeeds Jay F. Honeycutt, who moved to the Kennedy Space Center, FL, last month to direct the processing of NASA's Space Shuttle Orbiters as director of STS Management and Operations.

Nicholson joined NASA in 1963 in the Engineering and Development Directorate at JSC and held several engineering positions in the Advanced Missions Program Office, the Apollo Spacecraft Program Office and the STS Operations Office.

He then served as technical assistant to the center director until becoming manager of the NSTS Mission Integration Office in April 1982. In this capacity, Nicholson was responsible for the overall management of the flight manifest and requirements, and integration and payload integration. In 1985 he became manager of the Integration and Operations Office, continuing his responsibilities for directing the operations and payload integration activities of the NSTS Program Office.

Williams began his career at the Johnson Space Center in 1962 working on the Apollo and Skylab programs, and the Apollo-Soyuz Test Project. He served as the deputy manager of the NSTS Engineering Integration Office during the Shuttle recovery activity and most recently served as deputy manager of the NSTS Integration and Operations Office.

-30-

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For Release

Jeffrey Carr
RELEASE NO. 89-021

April 17, 1989

DEADLINE SET FOR NEXT ASTRONAUT SELECTION

Applications received by NASA on or before June 30, 1989 will be considered in the next astronaut candidate selection, now planned for early 1990. The selection will be the first in a regular two-year selection cycle which was announced last year.

After six months of screening, medical evaluations, and interviews, the astronaut candidate class of 1990 will be announced in January, and candidates will report to the Johnson Space Center in July of next year.

NASA will continue to accept and review applications from the general public on an ongoing basis. Those received after June 30 will be eligible for consideration in the 1992 selection. The number of selections made every two years will be based on projected requirements.

Applications can be obtained by writing to the following address:

NASA, Lyndon B. Johnson Space Center
Astronaut Selection Office
ATTN: AHX
Houston, Texas 77058

Applicants must be citizens of the United States.

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

April 21, 1989

RELEASE: 89-59

NASA TO FLY ONE SHUTTLE MISSION BETWEEN MAGELLAN AND GALILEO

NASA today announced that STS-28, but not STS-33, will be flown between the upcoming Magellan mission (STS-30), scheduled for April 28, and Galileo (STS-34), currently targeted for Oct. 12, 1989.

This change to the flight schedule has been made to protect the opportunity to launch the Galileo mission early in its launch window and to return the orbiter Columbia to flight status as soon as possible.

STS-28 will be flown around the beginning of August. STS-33, which originally had been planned for August, will be flown after Galileo (STS-34). Launch dates for both missions will be set at their respective flight readiness reviews.

In making the announcement, Adm. Richard H. Truly, NASA associate administrator for Space Flight and nominee for NASA Administrator, said: "NASA management has become increasingly concerned that the work involved in preparing the orbiter Columbia for its first flight in over 3 years is taking long enough that it might endanger the option to launch Galileo at the opening of its launch window. Our overriding objectives in this situation are to protect the Galileo window and to fly Columbia as early as we can. We currently are assessing manifest options downstream of Galileo."

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For Release

Jeffrey Carr
RELEASE No. 89-025

April 24, 1989
12 noon CDT

MCBRIDE TO LEAVE NASA; BRAND NAMED COMMANDER OF STS-35

Astronaut Jon A. McBride (Captain, USN) has announced his intention to leave NASA effective May 12, 1989.

McBride was named last year to command the STS-35 (ASTRO-1) mission, scheduled for launch in March 1990. He will be succeeded as STS-35 commander by Vance D. Brand.

McBride was selected as an astronaut in August 1978. He was the lead T-38 chase pilot for STS-1, the maiden voyage of Columbia in April 1981, and a Capsule Communicator (CAPCOM) in the Mission Control Center for Shuttle flights STS-5, STS-6, and STS-7.

He flew in space as pilot aboard Challenger on STS 41-G in October 1984. McBride was scheduled to fly next in March 1986 as the commander of STS 61-E. The flight was one of several deferred by NASA in the wake of the Challenger accident in January 1986.

McBride recently completed an assignment at NASA Headquarters, Washington, D.C., as the Acting Assistant Administrator for Congressional Relations, a post he held since September 1987.

He has also announced his intent to retire from the Navy in the near future. McBride said, "I've spent an extremely rewarding 25 years with NASA and the Navy. This move has been a very difficult decision for me. But in the final analysis, I felt it was time to make a career change and return to West Virginia. I'll continue to follow developments in the space program with keen interest".

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Brand joined NASA as an astronaut in 1966. He flew as Apollo command module pilot on the Apollo-Soyuz Test Project mission in 1975. Brand has also flown as commander of Shuttle missions STS-5 in November 1982 and STS 41-B in February 1984. Brand currently serves as JSC's Assistant Manager for Space Station Integration and Assembly. He was born on May 9, 1931 in Longmont, CO.

# # #

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For Release

Jeff Vincent
Headquarters, Washington, D.C.
(Phone: 453-8400)

April 24, 1989

RELEASE: 89-60

ASSOCIATE DEPUTY ADMINISTRATOR HINNERS TO RESIGN

Dr. Noel W. Hinners, third ranking official of NASA and the principal senior assistant to the administrator and deputy administrator, today announced his resignation from the agency, effective May 14, 1989.

"I regret leaving before the transition to the new NASA administration is complete," Hinners said, "but uncertainty in interpretation of new post-employment laws led me to move the date forward. I am heartened, however, by knowing that the incoming administrator and his deputy will provide excellent leadership and advocacy of NASA and its institution."

Hinners also serves as the NASA chief scientist and oversees the institutional management of the agency. As NASA chief scientist, he is the principal adviser to senior management on agency-wide aspects of NASA's scientific activities.

Before his appointment to senior headquarters management in June 1987, Hinners served 5 years as director of the Goddard Space Flight Center, Greenbelt, Md. From 1979 to 1982, he was director of the Smithsonian Institution's National Air and Space Museum, Washington, D.C., and from 1974 to 1979 he served as NASA associate administrator for space science. Hinners joined NASA in 1972 as deputy director of lunar programs, Office of Space Science, NASA Headquarters.

Hinners began his career in space exploration in 1963 with Bellcomm, Inc., working on the Apollo program with emphasis on the selection of lunar landing sites and design of scientific tasks for the astronauts.

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He received NASA Distinguished Service Medals for his leadership of the space science program and for contributions to the Viking and Voyager programs. He also has been awarded the Presidential Rank of Meritorious and Distinguished Executive.

Hinners was educated at Rutgers University, California Institute of Technology and Princeton University, where he received his doctorate in geochemistry and geology in 1963. He is a member of Phi Beta Kappa and Sigma Xi, the American Geophysical Union, the American Association for the Advancement of Science and the American Institute of Aeronautics and Astronautics.

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Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

For Release

April 24, 1989

RELEASE: 89-61

ODOM ANNOUNCES RETIREMENT FROM NASA

James B. Odom, associate administrator for the Space Station Freedom program, announced today he will retire from NASA on April 30. "After 33 years, I've decided to make a career change," Odom said. "I regret the timing of my decision, but the impact of some upcoming changes on government retirees made it such that I did not get to pick the most desirable or optimum time to retire." Tom Moser, deputy associate administrator for the Freedom program will serve as acting associate administrator until Odom's successor is named.

Odom was appointed associate administrator for the space station program in April 1988. He came to Washington, D.C., from the Marshall Space Flight Center (MSFC), Huntsville, Ala., where he had served in a number of key positions over the past 30 years. Among the positions he held at Marshall were director of the Science and Engineering Directorate, manager of the Space Telescope Project and manager of the External Tank Project.

He has received numerous awards in recognition for his contributions to the space program, including the NASA Exceptional Service Medal for work on the second stage of the Apollo Saturn rocket and the NASA Distinguished Service Medal for work on the Space Shuttle program. Odom was twice awarded the Presidential Rank of Meritorious and Distinguished Executive for his efforts on the External Tank program and was most recently recognized by the National Space Club with the Astronautics Engineer Award for his engineering and management leadership.

Odom began his engineering career with the Chemstrand Corp., Decatur, Ala. In 1956 he joined the U.S. Army's rocket research and development team as a systems engineer at Alabama's Redstone Arsenal, and transferred to the MSFC in 1959 prior to its formal establishment in July 1960.

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Odom was educated in Alabama at Troy State College and Auburn University where he earned a bachelor of science degree in mechanical engineering. He and his wife June will return to Alabama upon his retirement.

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For Release:

Brian Welch
Release No. 89-026

April 27, 1989

FLIGHT CONTROL OF STS-30

Flight control for STS-30, the twenty-ninth voyage of the Space Shuttle, will follow the same procedures and traditions common to all U.S. manned space flights since the Mission Control Center was first used for Gemini IV in 1964.

As on past flights, responsibility for conduct of the mission will revert to the Mission Control Center (MCC) in Houston once Atlantis clears the tower of Launch Pad 39-B at the Kennedy Space Center. Mission support will begin in the MCC about five hours prior to launch and will continue around the clock through the landing and post-landing activities.

The mission will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC, which is located in Bldg. 30 at Johnson Space Center.

All of the traditional hallmarks of Shuttle missions will be available to news media covering the flight. Throughout the mission, NASA will continue its practice of providing around-the-clock, live release of air-to-ground transmissions between the spacecraft and the MCC. Live views of the activities within FCR-1, alternating with views of the large situation map in Mission Control, will be fed continuously on NASA Select television.

NASA also will hold change-of-shift press conferences with offgoing flight directors, approximately every eight hours, as warranted by mission events and media interest. The press conferences will originate from JSC's News Center in Bldg. 2, Room 135, and will be carried live on NASA Select, with two-way question and answer capability available at Kennedy, the Marshall Space Flight Center and the Dryden Flight Research Facility.

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As in the past, three teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities at JSC. The handover between each team takes about an hour and allows each flight controller to brief his or her oncoming colleague on the course of events over the previous two shifts. Change-of-shift press conferences generally take place 30 minutes to an hour after the shift handovers have been completed.

The three flight control teams are referred to as the Ascent/Entry-Orbit 1, Orbit 2 and Planning teams. Generally, the STS-29 crew's working day is split between the Orbit 1 and Orbit 2 shifts.

For STS-30, the ascent phase will be conducted by Flight Director Alan L. (Lee) Briscoe. Once Discovery is in orbit, this same shift, operating from about 7 a.m. to 4 a.m. CDT each day, is known as the Orbit 1 team and will be led by Flight Director Ron Dittemore. Because the shifts overlap in this manner, some of the flight control positions will be staffed by the same personnel for both Ascent/Entry and Orbit 1 operations. Other positions will alternate between specialists in launch/landing activities and orbital operations. Dittemore, for example, will also conduct the entry phase of STS-30.

The Orbit 2 team, led by Lead Flight Director Milt Heflin, will be on-console each day from around 3 p.m. to midnight CDT. The Orbit 2 team has primary responsibility for the deploy of the Magellan spacecraft on Flight Day One.

The Planning Team, led by Flight Director Bill Reeves, will be on-console from about 11 p.m. to 8 a.m. CDT each day. The Planning shift, which for the most part operates during the crew's sleep period, has the dual responsibility for monitoring the systems aboard Discovery and updating schedules or coordinating any changes in the flight plan as may be dictated by real-time mission events.

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MCC POSITIONS AND CALL SIGNS FOR STS-29

The flight control positions in the Mission Control Center, their call signs and their functions are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter traffic to vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Electrical, Environmental & Consumables Manager (EECOM)

Responsible for all life support systems, power management, heating and cooling systems, transducers and vehicle lighting; monitors fuel cells; manages consumables.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

-more-

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware; monitors radio navigation and digital autopilot hardware systems.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

EVA Specialist (EVA)

A specialty position, activated for planned or contingency extra-vehicular activity; operates from the MMACS console; monitors timeline and all preparations leading up to an EVA; monitors spacesuit parameters and provides ready reference on procedures during an EVA.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-30 FLIGHT CONTROL TEAM STAFFING

Position	Ascent/Entry	Orbit 1	Orbit 2	Planning
FLIGHT	Alan L. Briscoe (A) Ron Dittemore (E)	Ron Dittemore	Milt Heflin	Bill Reeves
CAPCOM	Frank Culbertson John O. Creighton	Mike Baker David Low	Pierre Thuot Tammy Jernigan	Ken Cameron Steve Oswald
FAO	Stephen S. Gibson	Stephen S. Gibson	Neil A. Woodbury	Pete V. Hasbrook
INCO	Harry Black	Harry Black	Joe W. Gibbs	Edgar B. Walters
FDO	Ed Gonzalez (A) Brian Perry (E)	Matthew R. Abbott	Timothy Brown	Jan McCoy
EECOM	Steve McLendon	Steve McLendon	Leonard J. Riche	Ray O. Miessler
PAYLOADS	Michael K. Fawcett	Michael K. Fawcett	Neilan E. Cook	J. Mark Childress
DPS	Terry W. Keeler	Terry W. Keeler	Gloria Araiza	Mark D. Erminger
PROP	Anthony Ceccacci	Anthony Ceccacci	Karen E. Crawford	Sarah A.V. Kirby
BOOSTER	Jerry L. Borrer	/////	/////	Terri L. Stowe
GNC	James M. Webb	James M. Webb	Edward F. Trlica	Charles K. Alford
GC	John Snyder	Mike Marsh	Chuck Capps	John Wells

-more-

STS-26 FLIGHT CONTROL TEAM STAFFING
(Continued)

Position	Ascent/Entry	Orbit 1	Orbit 2	Planning
MMACS	R. Kevin McCluney	R. Kevin McCluney	Paul F. Dye	Robert C. Doremus
SURGEON	John Schulz	Richard Jennings	/////	/////
PAO	Billie Deason (A/E)	Billie Deason	Brian Welch	Jeffrey E. Carr

(A) = Ascent; (E) = Entry

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For Release

Jeffrey Carr
RELEASE NO. 89-028

May 11, 1989
3 p.m. CDT

ASTRONAUTS NAMED TO DOD MISSIONS IN 1990 (STS-38, STS-39)

Shuttle crew members have been named for two Department of Defense-dedicated Shuttle missions scheduled for mid-1990.

USAF Col. Richard O. Covey will command STS-38, a classified DOD mission aboard the Space Shuttle Atlantis, in May of 1990. Covey's pilot will be USN Cmdr. Frank L. Culbertson. Assigned as mission specialists are USMC Col. Robert C. Springer, USAF Maj. Carl J. Meade, and USA Capt. Charles D. "Sam" Gemar.

Named as mission specialists for Shuttle mission STS-39, another DOD mission scheduled for July of 1990, are USAF Col. Guion S. Bluford, Jr., Richard J. Hieb, and Charles Lacy Veach. The remainder of the seven-member crew will be assigned later. The early assignment of mission specialists will provide for long-range crew participation in payload training and integration.

- more -

Covey has flown twice previously as pilot on missions STS-51I in August of 1985, and STS-26 in September of 1988. He was born August 1, 1946, in Fayetteville, AR but considers Fort Walton Beach, FL, to be his hometown.

Culbertson will make his first space flight. He was born May 15, 1949, in Charleston, SC, but considers Holly Hill, SC, to be his hometown.

Springer has flown previously as a mission specialist on STS-29 in March of this year. He was born May 21, 1942, in St. Louis, MO, but considers Ashland, OH, to be his hometown.

Meade will also make his first flight in space. He was born November 16, 1950, at Chanute Air Force Base, IL.

Gemar, also making his first space flight, was born August 4, 1955, in Yankton, SD, but considers Scotland, SD, to be his hometown.

Bluford is a veteran of two shuttle missions, STS-8 in August of 1983, and STS-61A in October of 1985. He was born November 22, 1942, in Philadelphia, PA.

Hieb will make his first trip to orbit. He was born September 21, 1955, in Jamestown, ND.

Veach will also make his first spaceflight. He was born September 18, 1944, in Chicago, IL, but considers Honolulu, HA, to be his hometown.

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Jeffrey Carr
RELEASE NO. 89-029

May 12, 1989

NOTE TO EDITORS: STS-30 CREW PRESS CONFERENCE SET FOR MAY 18

The STS-30 astronaut crew will meet with news media on Thursday, May 18 at 9 a.m. CDT to discuss the recent mission which featured the deployment of the Venus radar mapper Magellan.

The press conference will be held at the Johnson Space Center in Building 2, room 135, and will feature a film and slide presentation followed by Q&A with media at participating NASA centers.

The event will be broadcast live on NASA Select television. NASA Select is carried on Satcom F2R transponder 13 (72 degrees W).

# # #

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

May 12, 1989

RELEASE: 89-72

MOSER TO LEAVE NASA MAY 13

Thomas L. Moser, acting associate administrator for the Space Station Freedom program, will leave NASA effective May 13. Moser, who was appointed deputy associate administrator for the Freedom program last December, has been serving as the acting associate administrator since April 30.

"My decision to leave is in no way a reflection on the status of the program," Moser said. "I am convinced that the Space Station Freedom program is absolutely necessary for this country to maintain its leadership in space and that NASA, along with the contractor team and international partners, will make it a success given the proper support. I'll sincerely miss NASA, but after 26 truly fulfilling years, I feel that it's the right time to go."

Moser served as the first program director of the Freedom program, a position he held from October 1986 to December 1988. He oversaw the establishment of the Space Station Freedom Program Office located in Reston, Va., and guided the program through extensive reviews by the Administration and the National Research Council and through the formation of the design, development and technical support contractor teams for Freedom.

Moser also helped put in place the structure for international cooperation in the Freedom program, which was formally adopted by the United States and the 11 participating countries last year.

From February 1986 until he was named to the space station post, Moser was deputy associate administrator for space flight at NASA Headquarters. Prior to that, he was director of engineering at Johnson Space Center, Houston.

- more -

Moser began his career with NASA in 1963 as a mechanical systems design and analysis engineer. From 1966 to 1971 he was the structural subsystem manager for the Apollo command module. In 1972, Moser was named head of structural design and manager for orbiter structure and thermal protection system.

He became technical assistant to the JSC director in 1981 and was named deputy manager, Orbiter Project Office, in 1982.

Born Aug. 12, 1938, in Houston, Moser received a B.S. degree in mechanical engineering from the University of Texas in 1961, an M.S. degree in mechanical engineering from the University of Pennsylvania in 1963 and completed candidacy requirements for a Ph.D. at Rice University.

Moser has received numerous honors, including the Presidential Rank of Meritorious Executive, the Exceptional Leadership Medal and Exceptional Engineering Medal and is a Fellow of the American Institute for Aeronautics and Astronautics.

Moser and his wife, the former Nelwyn DeLaney, reside in Reston, Va. They have two children, Matthew and Meredith.

- end -

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For Release

Sarah Keegan
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

May 12, 1989

RELEASE: 89-73

NASA ANNOUNCES UPCOMING SHUTTLE FLIGHT SEQUENCE

NASA today announced the order of planned Space Shuttle flights between the Galileo mission to Jupiter and the Astro Spacelab mission. No planning dates for the missions after Galileo have been determined yet, but a full manifest will be published in the next several weeks.

After the Galileo mission, currently manifested for Oct. 12, 1989, the sequence of flights will be: the DOD mission, previously delayed to "protect" the Galileo launch window; the Syncom IV deployment/LDEF retrieval mission; a DOD mission; the Hubble Space Telescope mission; and the Astro mission.

Three weeks ago NASA management decided to fly only one mission between Magellan and Galileo to be as certain as possible that the Shuttle program would be ready to launch Galileo early in its planetary window. The advantages of this approach were demonstrated by the recent launch of Magellan, which began its journey to Venus last week. The flight sequence set out today is the best possible solution given the tight constraints of all the payload communities involved.

- end -

NASA News

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For Release

Linda Copley
RELEASE NO: 89-031

May 26, 1989

NOTE TO EDITORS

HOUSTON COMMUNITY JOINS JOHNSON SPACE CENTER IN PLANNING TWENTIETH LUNAR LANDING ANNIVERSARY FESTIVITIES

"We choose to go to the moon in this decade and to do other things, not because they are easy but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one we are willing to accept, one we are unwilling to postpone, and one we intend to win." (President John F. Kennedy, in a speech at Rice University in Houston, 1962.)

Friends, family, neighbors, co-workers, and fellow Houston-area residents of those at Johnson Space Center (JSC) who worked to meet that challenge two decades ago will be invited to participate in a major series of celebrations marking the 20th anniversary of the first lunar landing this July.

Houston and the Clear Lake area's Spaceweek activities, which traditionally mark the week of the July 20 lunar landing anniversary observance, will include this year a series of technical briefings, panel discussions, and entertainment events at JSC and in the surrounding communities.

Highlights of those events include:

Briefings: A series of technical briefing and panel discussions by Apollo-era veterans and NASA experts, open to the public, free-of-charge, will be held in JSC's Teague auditorium throughout the week.

One series will deal with the Apollo science program - what we knew about the Moon prior to Apollo; how the landing sites were selected; what we learned about the Moon through Apollo; and what we would hope to learn through future visits.

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Additional briefings by Apollo-era astronauts discussing their missions are also planned. There will also be a panel discussion by leading Apollo managers discussing the decisions and achievements of the program that ushered in a new age of interplanetary horizons over a decade ago.

Entertainment: In a step back in time, an Apollo-era "splashdown" party for current and former NASA employees and contractors, their spouses and guests, is scheduled at the Robert R. Gilruth Recreation Facility at JSC from 4:30-8:30 p.m., on Thursday, July 20. JSC expects as many as 5,000 to attend the evening's festivities.

An event open to the public and free to all will be the lighted boat parade and fireworks display named "A Thousand Points of Light." Planned by the Eagle Twenty Group, a non-profit organization of local Clear Lake businessmen organized to commemorate mankind's first footsteps on the moon, the event will assemble 1,000 boats on Clear Lake for the parade.

At 3:17 p.m. CDT, the exact time of the landing on the moon 20 years ago, the parade of boats will unfurl and fly American flags. At precisely 9:56 p.m. CDT the boats will turn on their lights to commemorate the exact time Neil Armstrong first set foot on the surface of the moon. A fireworks display over the lake will follow.

On Friday, July 21, a gala black-tie anniversary banquet honoring NASA and the Apollo program, with remarks by Walter Cronkite, will take place at 7 p.m. in the Imperial Ballroom at the Hyatt Regency Hotel in downtown Houston. Tickets will be offered for sale to JSC employees through the Exchange for $65 per person beginning June 12. The banquet is sponsored by the American Institute of Aeronautics and Astronautics (AIAA) and the Spaceweek National Committee.

A public open house held at JSC on Saturday, July 22 and Sunday, July 23 will kickoff with a parade and rally on JSC grounds Saturday morning. Throughout the entire weekend, from 8 a.m. to 5 p.m. daily, facilities not usually open to the public, as well as special exhibits including a T-38 astronaut training aircraft and a lunar landing training vehicle, will be available for viewing.

The Lunar and Planetary Institute will hold its first open house in ten years, featuring special tours and exhibits, from 10 a.m. to 6 p.m. on July 22.

Boeing will offer guided tours (by appointment only) of their flight equipment processing facilities at 1045 Gemini, Monday, July 17 through Friday, July 21, from 2 until 3 p.m. daily. Contact Julia Sorrels, 280-2023 for reservations.

For additional information regarding anniversary events in Houston and the Clear Lake area, unless otherwise indicated, contact the following:

May 26 Apollo 11 Crew 20th Anniversary Press Conference (in Washington, DC), David W. Garrett, NASA Headquarters, (202) 453-8400.

July 17-21 Boeing Facility Tours, contact Julia Sorrels, (713) 280-2023, for reservations.

July 19 Apollo Recovery Reunion, contact Charles Filley, (713) 333-3919.

July 20 JSC Splashdown Party, Cathey Lamb, NASA, (713) 483-0580

Lighted Boat Display and Fireworks - Eagle Twenty Group, John McLeaish, (713) 480-7445 or Bob Taylor, 713-474-3440.

July 21 Apollo 20th Anniversary Celebration Gala, at the Hyatt Regency hotel in downtown Houston and featuring Walter Cronkite as keynote speaker, AIAA or Spaceweek National Committee, Julia Sorrels, (713) 280-2023.

July 22 JSC Homecoming Parade, Celeste Wilson, NASA, (713) 282-1820.

JSC Homecoming Rally, Celeste Wilson, NASA, 713-282-1820.

Apollo Spacecraft Program Office Reunion, Patsy Hall, (713) 483-0824.

Lunar and Planetary Institute Open House, Beth Williams, (713) 486-2157.

Information regarding any changes to NASA-sponsored events listed on the following Lunar Landing Anniversary events agenda is available by calling the JSC News Center at (713) 483-5111.

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JOHNSON SPACE CENTER
APOLLO 20TH ANNIVERSARY EVENTS

July 15-23, 1989

SATURDAY, July 15

9 a.m.	Aerospace and Air Exhibit, Ellington Field, Houston, sponsored by the Civil Air Patrol
7 p.m.	Lunar Rendezvous Space Race JSC Gilruth Center

MONDAY, July 17

11 a.m. - 2 p.m.	Speakers Program, Teague Auditorium "THE MOON BEFORE APOLLO" Concepts about the origin, evolution,and composition of the Moon Unmanned precursor missions (Orbiter,Ranger, Surveyor)
2 - 3 p.m.	Boeing facility guided public tours of the flight processing facility, Monday-Friday, July 17-21. Contact Julia Sorrels, 713-280-2023, for reservation.

TUESDAY, July 18

11 a.m. - 2 p.m.	Speakers Program, Teague Auditorium "PLANNING THE APOLLO MISSIONS" Mission operations, communications, guidance, software, propulsion, thermal protection and landing dynamics discussed by key project engineers

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WEDNESDAY, July 19

11 a.m. - 2 p.m.	Speakers program, Teague auditorium "APOLLO SCIENTIFIC RESULTS" Program summary from the perspective of Apollo Flight Directors.
7 p.m.	Apollo Recovery Reunion, all Navy personnel who participated in the recovery operations during the Apollo flights are invited.
6:30 - 9 p.m.	Mission Operations Directorate Lunar Landing Party, Gilruth Recreation Center, dinner and dancing, music by "Contra-Band," attendance by invitation.

THURSDAY, July 20

9 a.m. - 2 p.m.	Spaceflight Recovery Seminar, Gilruth Recreation Center, Room 217
11 a.m. - 2 p.m.	Speakers program, Teague auditorium "APOLLO SCIENTIFIC RESULTS" Leading lunar and planetary scientists from the Apollo era discuss mission preparation, scientific results and plans for future exploration.
4:30 p.m.-8:30 p.m.	"Splashdown" party, Gilruth Recreation Center. Patterned after the informal, spontaneous parties that followed each of the Apollo missions. Attendees will include current and former NASA employees and contractors as well as their spouses or adult guests.
9 p.m.	"1,000 Points of Light" Community-sponsored lighted boat display, fireworks and laser light show on Clear Lake

FRIDAY, July 21

9 - 11 a.m.	HEALTHCARE SYMPOSIUM, Teague Auditorium Forum held by members of St. John, Humana, and Memorial Hospitals to discuss medical spinoffs from space technology. Three health units will be open to the public for various kinds of medical screenings free of charge; medical spinoff exhibits will be displayed in the west corridor of the Visitor Center.
11 a.m. - 2 p.m.	Speakers program, Teague auditorium "THE MOON AS SEEN BY APOLLO ASTRONAUTS" Apollo missions from the perspective of the astronauts who flew them
7 p.m.	GALA Dinner and dancing at the Hyatt Regency Imperial Ballroom. Remarks by Walter Cronkite. Sponsored by AIAA and Spaceweek National Committee Black tie.

SATURDAY, July 22

8 a.m. - 5 p.m.	JSC OPEN HOUSE Featuring special Apollo exhibits and facilities not normally open to the public, plus films and live entertainment
9:30 - 11:30 a.m.	JSC Homecoming Parade begins at Gilruth Center through JSC, ending in Rocket Park
11:30 a.m. - noon	JSC Homecoming Rally (in Rocket Park)
time TBD	Model Rocket Launch (in Rocket Park)
4 - 7 p.m.	Apollo Spacecraft Program Office Reunion

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10 a.m. - 6 p.m.	Lunar and Planetary Institute Open House. First open house in ten years will feature special tours and exhibits.

SUNDAY, July 23

9 a.m. - 4 p.m.	JSC OPEN HOUSE

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For Release
June 7, 1989

Billie A. Deason
RELEASE: 89-033

ASTRONAUT HARTSFIELD TO HEAD SPACE FLIGHT/SPACE STATION INTEGRATION

Veteran Astronaut Henry Hartsfield has been assigned temporary duty in the Office of Space Flight, NASA Headquarters, Washington, D.C., effective immediately.

Hartsfield will serve as director of the Space Flight/Space Station Integration Office, reporting directly to the Associate Administrator for Space Flight.

Hartsfield replaces Astronaut Robert Parker who has returned to the Johnson Space Center to begin training for his mission specialist assignment on shuttle mission STS-35 scheduled for launch in Spring 1990.

The Space Flight/Space Station Integration Office was established in 1987 to facilitate integration of the Space Station and its unique requirements into the space transportation system. The office coordinates the exchange of information between the two programs and serves as a forum for resolving technical and programmatic issues.

Hartsfield began his Air Force career in 1955 and is a graduate of the USAF Test Pilot School at Edwards AFB, California. He was an instructor there prior to his assignment in 1966 to the USAF Manned Orbiting Laboratory (MOL) Program as an astronaut. After cancellation of the MOL Program in June 1969, he was reassigned to NASA. Hartsfield retired from the Air Force in August 1977, and remained in the astronaut corps. He was pilot for STS-4 in June/July 1982, and commanded shuttle missions STS 41-D in September 1984 and STS 61-A in November 1985. Hartsfield's most recent assignment was Deputy Director for Flight Crew Operations at the Johnson Space Center.

In addition to other awards, he received the NASA Distinguished Service Medals in 1982 and 1988 and the NASA Exceptional Service Medal in 1988.

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NASA News

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For Release

Jeffrey Carr
RELEASE NO. 89-034

June 9, 1989
10:30 am CDT

ASTRONAUT "PINKY" NELSON TO LEAVE NASA

Three-time space flight veteran George D. "Pinky" Nelson, Ph.D., will leave NASA on June 30 to accept academic and administrative posts at the University of Washington in Seattle. Nelson has been named Assistant Provost at the university as well as an associate professor of Astronomy.

Nelson joined NASA with the first Shuttle-era astronaut selection in January 1978. While awaiting a flight crew assignment, he flew as scientific equipment operator aboard the WB-57F high altitude research airplane, flew as chase plane photographer for Shuttle mission STS-1, and served as support crewman and Capcom for missions STS-3 and STS-4.

He made his first flight as a mission specialist aboard the Space Shuttle Challenger on mission STS 41-C in April 1984. The 41-C crew successfully deployed the Long Duration Exposure Facility (LDEF) and retrieved, repaired, and replaced into orbit the ailing Solar Maximum Satellite. Nelson flew the Manned Maneuvering Unit (MMU) and, with fellow crewman James "Ox" van Hoften, repaired and deployed the Solar Max during two spacewalks in the first space salvage operation in history.

Nelson flew again in January 1986 aboard Columbia on mission STS 61-C which featured the deployment of the SATCOM KU satellite, experiments in astrophysics and materials processing, and a night landing at Edwards Air Force Base.

In September 1988, Nelson made his third flight as a mission specialist aboard Discovery on the first post-Challenger mission, STS-26. Discovery's crew successfully deployed the Tracking and Data Relay Satellite (TDRS-C) and operated eleven mid-deck scientific experiments in returning the nation's Space Transportation System to flight.

(more)

"I am excited with the prospects of a new challenge at the University of Washington in Seattle", Nelson said. "At the same time, I know that I will miss NASA and the Johnson Space Center, especially the people. I don't think there is a more dedicated, motivated, and skilled group around. Thanks to everyone for making the past eleven years so enjoyable."

He added, "I hope to continue to promote the space program in my new career, because I believe that the exploration of space and the development of new technology is key to the future success of our civilization."

Nelson has a total of 411 hours in space aboard three different Shuttle orbiters, including 10 hours EVA (spacewalk) time.

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Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

For Release

June 15, 1989

RELEASE: 89-95

U.S./SOVIET SPACEBRIDGE PROJECT EXTENDED TO ASSIST TRAIN VICTIMS

NASA's Life Sciences Division, Washington, D.C., announced today that the Spacebridge project with Armenia, USSR, will be extended to Moscow and Ufa to assist the victims of a recent accident involving two trains destroyed by a gas explosion outside the Soviet city of Ufa in the Ural Mountains.

Spacebridge currently links medical facilities and doctors in Yerevaon, Armenia, with U.S. doctors in Bethesda and Baltimore, Md., Houston, and Salt Lake City, Utah.

Since May 1, dozens of physicians have been meeting from 9 a.m. to 1 p.m. EDT (6 p.m. to 10 p.m. Armenian time), Monday through Friday, to discuss difficult medical cases resulting from the Armenian earthquake disaster. Each case presented is representative of many people suffering the same medical problems. Some cases involve people who lost limbs in the disaster and now need prostheses, reconstructive surgery or rehabilitation. These daily Spacebridge sessions will continue through June 29.

Linked by satellite, the doctors have access to audio, visual and facsimile communications capability at NASA Headquarters in Washington, D.C., the Republic Diagnostic Center Yerevan, Armenia, outside the disaster zone, the Uniformed Services University of the Health Sciences in Bethesda, the University of Maryland Institute of Emergency Medical Services System in Baltimore, the University of Texas Health Science Center in Houston, the University of Utah and LDS Hospital in Salt Lake City.

The new link with Moscow and Ufa will extend the U.S. medical expertise being used particularly in the area of burn treatment. The Soviet Ministry of Telecommunications will provide the technical communications link between Moscow, Ufa and Yerevaon. The new communciations capabilities will be patched into the existing Spacebridge network.

- more -

The procedures are expected to be similar to those used for the past 6 weeks to consult on the Armenian earthquake victims. Each day, Armenian doctors prepare their cases according to an agenda that sets the subject for each day's consultation, faxing data on the cases to U.S. participants before each session begins.

During the consultation, the Armenian doctors present their cases one by one, sometimes with the patient on hand, displaying x-rays, CT scans and other relevant data. Doctors at the U.S. medical centers then make recommendations for treatment or further study.

Many of the Armenian cases discussed to date concern injuries requiring reconstructive or plastic surgery, orthopedics or prosthetics. Post-traumatic stress disorders also account for cases requiring psychiatric or psychological treatment. Many of these consultations have focused on public health issues such as sanitation problems and epidemiological concerns.

The Spacebridge has turned out to be a very successful endeavor according to NASA and other participating American physicians in the four medical centers. Extending the program to assist the train victims will further enhance U.S./USSR relationships. This program also serves future space exploration by providing Spacebridge participants with knowledge of how to conduct a complicated telemedicine consultation as might occur on a space station.

- end -

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For Release

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

June 15, 1989

Michael J. Braukus
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/286-5565)

RELEASE: 89-96

NASA GODDARD TO OPEN SPACE ROBOTICS ADVANCED TECHNOLOGY FACILITY

NASA's Goddard Space Flight Center, Greenbelt, Md., will open its new state-of-the-art robotics facility with a ribbon-cutting ceremony on Tuesday, June 20, 1989. The facility will play an important role in developing a space robot to do things never before done in space.

The ribbon-cutting ceremony will begin at 10 a.m. EDT at the Building 11 facility. A demonstration of the facility's robotics capabilities will follow the ceremony.

The highly sophisticated facility will be used by Goddard's robotics team to create, test and evaluate new robotic technologies to support Space Station Freedom.

As part of the Freedom project, Goddard manages the development of the Flight Telerobotic Servicer (FTS), a robotic device that combines teleoperation -- the using of a human operator to direct the machine -- and autonomous capabilities for performing tasks by itself but supervised by an astronaut. Martin Marietta Space Systems Co., Denver, Colo., was selected by NASA to develop the FTS.

"The FTS will allow astronauts to accomplish routine work in space," said Ronald Browning, Goddard's deputy director for Space Station Freedom. "FTS is designed to complement astronaut extravehicular activity and will be used both with and without a crewman."

The new facility contains a gantry robot 40 feet wide, 60 feet long and 20 feet high with six degrees of freedom, capable of lifting up to two tons of payload and applying 4000 foot-pounds of torque.

- more -

Suspended from one mast of the gantry will be a set of teleoperated industrial arms, which will be used as an FTS operational simulator. Another mast carries a grapple to emulate Freedom's remote manipulator system, which primarily will be used to transport payloads to and from the work site.

The facility also includes an operator work station installed in a mockup of the Space Shuttle's aft flight deck. This simulator will permit teleoperation of the robot, providing valuable information about operating the FTS in the constrained environment of the Shuttle.

Located in a glass enclosed mezzanine, overlooking the gantry robot, is what David Provost, head, robotics data systems and integration section, calls one of the unique technologies being developed by Goddard for the FTS project -- the Graphic Robot Simulator.

"This computerized simulator uses animated graphics to determine such things as the robot's reach capability and collision avoidance information," said Provost. "It allows our engineers to use engineering and design concepts to evaluate what would be seen at Freedom Station 6 or 7 years from now.

"The simulator is a very cost-effective system. It reduces the construction costs considerably for major spacecraft and instrument subsystems and makes results available in a much shorter time."

Also located in the facility is a robotics test bed for the evaluation of various computers, software, mechanical arms and control devices.

Commenting on the utilization of the robotics facility with the FTS project, Stanford Ollendorf, chief, telerobotics engineering office, said, "Goddard has been given a technical challenge to build a robot to do things which have never been done before in space."

"With this facility and the team of specialists from universities, industry and other NASA centers, Goddard will have a positive impact not only on Freedom Station and the nation's space program but also on the U.S. ability to compete in world markets through technology transfer to private industry," Ollendorf continued.

- end -

EDITORS NOTE: Media representatives planning to attend this ceremony are requested to call the Goddard Space Flight Center newsroom at 301/286-5565.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

June 15, 1989
For Release: 1 p.m. CDT

John M. Dumoulin
Marshall Space Flight Center, Huntsville, Ala.
(Phone: 205/544-0034)

RELEASE: 89-97

NASA SCIENTISTS IDENTIFY MOLECULAR STRUCTURE OF BLOOD PROTEIN

Scientists at NASA's Marshall Space Flight Center, Huntsville, Ala., have solved a mystery that may help in the design of new or improved disease-fighting drugs.

Using a technique known as X-ray crystallography, a team of scientists and technicians, headed by Dr. Daniel C. Carter, has successfully determined the three-dimensional structure of human serum albumin, the most abundant plasma protein in the human circulatory system. Knowing the molecule's structure may allow pharmaceutical companies to design new drugs or alter existing drugs to allow them to be more efficiently carried by the protein molecule through the body.

Compiling the images of hundreds of individual X-ray diffraction experiments, Carter of the Marshall Center's Space Science Laboratory, and colleague Dr. Xiao-min He, Universities Space Research Association (USRA), identified the plasma protein as a large, ellipsoidal molecule of six bundles of intertwining spirals of amino acids. USRA is headquartered in Columbia, Md.; Dr. He works at USRA's Huntsville, Ala., office.

The scientists have successfully mapped and confirmed the structure of the protein to a resolution of six angstroms, providing an image with enough detail to extract data about individual molecules. The scientists' next step will be to further refine the resolution to three angstroms using space-grown crystals. This higher resolution will help identify individual spirals in each bundle of the molecule, a process that may take 1 to 2 years.

- more -

Human serum albumin crystals have been grown twice in space, most recently during Shuttle mission STS-26 last September as part of a Marshall-managed protein crystal growth experiment.

Identifying the structure of human serum albumin has been the goal of crystallographic investigations for many years. Many studies have focused on the protein's ability to bind to other substances.

"We knew that the protein binds and transports a wide variety of substrates in plasma, such as calcium, copper, fatty and amino acids, hormones and an impressive spectrum of therapeutic drugs," said Carter. "Now, knowing the structure, we can determine where on the molecule these substrates bind. For instance, preliminary binding studies of several compounds, including common aspirin, have shown that many compounds are transported inside just two of the molecule's segments, or bundles: the first and fifth."

Many existing drugs are now less effective or entirely ineffective because their molecular structures either fail to bind or bind too tightly with the protein, said Carter. The metabolism, distribution and effectiveness of many pharmaceuticals can be significantly altered based on their affinity for human serum albumin. Therefore,scientists believe the knowledge of the three-dimensional structure, and how and where the substrates bind on the molecule, may significantly change the industry's approach to drug design.

"Most of the hard work is behind us," said Carter. "Now that we know how to obtain this resolution, it's a matter of systematically refining the details. But scientists will be studying applications for the protein molecule for a long time."

In addition to Carter and He, other members of the science team included Teresa Y. Miller, Marshall Space Flight Center, and Sibyl H. Munson, Pamela D. Twigg, Kim M. Gernert and M. Beth Broom, all under contract with USRA, a non-profit consortium of universities involved in space science research.

- end -

Notes to Editors:

Still photos of the actual molecule are available from Marshall Space Flight Center, 205/544-0034.

A short video clip of STS-26 crew members working on the Protein Crystal Growth Experiment is available from NASA Headquarters, Washington, D.C., 202/453-8375. Still photos of the STS-26 crew activity are available from Johnson Space Center, Houston, 713/483-5111.

NASA News

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For Release

Kari Fluegel
RELEASE No. 89-035

June 16, 1989
Immediate

SATELLITE SERVICING CONFERENCE BEGINS WEDNESDAY AT JSC

Representatives from industry, academia and government will gather at NASA's Johnson Space Center June 21-23 for a three-day workshop to exchange information and discuss ideas for the on-orbit servicing of satellites.

The Satellite Services System workshop, supported by the Advanced Programs Development Division of the NASA's Office of Space Flight, will focus on four issues: servicer/satellite design, servicing operations, tools and equipment, and future opportunities.

The workshop is a joint effort by government and industry. It is unclassified and open to the aerospace community. All technical session will be in Teague Auditorium.

The workshop begins June 21 with a welcome by JSC Director Aaron Cohen at 9 a.m. followed by a keynote address by Darrell Branscome, director of the Advanced Programs Development Division.

Also Wednesday, a presentation by astronauts Capt. Bruce McCandless II and Jerome Apt about the space shuttle experience will be at 9:30 a.m.

That presentation will be followed by a discussion of space station considerations at 11 a.m. with Robert E. Bobola, project manager for development in the Space Station Projects Office at JSC; Randy Waibel of MacDonnell Douglas; and Don Peterson of General Electric Astro Space.

The first session will begin at 1 p.m. with a focus on satellite design. Session leaders will be Ed Falkenhayn of the Goddard Space Flight Center and Robert Radtke of Tracor Applied Sciences. Session topics include Orbital Manueuvering Vehicle

-more-

(OMV) usage, the Flight Telerobotic Servicer, Advanced X-Ray Astrophysics Facility servicing design concepts and servicing polar platforms.

Also Wednesday, participants may observe demonstrations of the Hubble Space Telescope, OMV pilot simulator and the Automatic Umbilical Connector/Manipulator Development Facility.

On June 22, Session II: Servicing Operations will begin at 8:30 a.m., followed by a Session III: Tools and Equipment at 1 p.m.

Stephen Elrod of the Marshall Space Flight Center and Sue Boyd of JSC will lead the servicing operations discussions which will include servicing Eureka-type platforms, OMV background and status, combining teleoperation with autonomous robot control for satellite servicing, and orbital fluid resupply development activities.

Neville Marzwell of the Jet Propulsion Laboratory, Richard Fullerton of JSC and Michael Withey of ILC Space Systems will lead the discussion on tools and equipment. Among the topics in Session III are task space coordination of multiple robotic arms manipulating the same payload in an orbital environment, the Astronautics Dexterous Anthropomorphic Manipulator System development of a teleoperated servicing system, magentic end effectors for space operations, and superfluid helium resupply coupling.

Session IV: Future Opportunities opens the day June 23 at 8 a.m. with a focus on presentations from representatives from NASA, the military, commercial programs, Canada, Japan and Europe.

Session leaders will be Major Neal Ely of the United States Air Force and Steve Hoffman of Science Applications International Corporation.

Additional topics will be discussed in each of the four session.

The workshop will conclude with a summary of session findings and discussion of key issues at 11 a.m. June 23.

-30-

NASA News

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For Release

Kari Fluegel
RELEASE: 89-038

June 20, 1989

TWO COMPANIES CHOSEN FOR WORK ON LIFE SCIENCE SATELLITE

NASA's Johnson Space Center, Houston, has selected two companies to continue the study and design of an unmanned, reusable reentry satellite called LifeSat (Life Science Satellite).

General Electric, Reentry Systems Department, Philadelphia, and Science Applications International Corp., Torrance, Calif., were chosen for the two parallel $900,000 contracts. The 1-year agreements are tentatively scheduled to start July 3, 1989.

LifeSat will carry life science payloads and could significantly expand NASA's capability to investigate the biological effects of microgravity and the unique space radiation environment. This type of investigation can be calculated only in space, preferably in polar orbits. LifeSat will be used primarily in the fields of life sciences and materials processing.

LifeSat will fly experiments in a variety of orbits, including those providing high doses of radiation, for up to 60 days, and perhaps longer. It would be placed into Earth orbit by an expendable launch vehicle, reserving the Space Shuttle for activities requiring crew presence. Upon completion of the mission, LifeSat would reenter the atmosphere and soft-land at a designated ground-site where scientists and engineers would have immediate access to the experiments.

The request for proposals, released in January, called for the design of a reusable spacecraft that could be processed and readied for reflight in 2 months, allowing for several flights each year.

The project is managed by the Flight Projects Office of the New Initiatives Office at the Johnson Space Center.

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Paula Cleggett-Haleim
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

June 29, 1989

RELEASE: 89-104

NASA SELECTS SCIENCE EXPERIMENTS FOR SPACE STATION FREEDOM

NASA's Office of Space Science and Applications today announced the selection of 27 flight experiments, or concept studies leading to experiments, that will fly aboard the Space Station Freedom.

The selections fall into two categories. The flight category is for attached scientific experiments that can be mounted aboard elements of Freedom's structure during its assembly and outfitting phase. The 14 investigations selected in this category will be the first performed aboard Freedom. Flight proposals were solicited that would be limited in weight and make only modest demands on station resources, such as power, cooling and crew availability, during the busy assembly phase.

The concept study category is for studies that may lead to flight experiments after the assembly phase. These proposals were solicited for more advanced ideas that could be implemented after station assembly when additional resources, such as higher power and data-handling capabilities, will be available.

Some of the 14 flight experiments and 13 concept studies call upon two facilities the Office of Space Science and Applications has indicated would be built for Freedom. These are Astromag, a cryogenically-cooled superconducting electromagnet to measure cosmic rays, and the Cosmic Dust Collection Facility, which will capture and record the direction and velocity of cosmic dust particles for further analysis.

The 27 selections were made from responses to two NASA announcements of opportunity issued in 1988. The first, issued in January, was for the Earth Observing System (EOS) and

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solicited proposals for both the unmanned NASA Polar Orbiting Platform and the permanently manned Space Station Freedom. The second was issued in July and was specifically for scientific and technological payloads in other scientific disciplines to be attached to Freedom. Eight of the nine Earth science investigations selected as attached payloads involve copies of EOS Polar Platform instruments.

The investigations include participants from about 50 organizations representing NASA and other government and private research centers, U.S. universities and five foreign countries. The selected experiments and concepts represent a wide range of scientific disciplines including space physics, solar and planetary physics, exobiology, astrophysics, Earth and environmental science and communications technology. They involve nearly 130 scientists.

Selection of the flight experiments was predicated on their ability to meet a timetable for the design, development and assembly of Freedom elements. The earliest expected flight date for any of the experiments is 1996. The Freedom Station will provide physical attachment points, power, cooling, data communications and pointing for certain instruments.

The Attached Payload Program is managed by the Office of Space Science and Applications, Flight Systems Division. Program manager is Dr. Philip J. Cressy, and program scientist is Dr. Stanley C. Freden, both at NASA Headquarters.

The following individuals have been selected for funding for experiments and concept studies in response to the January 1988 announcement:

Dr. Robert M. Walker, McDonnell Center for the Space Sciences, Washington University, St. Louis, Cosmic Dust Experiment, flight experiment.

Dr. Michael Fitzmaurice, Goddard Space Flight Center, Greenbelt, Md., Laser Communications Transceiver, flight experiment.

Dr. Paul Gorenstein, Smithsonian Astrophysical Observatory, Cambridge, Mass., Large Area Modular Array of Reflectors/High Throughput X-Ray Astronomy Instrument, flight experiment.

Dr. Thomas A. Parnell, Marshall Space Flight Center, Huntsville, Ala., Spectra, Composition and Interactions of Nuclei above 10 TeV, Astromag experiment, flight experiment.

Dr. Jonathan F. Ormes, Goddard Space Flight Center, Greenbelt, Md., Large Isotope Spectrometer for Astromag, flight experiment.

Dr. Glenn C. Carle, Ames Research Center, Moffett Field, Calif. Exobiology Intact Capture Experiment, flight experiment.

Dr. Siegfried Auer, Applied Research Corporation, Landover, Md., Cosmic Dust Orbit and Capture Experiment, flight experiment.

Dr. Robert L. Golden, Particle Astrophysics Laboratory, New Mexico State University, Las Cruces, Measurement of Cosmic Rays including Anti-protons, Positrons, Anti-nuclei and a Search for Primordial Antimatter, Astromag experiment, flight experiment.

Dr. Arthur B. Walker, Jr., Center for Space Science and Astrophysics, Stanford University, Calif., Ultra-High Resolution XUV Spectroheliograph, flight experiment.

Dr. W. T. Sanders, Space Science and Engineering Center, University of Wisconsin at Madison, X-ray Background Survey Spectrometer, flight experiment.

Dr. Peter B. Price, Space Science Laboratory, University of California at Berkeley, Heavy Nucleus Collector, flight experiment.

Dr. Peter M. Banks, STAR Laboratory, Department of Electrical Engineering, Stanford University, Calif., Plasma Interactions Experiment, concept study.

Dr. Michael Shao, Optical Sciences and Applications Section, Jet Propulsion Laboratory, Pasadena, Calif., Orbiting Stellar Interferometer, concept study.

Dr. Robert D. Reasenberg, Smithsonian Astrophysical Observatory, Cambridge, Mass., Precision Optical Interferometry in Space Study, concept study.

Dr. Jonathan E. Grindlay, Harvard College Observatory, Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass., Energetic X-ray Observatory for Space Station, concept study.

Dr. Robert L. Brown, National Radio Astronomy Observatory, Charlottesville, Va., High-Resolution Imaging Spectroscopy at Tera Hertz Frequencies, concept study.

Dr. Hugh S. Hudson, Center for Astrophysics and Space Sciences, University of California, San Diego, Pinhole/Occulter Facility, concept study.

Dr. Guy Fogleman, SETI Institute, Ames Research Center, Moffett Field, Calif., Study to Develop an Active Collector of Cosmic Dust, concept study.

The following investigators were selected from responses to the July 1988 announcement:

Dr. M. Patrick McCormick, Langley Research Center, Hampton, Va., Stratospheric Aerosol and Gas Experiment III, flight experiment.

Dr. Hugh Christian, Marshall Space Flight Center, Huntsville, Ala., Lightning Imaging Sensor, flight experiment.

Dr. Bruce Barkstrom, Langley Research Center, Hampton, Va., Clouds and the Earth's Radiant Energy System, flight experiment.

Dr. William L. Barnes, Goddard Space Flight Center, Greenbelt, Md., Tropical Region Imaging Spectrometer, concept study.

Dr. Michael H. Freilach, Jet Propulsion Laboratory, Pasadena, Calif., Advanced Scatterometer for Studies in Meteorology and Oceanography, concept study.

Dr. Tiruvalam Krishnamurti, Florida State University, Tallahassee, an experiment similar to the Laser Atmospheric Wind Sounder, one of six facility instruments included in the Polar Platform proposal, concept study.

Dr. William G. Melbourne, Jet Propulsion Laboratory, Pasadena, Calif., Global Positioning System Geoscience Instrument, concept study.

Dr. Gerald R. North, Texas A&M University, College Station, Tropical Rain Mapping Radar, concept study.

Dr. Roy Spencer, Marshall Space Flight Center, Huntsville, Ala., Tropical Geophysical Information Retrieval with a High Resolution Microwave Spectrometer Sounder, concept study.

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NOTE: A complete list of payload co-investigators is available from the NASA Newsroom, Room 6043, 400 Maryland Ave., S.W., Washington, D.C. 20546, phone 202/453-8400.

NASA News

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Lyndon B. Johnson Space Center
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For Release

Jeffrey Carr
RELEASE NO. 89-040

June 29, 1989
3:00 pm CDT

PARTIAL SHUTTLE CREW ASSIGNMENTS ANNOUNCED
Blaha to Replace Griggs; Gutierrez, Cleave, Thagard Assigned

USAF Col. John E. Blaha has been named to the flight crew of Shuttle mission STS-33, a Department of Defense dedicated flight set for November 19, this year. He replaces USNR Rear Admiral S. David Griggs, who was killed on June 17 when the private plane he was flying crashed in eastern Arkansas.

Blaha had previously been assigned as the pilot for STS-40, a space and life sciences dedicated mission (SLS-1).

He joins crew commander USAF Col. Frederick D. Gregory and mission specialists F. Story Musgrave, M.D., Kathryn C. Thornton, Ph.D., and USN Capt. Manley L. "Sonny" Carter, Jr., M.D., who have been in training since November, last year. The replacement is not expected to impact the launch date.

Replacing Blaha as pilot for STS-40 is USAF Maj. Sidney M. Gutierrez. Set for launch in August, 1990, the 7-day flight will feature space and life sciences studies in the SLS-1 laboratory module aboard the space shuttle Columbia.

Gutierrez joins crew commander USMC Col. Bryan D. O'Connor, mission specialists M. Rhea Seddon, M.D., James P. Bagian, M.D., and Tamara E. Jernigan, Ph.D., and payload specialists F. Drew Gaffney, Ph.D., and Robert W. Phillips, Ph.D. All had been previously named.

In another flight crew assignment, Mary L. Cleave, Ph.D., and Norman E. Thagard, M.D., have been named as mission specialists for STS-42, a nine-day flight aboard Columbia, set for December, 1990. The partial crew assignment will allow for long range crew participation in payload training and integration associated with the International Microgravity Laboratory (IML-1). The remainder of the 7-member crew will be named later.

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Blaha made his first space flight as pilot aboard Discovery on mission STS-29 in March, this year. He was born August 26, 1942, in San Antonio, TX.

Gutierrez, making his first flight in space, was born June 27, 1951, in Albuquerque, NM.

Cleave will make her third space flight, having flown previously as mission specialist on STS 61-B in November, 1985, and on STS-30 in May, this year. She was born February 5, 1947, in Southampton, NY.

Thagard will make his fourth space flight. He flew as mission specialist on STS-7 in June, 1983, on STS 51-B in April, 1985, and on STS-30 in May, this year. Thagard was born July 3, 1943, in Marianna, FL, but considers Jacksonville, FL, to be his hometown.

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SHUTTLE FLIGHT CREWS IN TRAINING
(as of 6/29/89)

FLIGHT CREW - DATE		RANK (BRANCH)	CLASS	FLT EXPERIENCE
STS-28 (DOD) 7/31/89				
Brewster H. Shaw	CDR	Col. (USAF)	1978	STS-9;61-B
Richard N. Richards	PLT	Cmdr. (USN)	1980	
James C. Adamson	MS1	Lt. Col. (USA)	1984	
David C. Leestma	MS2	Cmdr. (USN)	1980	41-G
Mark N. Brown	MS3	Maj. (USAF)	1984	
STS-34 (Galileo) 10/12/89				
Donald E. Williams	CDR	Capt. (USN)	1978	51-D
Michael J. McCulley	PLT	Cmdr. (USN)	1984	
Shannon W. Lucid	MS1	Civilian - Ph.D.	1978	51-G
Franklin R. Chang-Diaz	MS2	Civilian - Ph.D.	1980	61-C
Ellen S. Baker	MS3	Civilian - M.D.	1984	
STS-33 (DOD) 11/19/89				
Frederick D. Gregory	CDR	Col. (USAF)	1978	51-B
John E. Blaha	PLT	Col. (USAF)	1980	STS-29
Manley L. Carter	MS	Capt. (USN)- M.D.	1984	
F. Story Musgrave	MS	Civilian - Ph.D.;M.D.	1967	STS-6;51-F
Kathryn C. Thornton	MS	Civilian - Ph.D.	1984	
STS-32 (LDEF) 12/18/89				
Daniel C. Brandenstein	CDR	Capt. (USN)	1978	STS-8;51-G
James D. Wetherbee	PLT	Lt. Cmdr. (USN)	1984	
Bonnie J. Dunbar	MS	Civilian - Ph.D.	1980	61-A
G. David Low	MS	Civilian	1984	
Marsha S. Ivins	MS	Civilian	1984	

FLIGHT CREW - DATE		RANK (BRANCH)	CLASS	FLT EXPERIENCE
STS-36 (DOD) 2/01/90				
John O. Creighton	CDR	Capt. (USN)	1978	51-G
John H. Casper	PLT	Col. (USAF)	1984	
David C. Hilmers	MS	Lt. Col. (USMC)	1980	51-J;STS-26
Richard M. Mullane	MS	Col. (USAF)	1978	41-D;STS-27
Pierre J. Thuot	MS	Lt. Cmdr (USN)	1985	
STS-31 (Hubble) 3/26/90				
Loren J. Shriver	CDR	Col. (USAF)	1978	51-C
Charles F. Bolden	PLT	Col. (USMC)	1980	61-C
Steven A. Hawley	MS	Civilian - Ph.D.	1978	41-D;61-C
Kathryn D. Sullivan	MS	Civilian - Ph.D.	1978	41-G
Bruce McCandless	MS	Capt. (USN)	1966	41-B
STS-35 (ASTRO-1) 4/26/90				
Vance D. Brand	CDR	Civilian	1966	ASTP;STS-5;41-B
Guy S. Gardner	PLT	Col. (USAF)	1980	STS-27
John M. Lounge	MS	Civilian	1980	51-I;STS-26
Jeffrey A. Hoffman	MS	Civilian - Ph.D.	1978	51-D
Robert A.R. Parker	MS	Civilian - Ph.D.	1967	STS-9
Ronald A. Parise	PS	Civilian - Ph.D.		
Samuel T. Durrance	PS	Civilian - Ph.D.		
STS-37 (GRO) 6/04/90				
Steven R. Nagel	CDR	Col. (USAF)	1978	51-G;61-A
Kenneth D. Cameron	PLT	Lt. Col. (USMC)	1984	
Jerry L. Ross	MS	Lt. Col. (USAF)	1980	61-B;STS-27
Jerome Apt	MS	Civilian - Ph.D.	1985	
Linda M. Godwin	MS	Civilian - Ph.D.	1985	

FLIGHT CREW - DATE		RANK (BRANCH)	CLASS	FLT EXPERIENCE
STS-38 (DOD) 7/09/90				
Richard O. Covey	CDR	Col. (USAF)	1978	51-I;STS-26
Frank L. Culbertson	PLT	Cmdr. (USN)	1984	
Robert C. Springer	MS	Col. (USMC)	1980	STS-29
Carl J. Meade	MS	Maj. (USAF)	1985	
Charles D. Gemar	MS	Capt. (USA)	1985	
STS-40 (SLS-1) 8/16/90				
Bryan D. O'Connor	CDR	Col. (USMC)	1980	61-B
Sidney M. Gutierrez	PLT	Col. (USAF)	1984	
M. Rhea Seddon	MS	Civilian - M.D.	1978	51-D
James P. Bagian	MS	Civilian - M.D.	1980	STS-29
Tamara E. Jernigan	MS	Civilian - Ph.D.	1985	
F. Drew Gaffney	PS	Civilian - M.D.		
Robert W. Phillips	PS	Civilian - M.D.		
STS-39 (IBSS) 11/01/90				
TBD	CDR			
TBD	PLT			
Guion S. Bluford	MS	Col. (USAF)	1978	STS-8;61-A
Richard J. Hieb	MS	Civilian	1985	
Charles L. Veach	MS	Civilian	1984	
TBD	MS			
TBD	MS			
STS-42 (IML-01) 12/06/90				
TBD	CDR			
TBD	PLT			
TBD	MS			
Mary L. Cleave	MS	Civilian - Ph.D.	1980	61-B;STS-30
Norman E. Thagard	MS	Civilian - M.D.	1978	STS-7;51-B;STS-30
TBD	PS	ESA or NASA		
TBD	PS	National Research Council of Canada		

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Houston, Texas 77058
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For Release

June 29 ,1989

SPACE STATION ATTACHED PAYLOAD
PRINCIPAL AND CO-INVESTIGATORS

Investigations selected for flight:

Principal Investigator (PI): Robert M. Walker, McDonnell Center for the Space Sciences, Washington University, St. Louis, Mo., Cosmic Dust Experiment; Co-Investigators (Co-I): E. Zinner and C. Simon, Washington University, St. Louis, Mo.; A. Tuzzolino and J. Simpson, University of Chicago.

PI: Michael Fitzmaurice, Goddard Space Flight Center, Greenbelt, Md., Laser Communications Transceiver.

PI: Paul Gorenstein, Smithsonian Astrophysical Observatory, Cambridge, Mass., Large Area Modular Array of Reflectors (High Throughput X-Ray Astronomy Instrument); Co-I: D. Fabricant, Smithsonian Astrophysical Observatory, Cambridge, Mass.; S. Kahn and C. McKee, University of California, Berkeley; M. Wiesskopf, Marshall Space Flight Center, Huntsville, Ala.; R. Rosner, University of Chicago.

PI: Thomas A. Parnell, Marshall Space Flight Center, Huntsville, Ala., Spectra, Composition, and Interactions of Nuclei above 10 TeV (Astromag experiment); Co-I: J. Wefel, Louisiana State University, Baton Rouge; R. Wilkes, University of Washington, Seattle; J. Gregory, University of Alabama, Huntsville; T. Ogata, University of Tokyo, Japan.

PI: Jonathan F. Ormes, Goddard Space Flight Center, Greenbelt, Md., Large Isotope Spectrometer for Astromag; Co-I: I. Rasmussen, Danish Space Research Institute, Denmark; J. Klarmann, Washington University, St. Louis, Mo.; M. Wiedenbeck, University of Chicago; R. Mewaldt, California Institute of Technology, Pasadena; R. Streitmatter, Goddard Space Flight Center, Greenbelt, Md.

PI: Glenn C. Carle, Ames Research Center, Moffett Field, Calif., Exobiology Intact Capture Experiment; Co-I: M. Fonda amd D. Blake, SETI Institute, Mountain View, Calif.; T. Bunch, Ames Research Center, Moffett Field, Calif.; B. Clark, Martin Marietta Astronautics Group, Denver, Colo.; P. Tsou, Jet Propulsion Laboratory, Pasadena, Calif.; J. Cronin, Arizona State University, Tempe; J. Hayes, Indiana University, Bloomington; J. Kerridge, University of California, Los Angeles.

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PI: Siegfried Auer, Applied Research Corporation, Landover, Md., Cosmic Dust Orbit and Capture Experiment; Co-I: O. Berg, University of Maryland, College Park; D. Brownlee, University of Washington, Seattle; G. Flynn, State University of New York, Plattsburgh; E. Grun, Max Planck Institute fur Kernphysik, West Germany; J. Iwanczyk, University of Southern California, Los Angeles; F. von Bun, Applied Research Corporation, Landover, Md.; H. Zook, Johnson Space Center, Houston.

PI: Robert L. Golden, Particle Astrophysics Laboratory, New Mexico State University, Las Cruces, Measurement of Cosmic Rays including Anti-protons, Positrons, Anti-nuclei and a Search for Primordial Antimatter, Astromag experiment; Co-I: S. Ahlen, Boston University; H. Crawford, University of California, Berkeley; J. Ormes, Goddard Space Flight Center, Greenbelt, Md.; C. Bower, Indiana State University, Terra Haute; T. Guzik, Louisiana State University, Baton Rouge; S. Stephens, New Mexico State University, Las Cruces; J. Adams, Naval Research Laboratory, Washington, D.C.; M. Simon, University of Siegen, West Germany; C. De Marzo, Italian Institutions (various).

PI: Arthur B. Walker Jr., Center for Space Science and Astrophysics, Stanford University, Calif., Ultra-High Resolution XUV Spectroheliograph; Co-I: R. Hoover, Marshall Space Flight Center, Huntsville, Ala.; T. Barbee, Lawrence Livermore National Laboratory, Lawrence, Calif.; J. Timothy, Stanford University, Calif.; S. Antiochos, Naval Research Laboratory, Washington, D.C.; S. Wu, University of Alabama, Huntsville; D. Sime, High Altitude Observatory, Boulder, Colo.

PI: Dr. Wilton T. Sanders III, Space Science and Engineering Center, University of Wisconsin at Madison, X-ray Background Survey Spectrometer; Co-I: Dan McCammon, William L. Kraushaar and Richard J. Edgar, University of Wisconsin at Madison.

PI: Dr. P. Buford Price, Space Science Laboratory, University of California, Berkeley, Heavy Nucleus Collector; Co-I: Gregory Tarle, University of Michigan, Ann Arbor; Michael H. Salaman, University of Utah, Salt Lake City; Dr. William H. Kinard, Langley Research Center, Hampton, Va.

Investigations selected for concept study:

PI: Peter M. Banks, STAR Laboratory, Department of Electrical Engineering, Stanford University, Calif., Plasma Interactions Experiment; Co-I: P. Bernhardt, Naval Research Laboratory, Washington, D.C.; D. Hardy, Air Force Geophysics Laboratory, Bedford, Mass.; S. Mende, Lockheed Palo Alto Research Laboratory, Calif., W. Raitt, Utah State University; A. Drobot, Science

Applications International Corp., McLean, Va., D. Hastings, Massachusetts Institute of Technology, Cambridge; M. Kelley, Cornell University, Ithaca, N.Y.; D. Reasoner, Marshall Space Flight Center, Huntsville, Ala.; L.R.O. Storey, Stanford University, Calif.

PI: Michael Shao, Optical Sciences and Applications Section, Jet Propulsion Laboratory, Pasadena, Calif., Orbiting Stellar Interferometer; Co-I: Charles Beichman, Jet Propulsion Laboratory, Pasadena, Calif.; B. Burke, Massachusetts Institute of Technology, Cambridge; J. Hughes, Naval Observatory, Washington, D.C.; S. Kulkarni, California Institute of Technology, Pasadena; K. Johnston, Naval Research Laboratory, Washington, D.C.; E. Kibblewhite, National Optical Astronomical Observatory, Arizona; H. McAlister, Georgia State University, Atlanta; P. Nisenson, Harvard/Smithsonian Center for Astrophysics, Cambridge, Mass.

PI: Robert D. Reasenberg, Smithsonian Astrophysical Observatory, Cambridge, Mass., Precision Optical Interferometry in Space Study; Co-I: R. Babcock, Smithsonian Astrophysical Observatory, Cambridge, Mass.; J. Phillips, Smithsonian Astrophysical Observatory, Cambridge, Mass.

PI: Jonathan E. Grindlay, Harvard College Observatory, Harvard-Smithsonian Center for Astrophysics Observations, Cambridge, Mass., Energetic X-ray Observatory for Space Station; Co-Is: S. Murray and F. Primini, Harvard Smithsonian Observatory, Cambridge, Mass.; Prince, California Institute of Technology, Pasadena; B. Ramsey and M. Weisskopf, Marshall Space Flight Center, Huntsville, Ala.; G. Skinner, University of Birmingham, England.

PI: Robert L. Brown, National Radio Astronomy Observatory, Charlottesville, Va., High-Resolution Imaging Spectroscopy at Tera Hertz Frequencies; Co-I: A. Kerr, National Radio Astronomy Observatory, Charlottesville, Va.

PI: Hugh S. Hudson, Center for Astrophysics and Space Sciences, University of California, San Diego, Pinhole/Occulter Facility; Co-I: C. Crannell and J. Davis, Marshall Space Flight Center, Huntsville, Ala.; A. G. Emslie, University of Alabama, Huntsville; J. Grindlay, Harvard University, Cambridge, Mass.; G. Hurford, California Institute of Technology, Pasadena; J. Kohl, Harvard/Smithsonian Center for Astrophysics, Cambridge, Mass.; R. Lin, University of California, Berkeley; R. Munro, Ball Aerospace Systems Division, Boulder, Colo.: G. Skinner, University of Birmingham, England; K. Wood, Naval Research Laboratory, Washington, D.C.

PI: Guy Fogleman, SETI Institute, Mountain View, Calif., Study to Develop an Active Collector of Cosmic Dust; Co-I: G. Carle, Ames Research Center, Moffett Field, Calif.; Benton Clark and J. Miller, Martin Marietta Astronautics Group, Denver; J. Huntington, SETI Institute, Mountain View, Calif.; D. Perkins and D. Thomas, KMS Fusion, Inc., Ann Arbor, Mich.

Earth science investigations selected for flight:

PI: M. Patrick McCormick, Langley Research Center, Hampton, Va., Stratospheric Aerosol and Gas Experiment III; Co-I: W. P. Chu, Langley Research Center, Hampton, Va.; D. M. Cunnold, Georgia Institute of Technology, Atlanta; Benjamin M. Herman, University of Arizona, Tempe; Alvin J. Miller, NOAA National Meteorology Center, Suitland, Md.; Joseph M. Zawodny, Langley Research Center, Hampton, Va.; Philip B. Russell, Ames Research Center, Moffet Field, Calif.; David Rind, Goddard Institute for Space Studies, New York, N.Y.; Jacqueline Lenoble, Universite de Sciences et Techniques de Lille, France.

PI: Hugh Christian, Marshall Space Flight Center, Huntsville, Ala., Lightning Imaging Sensor; Co-I: Richard Blakeslee and Steven J. Goodman, Marshall Space Flight Center, Huntsville, Ala.; Douglas M. Mach, University of Alabama, Birmingham.

PI: Bruce Barkstrom, Langley Research Center, Hampton, Va., Clouds and the Earth's Radiant Energy System; Co-I: Maurice L. Blackmon, NOAA Environmental Research Laboratory, Princeton, N.J.; Robert D. Cess, State University of New York, Stonybrook.

Earth science investigations selected for concept studies:

PI: William L. Barnes, Goddard Space Flight Center, Greenbelt, Md., Tropical Region Imaging Spectrometer; Co-I: Wayne Esaias and Joel Susskind, Goddard Space Flight Center, Greenbelt, Md.

PI: Michael H. Freilich, Jet Propulsion Laboratory, Pasadena, Calif., Advanced Scatterometer for Studies in Meteorology and Oceanography; Co-I: Robert M. Atlas, Goddard Space Flight Center, Greenbelt, Md.; Peter Cornillon, University of Rhode Island, Kingston; Robert A. Brown, University of Washington, Seattle; David Halpern and Fuk Li, Jet Propulsion Laboratory, Pasadena, Calif.; Ross N. Hoffman, Atmospheric and Environmental Research, Inc., Cambridge, Mass.; David Legler, Florida State University, Tallahassee; Richard K. Moore, University of Kansas, Lawrence; James J. O'Brien, Florida State University, Tallahassee.

PI: Tiruvalam Krishnamurti, Florida State University, Tallahassee, an experiment similar to the Laser Atmospheric Wind Sounder, one of six facility instruments included in the Polar Platform proposal; Co-I: Daniel Fitzjarrald, Marshall Space Flight Center, Huntsville, Ala.

PI: William G. Melbourne, Jet Propulsion Laboratory, Pasadena, Calif., Global Positioning System Geoscience Instrument; Co-I: Thomas P. Yunck, Gunnar F. Lindal and Lawrence E. Young, Jet Propulsion Laboratory, Pasadena, Calif.; George H. Born, University of Colorado, Boulder; Bradford H. Hager, California Institute of Technology, Pasadena; Chao-Han Liu, University of Illinois, Urbana.

PI: Gerald R. North, Texas A&M University, College Station, Tropical Rain Mapping Radar; Co-I: Fuk Li, Jeff Dozier, R. Eastwood Im, and W. Timoth Liu, Jet Propulsion Laboratory, Pasadena, Calif.; David Atlas, consultant, Bethesda, Md.; Robert Houze, University of Washington, Seattle; Tiruvalam Krishnamurti, Florida State University, Tallahassee; William K. Lau, Robert Meneghini, David Short, Joanne Simpson and Thomas Wilheit, Goddard Space Flight Center, Greenbelt, Md.; Ken'ichi Okamoto, Communications Research Laboratory, Tokyo, Japan; Jagadish Shukla, University of Maryland, College Park; Juan Valdes, Texas A&M University, College Station; Peter Webster, Pennsylvania State University, University Park; James. A Weinman, Applied Research Corporation, Landover, Md.

PI: Roy Spencer, Marshall Space Flight Center, Ala., Tropical Geophysical Information Retrieval with a High Resolution Microwave Spectrometer Sounder; Co-I: Frank J. Wentz, Remote Sensing Systems; Paul Swanson, Jet Propulsion Laboratory, Pasadena, Calif.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

Charles Redmond/Paula Cleggett
Headquarters, Washington, D.C.
(Phone: 202/453-1548)

June 29, 1989

RELEASE: 89-105

NASA SELECTS SCIENCE EXPERIMENTS FOR MICROGRAVITY MISSIONS

NASA's Office of Space Science and Applications, Washington, D.C., today announced selection of 23 scientific investigations and their principal investigators for definition studies which could lead to Space Shuttle flights on microgravity science missions. The definition phase is expected to last up to 2 years prior to the proposed flight for a particular investigator.

The 23 investigations come from 19 institutions, all within the United States. Three of the institutions are NASA centers -- Jet Propulsion Laboratory, Pasadena, Calif.; Marshall Space Flight Center, Huntsville, Ala.; and Lewis Research Center, Cleveland. Eleven institutions are universities. Of the 23 investigators selected, 15 were selected for materials science, five for fluid dynamics experiments and three for biotechnology investigations.

The microgravity investigations are in response to the NASA Announcement of Opportunity for Microgravity Science and Applications, AO OSSA 4-88. The announcement requested proposals to fly aboard Shuttle microgravity missions in two series -- the U.S. Microgravity Laboratory (USML) and U.S. Microgravity Pallet (USMP) series and the International Microgravity Laboratory (IML) series. There were a total of 89 respondents to the announcement from which these investigations were selected following peer review.

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For the USML flight investigations would be using NASA-supplied facility instruments such as the Crystal Growth Furnace and the Drop Physics Module. For the IML and USMP flights, the investigations would be using facilities such as the Critical Point Facility and Bubble Drop and Particle Unit developed by the European Space Agency, the Cryostat developed by Germany and the MEPHISTO furnace developed by France. European scientists also will use the European facilities on IML, based on the selection procedures of their sponsoring agencies.

The IML-1 is scheduled for launch in December 1990. The USML-1, scheduled for launch in March 1992, would be the first mission to use the extended duration orbiter.

The investigators selected, their institutions and locations and the name of their experiment are listed below by mission:

For USML-1:

Robert E. Apfel, Yale University, New Haven, Conn., Science and Technology of Surface Controlled Phenomena.

Frederick M. Carlson, Clarkson University, Potsdam, N.Y., Directional Solidification of Cadmium Telluride.

Randall M. German, Rensselaer Polytechnic Institute, Troy, N.Y., Gravitational Role in Liquid Phase Sintering.

Edward R. Gertner, Rockwell International Corporation, Thousand Oaks, Calif., Cadmium Telluride Microgravity Growth Experiment Development.

James Kafalas, GTE Laboratories, Inc., Waltham, Mass., Study of Dopant Segregation Behavior During the Growth of Gallium Arsenide in Microgravity.

David Larson, Grumman Aerospace Corporation, Bethpage, N.Y., Orbital Processing of High-Quality CdTe Compound Semiconductors.

Sandor L. Lehoczky, Marshall Space Flight Center, Huntsville, Ala., Crystal Growth of Selected II-VI Semiconducting Alloys by Directional Solidification.

Bruce A. Nerad, 3M Space Research Laboratory, St. Paul, Minn., Advanced Chemical Ceramics Microgravity Experiment.

Michael C. Weinberg, University of Arizona, Tucson, Ariz., Measurement of Liquid-Liquid Interfacial Tension and the Role of Gravity in Phase Separation Kinetics of Fluid Glass Melts.

Herbert Wiedemeier, Rensselaer Polytechnic Institute, Troy, N.Y., Vapor Transport Crystal Growth of Mercury-Cadmium Telluride in Microgravity.

For IML-1:

Alexander McPherson, University of California, Riverside, Protein Crystallization Experiments in Cryostat.

R. Allen Wilkinson, Lewis Research Center, Cleveland, Investigation of the Thermal Equilibration Dynamics of SF6 near the Liquid-Vapor Critical Point.

For IML-2

Robert J. Bayuzick, Vanderbilt University, Nashville, Effects on Nucleation by Containerless Processing in Low Gravity.

Merton C. Flemings, Massachusetts Institute of Technology, Cambridge, Alloy Undercooling Experiments.

Donald O. Frazier, Marshall Space Flight Center, Huntsville, Ala., Kinetics of Diffusional Droplet Growth in a Liquid/Liquid Two Phase System.

W. C. Hymer, University of Pennsylvania, Philadelphia, Eletrophoretic Separation of Cells and Particles from Rat Pituitary and Spleen.

William L. Johnson, California Institute of Technology, Pasadena, Metallic Glass Research in Space.

Jean N. Koster, University of Colorado, Boulder, Interfacial Phenomena in Multilayered Fluid Systems: Steady and Oscillatory Convection, and g-Jitter and g-Modulation Effects.

Robert S. Snyder, Marshall Space Flight Center, Huntsville, Ala., Electrohydrodynamic Sample Distortion During Eletrophoresis.

R. Shankar Subramanian, Clarkson University, Potsdam, N.Y., Thermocapillary Migration and Interactions of Bubbles and Drops.

Julian Szekely, Massachusetts Institute of Technology, Cambridge, Measurement of the Viscosity of the Undercooled Melts Under the Conditions of Microgravity and Supporting MHD Calculations.

For USMP-2

G.J. Abbaschian, University of Florida, Tallahassee, In-Situ Monitoring of Crystal Growth Using MEPHISTO.

Undetermined Mission

N.B.Singh, Westinghouse Electric Corporation, Pittsburgh, Penn., Double Diffusive Convection During Growth of Lead Bromide Crystals in Space.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

James W. McCulla
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

July 27, 1989

RELEASE: 89-126

TRULY ASSIGNS JSC's COHEN TO LEAD NASA
PREPARATION FOR NEW CIVIL SPACE GOALS

Richard H. Truly, Administrator of NASA, today announced that he has asked Aaron Cohen, Director of the Johnson Space Center, to lead agency activities in response to the national goal of human exploration of the moon and the planet Mars announced by President Bush last week. Cohen will be temporarily assigned to NASA Headquarters in Washington for the next few months.

Speaking at the 20th anniversary of the Apollo 11 moon landing, the President asked Vice President Quayle to lead the National Space Council to determine what is needed for the next round of exploration to establish a scientific outpost on the moon and begin human exploration of Mars. Recommendations to the President will be influenced markedly by the NASA effort which Cohen will lead.

"From his engineering work in the early days of the Apollo program in the 1960s to today, when he leads the JSC team in support of the Shuttle and Space Station programs, Aaron has done outstanding work," Truly said. "No one in the agency is as well suited to prepare NASA to accept the challenges of this historic new project. Aaron will be calling on many other people across NASA to accomplish this comprehensive self-examination of the agency, and all of us look forward to this challenge. JSC will remain in good hands during this period under the leadership of Paul Weitz, the Deputy Director."

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
RELEASE NO. 89-041

8/16/89

BRYAN O'CONNOR NAMED DEPUTY DIRECTOR OF FLIGHT CREW OPERATIONS

Veteran shuttle astronaut USMC Col. Bryan D. O'Connor has been named Deputy Director of the Flight Crew Operations Directorate at the Johnson Space Center, effective immediately.

He replaces another veteran astronaut, Henry W. Hartsfield, Jr., who was recently assigned to the Office of Space Flight at NASA Headquarters as Director of the Space Flight/Space Station Integration Office.

O'Connor began his military career with the U.S. Marine Corps after graduation from the U.S. Naval Academy in 1968. He flew A-4 Skyhawk light-attack aircraft at El Toro, CA, before being assigned to the first Harrier squadron in Beaufort, SC, with whom he completed a six-month cruise aboard the USS GUAM in the Mediterranean.

After graduation from the U.S. Navy Test Pilot School, O'Connor served as a test pilot with the Naval Air Test Center's Strike Test Directorate at Patuxent River, MD. He also served as project pilot for AV-8 Harrier projects during his assignment there.

O'Connor was selected as an astronaut in 1980. He served as T-38 chase pilot for STS-3, and as Capcom for STS-5 through STS-9. His first space flight was in November, 1985, as pilot of the Space Shuttle Atlantis on mission STS-61B during which the crew deployed three communications satellites and demonstrated Space Station assembly techniques.

After the Challenger accident, O'Connor served as Assistant to the Shuttle Program Manager until February, 1988, and as Chairman of NASA's Space Flight Safety Panel until February, 1989.

In addition, O'Connor will continue to train as the commander of Shuttle flight STS-40, the space and life sciences mission SLS-1, which is scheduled for August of next year.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release

August 21, 1989
4 p.m. EDT

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-2352)

Linda Copley
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: C89-O

CONTRACTOR CHOSEN FOR NASA JSC TRAINING SYSTEMS CONTRACT

NASA has selected Link Flight Simulation Division, CAE-Link Corp., Houston, for negotiations leading to award of a contract to provide technical and engineering services for the Mission Support Directorate Training Systems at Johnson Space Center, Houston.

The proposed cost-plus-award-fee contract consists of a basic period of 6 years with priced options for four additional 1-year periods. It is anticipated that the contract will be awarded in October 1989. Link's proposed cost and fee is approximately $477 million for the 10-year period.

Major subcontractors include IBM, Federal Systems Division, Houston; Booz-Allen and Hamilton, Inc., Bethesda, Md.; and Eagle Technical Services, Inc., Webster, Texas.

Services provided by the contract consist of the development of training systems in support of the National Space Transportation System program, Space Station Freedom program and future programs; definition, design, development, acquisition, test, integration and support of training systems including the Shuttle Mission Training Facility upgrade and the Space Station Training Facility.

- end -

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Steve Nesbitt
Johnson Space Center
(713) 483-5111

For Release:
IMMEDIATE

NOTE TO EDITORS: STS-34 BRIEFINGS, CREW CONFERENCE SET

The background briefings and astronaut press conference for STS-34, the Oct. 12 flight of the Space Shuttle Atlantis, are scheduled for September 5 and 6 at the NASA Johnson Space Center in Houston.

STS-34 will deploy the Galileo spacecraft to study the planet Jupiter.

A mission overview with the lead flight director and Galileo spacecraft mission manager will begin at 12:30 p.m. CDT Sept. 5 followed at 2 p.m. by a briefing from the Galileo mission scientist of the scientific observations to the made by the planetary probe. Briefings on other payloads and experiments to be carried on Atlantis will follow. All briefings are to be held in Room 135 of Building 2 at JSC.

The astronaut crew of STS-34 will hold a press conference at 10:15 a.m. September 6, also in Room 135.

All briefings will be carried live on NASA Select television via Satcom F2R (transponder 13). Two-way Q&A will be provided at NASA Headquarters in Washington, D.C., the Jet Propulsion Laboratory in Pasadena, CA, the Kennedy Space Center in Florida, and the Marshall Space Flight Center in Huntsville, AL.

August 24, 1989

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release

Terri Sindelar
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

August 31, 1989
Embargoed until 1 p.m. EDT

RELEASE: 89-136

NASA DESIGNATES 17 SPACE GRANT COLLEGES/CONSORTIA

NASA today announced the selection of 17 universities and consortia as Designated Space Grant Colleges/Consortia in the first element of NASA's new National Space Grant College and Fellowship Program.

The program was mandated by Congress in 1987. Its first element names certain schools or consortia of schools as Designated Space Grant Colleges/Consortia. These designated institutions, which are already significantly involved in space-related activities, will receive grants and fellowships. The designated colleges/consortia were selected based on a competitive evaluation of the institutions' existing aerospace activities as well as the quality of their plans to strengthen the national educational base for science, math and technology.

The original program announcement forecast the number of expected space grant college designations as no more than 12, due to anticipated budget limitations. However, NASA Administrator Richard H. Truly decided to extend designations to 17 colleges/consortia in response to the high quality of the proposals received and as an indicator of NASA's desire to get this important program off to a strong start.

Truly said, "I expect this program to have a very significant educational impact throughout the nation, by enhancing the training of future scientists and engineers at the university level, as well as by improving the teaching of science, mathematics and technology at the elementary and secondary levels."

The Designated Space Grant Colleges/Consortia will provide leadership and form partnerships with other universities, government and industry to better understand, develop and use space resources through research, education and public service functions.

- more -

The 17 designated universities and consortia, listed in alphabetical order, are: Alabama Space Grant Consortium; Arizona Space Grant College Consortium; California Space Grant Consortium; Colorado Space Grant Consortium; Cornell Space Grant Consortium; Florida Space Grant Consortium; Georgia Institute of Technology; Aerospace Illinois Space Grant Consortium; The Johns Hopkins Space Grant Consortium; Massachusetts Institute of Technology; Michigan Space Grant College Program; Ohio Aerospace Institute; Pennsylvania State University; Rocky Mountain Space Grant Consortium; Texas Space Grant Consortium; Virginia Space Grant Consortium; and the University of Washington. NASA expects to designate additional Space Grant Colleges/Consortia in future years as funds become available and as schools expand their capabilities in the space area.

These Designated Space Grant Colleges/Consortia will receive funding for 5 years. In fiscal year 1989 each designee will receive $75,000. In subsequent years, the institutions will receive up to $225,000 per year and are expected to obtain, as a minimum, matching non-Federal funds. In addition, these designated institutions will receive $100,000 funding to support fellowships for undergraduate and graduate students beginning in fiscal year 1990.

"The National Space Grant College and Fellowship Program will help maintain America's leadership in aerospace research, training and education," Adm. Truly said. "The investment in these universities and consortia will greatly impact and nourish all levels of education. I am very pleased with the growing aerospace education programs and the strong desire of universities to expand and coordinate these activities. In light of the President's recently announced space exploration initiative, this program will be key to attracting and developing future generations of the most talented engineers and space scientists."

The National Space Grant College and Fellowship Program comprises three elements: (1) designation of Space Grant Colleges/Consortia which will provide for a national network of universities and colleges; (2) awards to support space grant programs at other institutions that will expand participation of colleges/universities/consortia that have not been as extensively involved in aeronautics and space research and education; and (3) space grant fellowships that will be made available to students at institutions selected in the first two elements. The first of the elements is the subject of this announcement. The second and third elements of the National Space Grant College and Fellowship Program will be initiated in fiscal year 1990.

A list of consortium institutions can be obtained by phoning the NASA Headquarters Newsroom on 202/453-8400.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Linda Copley

August 31, 1989

RELEASE NO. 89-045

JSC CONTRACTS FOR ENGINEERING COMPUTATION FACILITY WITH GRUMMAN DATA SYSTEMS

NASA's Johnson Space Center has entered into a contract with Grumman Data Systems Corporation, Woodbury, NY, for an Engineering Computation Facility (Class VI Computer System). The system will be located in JSC's Bldg. 46 Computer Facility.

The firm-fixed-price contract is for the period of August 25, 1989, through September 30, 1990, with a value of $11,118,323. If all subsequent options are exercised the total firm-fixed-price will be $47,682,033, for a period not to exceed 60 months.

The contract is an agreement for lease-to-ownership of the Class VI system and includes installation and integration of the system components, as well as analyst support services. NASA will own the equipment in the event that the renewal options are exercised.

The contract was awarded as a result of conversion of a two-step invitation for bid to a single source negotiated procurement.

The Engineering Computation Facility, "a supercomputer," was acquired by JSC for engineering analysis and numeric simulation in the areas of stress, fluid dynamics, thermodynamics, aerodynamics, guidance, navigation, and control of large spacecraft structures.

The use of this supercomputer will allow JSC's engineering and scientific staff to improve their computational capability by reducing calculation times significantly. The resulting improved analyses techniques will provide better definition of expected loads and help increase spacecraft performance, which may result in larger payloads and higher orbits.

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Selby
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

Sept. 6, 1989
4 p.m. EDT

Linda Copley
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: C89-T

CONTRACTOR SELECTED FOR JSC MISSION SYSTEMS SERVICES

The National Aeronautics and Space Administration has selected Ford Aerospace Corp., Houston, for final negotiation leading to a contract to provide technical and engineering services related to mission systems in support of the Mission Support Directorate at the Johnson Space Center, Houston.

The proposed cost-plus-award-fee contract consists of a basic period of 6 years with priced options for 4 additional 1-year periods. It is anticipated that the contract will be awarded in November 1989. Ford's proposed cost and fee is approximately $469 million for the 10-year period.

Major subcontractors include Unisys, Inc., Federal Information Systems, Houston; IBM Corp., Houston; and Booz-Allen and Hamilton, Inc., Bethesda, Md.

Services to be provided by the contract consist of the development of mission systems in support of the National Space Transportation System program, Space Station Freedom and future programs; and definition, design, development, acquisition, test, integration and support of mission systems including the Shuttle Mission Control Center upgrade and the Space Station Control Center.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey E. Carr
RELEASE NO. 89-046

9/08/89

ASTRONAUT CLASS OF 1990 SELECTION UNDERWAY

Screening of applications for the astronaut class of 1990 is underway in the first of what will become regular bi-annual selections. According to statistics compiled by the Astronaut Selection Office at the Johnson Space Center, nearly 2,500 applications were received prior to the June 30 deadline.

The two-year hiring cycle was adopted last year in order to assure NASA's ability to meet flight crew requirements while minimizing the impact on center resources, according to Donald Puddy, Director of Flight Crew Operations.

The Astronaut Selection Board is chaired by Puddy, and members include Director of Life Sciences Carolyn Huntoon, Chief of Equal Opportunity Programs Joseph Atkinson, Chief of the Astronaut Selection Office Duane Ross, and a number of senior representatives of the Astronaut Office.

"When you interview a hundred people or so, you tie up key center personnel full-time for up to five weeks", said Puddy. "With the standardized two-year cycle, managers know what to expect and can plan for the increased workload."

Preliminary screening is done by the Astronaut Selection Office and has already been completed, with 1,945 applicants meeting the minimum qualifications for pilots or mission specialists.

The second screening phase consists of a more detailed review of applications by a JSC rating panel to determine which applicants are most exceptionally qualified, based on such factors as performance, acquired responsibility, and applicability of training.

Applications of highly qualified individuals are then turned over to the selection board for assessment of their academic and professional experience and references, plus a review by JSC flight surgeons of applicants' medical forms. The overall rating effort is expected to produce about 100 top candidates.

-more-

Beginning this month, the top-rated applicants will be invited to JSC in groups of about 20 for interviews and medical evaluations. In this final phase of screening leading to the selection, applicants will be evaluated for such qualities as adaptability, communication skills, and teamwork.

In addition to being sized up by NASA flight surgeons and members of the board, applicants will have a chance to learn something more about the jobs they are seeking through orientation briefings and tours.

"We really want to pick people who know what they're signing up for," said Steve Hawley, Deputy Chief of the Astronaut Office and a member of the selection board. "We encourage them while they're here to meet and talk with as many current astronauts as they can."

The most common question, according to Hawley, seems to be how their time would be spent should they be selected. "One of the biggest misconceptions is the extent to which it is a program support job. Most think that they'll be flying and training in simulators much more than they will."

The opportunity to meet and talk with potential new team members is welcomed by current astronauts, said Hawley. "Most people remember what it was like when they applied, and they want to help out."

The first group of applicants is due to arrive at JSC for orientation and interviews the week of September 18.

"We get a little bit smarter about the way we do this, with each selection," said Duane Ross, who expects this year's selection task to be comparable to 1987. The number of applications received for consideration in the 1987 selection was 2,062 with 1,846 meeting minimum qualifications. From 117 interviewees, 15 were finally selected as astronaut candidates.

Current plans are to announce the class of 1990 in January, with the new hires reporting here in July. Like their predecessors, they will be subject to one year of candidate training and evaluation before receiving technical assignments and full astronaut status.

Ross expects this year's effort to produce anywhere from 15 to 20 new top-notch JSC employees.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
RELEASE NO. 89-047

September 14, 1989

FIRST GROUP OF PROSPECTIVE ASTRONAUTS TO ARRIVE AT JSC

The first of several groups of prospective astronauts will arrive at the Johnson Space Center on Monday, September 18, to begin a week of orientation, interviews, and medical evaluations.

Approximately 100 of nearly 2500 total applicants are expected to be interviewed here over the next several weeks for a chance to be among the final 15 to 20 who will be named as astronaut candidates in January.

The first group of 20 will consist of Paul J. Bertsch of the Johnson Space Center; Jay C. Buckey, M.D., of Dallas, TX; Leroy Chiao, Ph.D., of Danville, CA; Michael R. Clifford (Maj., USA) of Seabrook, TX; David B. Cripps (Maj., USA) of Edwards, CA; Steven R. Hamel (LCdr, USN) of Ft. Washington, MD; Bernard A. Harris, Jr., M.D., of the Johnson Space Center; David E. Hollowell, Ph.D., of Los Alamos, NM; James A. Jones (LCdr, USN) of Virginia Beach, VA; Michael E. Lopez-Alegria (Lt., USN) of Waldorf, MD; Ellen Ochoa, Ph.D., of the Ames Research Center; Thomas P. Phelan (Lt., USN) of Hollywood, MD; Kent V. Rominger (Lt., USN) of California, MD; James C. Seat (Maj., USAF) of Edwards, CA; Mark D. Shackelford (Maj., USAF) of Edwards, CA; Richard A. Stevens (Maj., USAF) of Edwards, CA; Keith A. Taylor, Sc.D., of Copley, PA; Donald A. Thomas, Ph.D., of the Johnson Space Center; Carl E. Walz (Capt., USAF) of Henderson, NV; and Dorothy J. Zukor, Ph.D., of NASA Headquarters.

Astronaut selections are conducted on a bi-annual basis. The number of candidates selected every two years will vary based on flight rate, program requirements, and attrition.

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NOTE TO EDITORS:

The following non-interference photo opportunities are planned for Monday and Tuesday at the Johnson Space Center. Those who wish to participate should contact Jeffrey Carr, 713/483-5111, for further details.

Mon., Sept. 18:

0645 Press van leaves Bldg 2 for Bldg 37
0700 Astronaut Applicants arrive at JSC, Bldg 37
0720 Press van returns Bldg 2

Tues., Sept. 19:

0930 Press van leaves Bldg 2
1000 Ellington (Applicants familiarization tour)
1100 Bldg 9A/B (Applicants familiarization tour)
1130 Press van returns Bldg 2

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Lisa Fowler
Kennedy Space Center, Fla.
(Phone: 407/867-2468)

Nancy Lovato
Ames-Dryden Flight Research Facility, Edwards, Calif.
(Phone: 805/258-8381)

EDITORS NOTE: STS-34 NEWS MEDIA ACCREDITATION

NASA is accepting accreditation requests for news media to cover the Space Shuttle Atlantis mission (STS-34), currently targeted for launch no earlier than October 12.

All news organizations wishing to send representatives to cover STS-34 must send a letter requesting accreditation for the mission. Previous requests for credentials do not apply to subsequent missions and new letters must be submitted.

Requests for credentials, launch through landing, should be submitted to:

NASA John F. Kennedy Space Center
PA-PIB/Accreditation
Kennedy Space Center, FL 32899

Please indicate the NASA location(s) from which you plan to cover the mission. Media planning to cover the landing only should submit their requests for accreditation to:

NASA Ames-Dryden Flight Research Facility
Attn: DXI/Public Affairs
P.O. Box 273
Edwards, CA 93523

Requests for accreditation must be made by a supervisory official other than the applicant on company letterhead, clearly indicating the assignment (reporter, photographer, technician, etc.) and social security number of each individual. Freelance writers and photographers must offer proof of assignment or evidence of past professional activity. The accreditation will be valid for all NASA news centers.

NASA ground rules for newspersons covering the mission are:

- NASA can make no travel or housing arrangments.
- Only working newspersons will be accredited at the news centers. Publishers and other news and advertising executives will not be accredited. These individuals should apply to NASA Public Services Division (LP), NASA Headquarters, Washington, D.C., 20546.
- Friends, dependents or relatives not covering the mission will not be accommodated.
- No one under 16 years of age will be allowed at the press site under any circumstances. Violation of this rule will result in cancellation of press site privileges for responsible parties.
- Philatelic publications must meet the criteria for general publications or be national publications of recognized philatelic organizations. Representatives of catalogs, newsletters, local clubs or profit seeking projects will not be accredited. Conducting philatelic business, other than reporting, is not permitted.
- College news media are limited to two accredited correspondents.
- You must present your letter of acceptance and a photo identification to obtain a news media badge at the appropriate center.
- Violations of the rules will result in loss of press badge and press site privileges.

end

NASA News

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AC 713 483-5111

For Release

Kelly Humphries
Release No. 89-050

September 29, 1989

RESEARCHERS EVALUATE ETHNIC FOODS FOR USE IN SPACE

The ultimate in take-out food -- when it goes into orbit you might even call it way-out take-out food -- may be assuming a more international flavor in the future.

When astronauts are living aboard Space Station Freedom, at a lunar base or on a ship headed toward Mars, they may be able to dine on regional delicacies from France, Russia, Canada, Japan and other countries as a result of a research project now filling the Food Systems Laboratory at Johnson Space Center (JSC) with tantalizing aromas from around the world.

Dr. Selina Ahmed, an associate professor of human nutrition at Texas Southern University, is principal investigator for the International Food Patterns for Space Foods research project that is looking at the taste, aroma, nutritional value and packaging of ethnic cuisine from a variety of countries.

The program, funded through JSC's Equal Employment Opportunity Office, is expected to play a role in providing nutrition research for space explorers of different ethnic backgrounds, she said.

"Our main purpose is to enhance morale with familiar foods," said Ahmed, a native of Bangladesh. The research effort is divided into four basic tasks.

The first task, Ahmed said, was identification of the dietary patterns to be studied, based on the nationalities of astronauts who have flown in space and who are expected to fly on space station as international partners. She and her army of tasters started with French and Russian foods and plan to move on to Japanese and German foods this month. Eventually she aspires to study the dietary patterns of every country in the world.

The next research task was evaluation of food items from the identified dietary patterns. The researchers randomly selected dishes from several dietary patterns and began taste tests.

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For the first round of taste tests, Ahmed said, she and graduate assistant Pauline Cornish and undergraduate assistant Amanda Cox prepared 38 Russian food items and at least 35 French and Canadian food items. These were evaluated on the standard Food Systems Laboratory's score sheets by JSC volunteers with the appropriate ethnic background or experience with foreign foods. Last Friday, the test kitchen was brimming with Japanese dishes.

The food items fall into categories of salads, soups, entrees and desserts. Some of the French dishes tested were French onion soup, veal scallops with crab and broccoli, fresh peas braised with onion and lettuce, and braised red cabbage in red wine with chestnuts. Russian dishes included Turkmenian pilaf with chicken, Caucasian lamb stew, borsch and kapoosta. Japanese dishes included shrimp tempura, fried lotus root and sushi.

Task three involves packaging and shelf-life studies. The foods that are approved by the taste-testing panels will be packaged, stored and tested at three-month, six-month and nine-month intervals. If they pass the storage test, they can be recommended for acceptance into the Space Nutrition Program, which will assess the dishes' nutritional value. Ahmed said her group hopes to make its first recommendations in May.

Dr. Charles Bourland, subsystem manager for space station food and the grant monitor, said the broad purpose of the research is to find some foods that are internationally acceptable, that astronauts from any country can enjoy. The idea, he said, is to develop a more standardized selection of menu items from which astronauts may make their selections. This would reduce the need to develop individual menus for each astronaut or crew he said, adding, however, that he suspects some catering to individual tastes will still be necessary.

Ahmed said her research also should help diet-oriented members of the astronaut health care team better understand and assist patients from other cultures during illness. The data should be useful to those who develop food plans for long-duration flights involving manned missions to Mars and the establishment of lunar colonies.

As the research project intensifies, she said, it will begin to explore the adaptability of plant varieties common to ethnic food groups to closed loop ecological systems, which are being studied for use on long-duration spaceflight.

-30-

Note: NASA photographs are available in conjunction with the release. Contact the Still Photo Library, 483-8603, and ask for photos S89-45615, S89-45618 and S89-45619.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
RELEASE NO. 89-051

September 28, 1989

SECOND GROUP OF ASTRONAUT HOPEFULS TO ARRIVE AT JSC

The second of an expected five groups of astronaut applicants will arrive at the Johnson Space Center for orientation, medical evaluations, and interviews on Monday, October 2. Each group consists of about 20 individuals who have a chance to be one of 15 to 20 finally selected as astronaut candidates in January.

The group consists of USAF Capt. Mark E. Almquist of Lancaster, CA; Kenneth Cockrell of the NASA Johnson Space Center in Houston, TX; USAF Maj. Eileen M. Collins of Edwards AFB, CA; Javier de Luis, Ph.D., of Cambridge, MA; Dean B. Eppler, Ph.D., of Las Vegas, NV; USAF Maj. Lance C. Grace of Holloman AFB, NM; USAF Capt. William G. Gregory of Edwards AFB, CA; John M. Grunsfeld, Ph.D., of Pasadena, CA; Butler P. Hine III, Ph.D., of Cupertino, CA; Benjamin D. Levine, M.D., of Dallas, TX; Thomas P. Moore, M.D., Ph.D., of Minneapolis, MN; David A. Noever, Ph.D., of Huntsville, AL; USAF Capt. Mark L. Polansky of Niceville, FL; USAF Capt. Mark W. Stephenson of Newburgh, NY; William C. Stone, Ph.D., of Derwood, MD; USN LCdr. Sharon K. Wallace of Bonita, CA; USMC Maj. Terrence W. Wilcutt of Patuxent River, MD; USAF Maj. Robert J. Wood of Niceville, FL; Albert Yen of the NASA Jet Propulsion Laboratory in Pasadena, CA; and USMC Capt. Peter E. Yount of Lexington Park, MD.

Applicants receiving interviews were chosen from nearly 2500 total applications received prior to the June 30 deadline. Those received after the deadline are eligible for consideration for the next selection in 1992.

The number of candidates selected every two years will vary based on flight rate, program requirements, and attrition.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release
September 29, 1989

Jeffrey Carr
RELEASE NO. 89-053

ASTRONAUTS NAMED TO SHUTTLE CREWS: STS-39 (IBSS), STS-41 (ULYSSES), STS-45 (ATLAS-01), STS-46 (TSS-1), STS-47 (SL-J)

Astronaut crew assignments have been made for five Space Shuttle missions in late 1990 and early 1991, including the first assignments from the astronaut class of 1987, the first U.S. Coast Guard astronaut to fly, the first European Space Agency (ESA) astronaut to be named as a mission specialist, and the first black woman to be selected for space flight.

The crew of STS-41, set for October of 1990, will be commanded by USN Capt. Richard N. Richards. USMC Lt. Col. Robert D. Cabana has been named as pilot. Mission specialists are USN Capt. William M. Shepherd, USCG Cmdr. Bruce E. Melnick, and USAF Maj. Thomas D. Akers. Melnick and Akers will become the first of the astronaut class of 1987 to fly in space. At an orbital altitude of 160 miles, the crew of Atlantis will deploy the space probe ULYSSES on its way to a major solar science harvest in polar orbit around the sun.

USN Capt. Michael L. Coats will command the crew of Discovery on STS-39, an unclassified Department of Defense mission scheduled for November of 1990. The pilot will be USAF Maj. L. Blaine Hammond, Jr. Mission specialists are Gregory J. Harbaugh and USAF Maj. Donald R. McMonagle. Previously assigned as mission specialists for the flight are USAF Col. Guion S. Bluford, Jr., Richard J. Hieb, Ph.D., and Charles Lacy Veach. During the eight-day mission, the crew will deploy, rendezvous, and retrieve the free-flying Infrared Background Signature Survey (IBSS), a sensor experiment to gather signature data on a variety of infrared, visible, and ultraviolet sources.

Kathryn D. Sullivan, Ph.D., and C. Michael Foale, Ph.D., have been named as mission specialists for the Atmospheric Laboratory for Applications and Science (ATLAS-01) mission, STS-45. In March of 1991, the crew of Columbia will spend nine days in orbit conducting studies of the sun and of the Earth's atmosphere in efforts to better understand the effect of solar activity on the Earth's climate and environment.

ATLAS-01 payload specialists Michael L. Lampton, Ph.D., of the University of California at Berkley, and Byron K. Lichtenberg of Payload Systems, Inc. were named in 1984. Additional crew members will be announced later.

In another partial crew assignment, USN Cmdr. Robert L. "Hoot" Gibson has been named to command the crew of STS-46. NASA astronauts Jeffrey A. Hoffman, Ph.D., and Franklin R. Chang-Diaz, Ph.D., plus Claude Nicollier, a European Space Agency (ESA) astronaut assigned to NASA, have been named to fly as mission specialists. During their seven-day mission, the crew of Atlantis will deploy the European Retrievable Carrier (EURECA), a ESA-sponsored free-flying science platform which will be retrieved and returned to Earth eight months later. This first flight of the EURECA features five multi-user facilities serving some 45 principle investigators in the materials and life sciences. In addition, the crew will demonstrate the Tethered Satellite System (TSS), a joint project between NASA and the Italian space agency, Agenzia Spaziale Italiana (ISA). The Shuttle-attached TSS will provide for the deployment, operation, and retrieval of a data gathering probe, through the use of a tether system which provides constant physical and electrical connection and RF communication between the probe and the Shuttle. Additional crew members will be named later.

Mission specialists have also been named to the STS-47 crew for Spacelab-J, a joint venture between the United States and Japan to conduct experiments in life sciences and materials processing. USAF Lt. Col. Mark C. Lee, N. Jan Davis, Ph.D., and Mae C. Jemison, M.D., will fly aboard Discovery on that mission in June of 1991. Jemison, assigned as a payload specialist, becomes the first black woman to be selected for a space flight. Other crew members will be named later.

STS-41

Richards, who will make his second space flight, his first as a commander, flew as pilot on STS-28. He was born August 24, 1946, in Key West, FL, but considers St. Louis, MO, his hometown.

Cabana will make his first flight in space. He was born January 23, 1949, in Minneapolis, MN.

Shepherd will make his second flight, having flown as a mission specialist on STS-27. He was born July 26, 1949, in Oak Ridge, TN.

Melnick will make his first space flight. He was born December 5, 1949, in New York, NY, but considers Clearwater, FL, his hometown.

Akers will make his first flight in space. He was born May 20, 1951, in St. Louis, MO, but considers Eminence, MO, his hometown.

STS-39

Coats makes his third space flight, his second as commander. He flew previously as pilot of STS-41D and as commander of STS-29. Coats was born January 16, 1946, in Sacramento, CA, but considers Riverside, CA, his hometown.

Hammond will make his first flight. He was born January 16, 1952, in Savannah, GA.

McMonagle, selected in 1987 as a pilot, will make his first flight as a mission specialist. He was born May 14, 1952, in Flint, MI.

Harbaugh will also make his first flight in space. He was born April 15, 1956, in Cleveland, OH, but Willoughby, OH, is his hometown.

STS-45

Sullivan, currently in training for her second space flight, STS-31, will make her third flight. She flew previously as a mission specialist on STS-41G. Sullivan was born October 3, 1951, in Paterson, NJ, but considers Woodland Hills, CA, her hometown.

Foale, an American citizen born in England, will make his first flight in space. He was born January 6, 1957, in Louth, England, but considers Cambridge, England, his hometown.

STS-46

Gibson, making his fourth flight, has flown previously as pilot on STS-41B, and as commander on STS-61C and STS-27. He was born October 30, 1946, in Cooperstown, NY, but Lakewood, CA, is his hometown.

Hoffman, who will make his third flight, is currently in training for his second Shuttle mission, STS-35. He also flew as a mission specialist on STS-51D. Hoffman was born November 2, 1944, in Brooklyn, NY, but considers Scarsdale, NY, his hometown.

Chang-Diaz, currently preparing for Shuttle mission STS-34, will make his third flight also. He flew previously as a mission specialist on STS-61C. Chang-Diaz was born April 5, 1950, in San Jose, Costa Rica.

Nicollier, making his first flight, will be the first ESA astronaut to fly as a mission specialist. Under a special agreement between NASA and ESA, he was assigned to receive mission specialist training at NASA in 1980. He was born September 2, 1944, in Vevey, Switzerland.

STS-47

Lee flew as a mission specialist on STS-30, and will make his second flight in space. He was born August 14, 1952, in Viroqua, WI.

Davis, making her first space flight, was born November 1, 1953, in Cocoa Beach, FL, but considers Huntsville, AL, her hometown.

Jemison will make her first flight in space. She was born October 17, 1956 in Decatur, AL.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Pam Alloway
RELEASE NO. 89-055

October 12, 1989

PRIVATE MEDICAL TALK POLICY SET FOR SPACE MISSIONS

Medical consultations between astronauts in space and NASA physicians on earth will become a routine part of future Space Shuttle flights to help improve the understanding and provide timely treatment of initial space motion sickness symptoms.

A private medical communication (PMC) will be scheduled between Shuttle crew members and Mission Control Center flight surgeons during the pre-sleep periods on the first two days of each flight beginning with STS-34 this month. Additional consultations may be requested by either the crew or the flight surgeons.

"The communication will assure the most effective treatment of space motion sickness symptoms during the first two days of flight when the condition is most prevalent," said Dr. Jeff Davis, chief of JSC's Medical Operations Branch.

"While symptoms vary from one person to another," Davis said, "most cases are mild and constitute little more than an inconvenience to the crew member. Given the variation in symptoms and available treatments, we felt it would be useful to plan routine consultations for the first two days of each mission."

The consultations will be confidential because of the physician-patient relationship and privacy laws. If a crew health problem is determined to affect a mission adversely, the flight surgeon will prepare a statement for public release which addresses the nature, gravity and prognosis of the situation. Information beyond that required to understand mission impact will not be released.

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NASA News

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For Release:

James Hartsfield
October 12, 1989
RELEASE NO. 89-056

ODOR PANEL SNIFFS OUT PROBLEMS SO ASTRONAUTS DON'T

When success smells sweet onboard a Space Shuttle, it is in large part due to noses in the New Mexico desert that sniffed it first.

The "odor panel" at the Johnson Space Center's White Sands Test Facility (WSTF), located near Las Cruces, New Mexico, is a group of about 20 volunteers who ensure that America's manned space program doesn't stink. All materials that go into the Shuttle's crew compartment must pass these noses before they make it to space.

It's not as strange as it sounds, or maybe it is -- but it's an indispensable test. A bad odor permeating an enclosed cabin for several days can become unbearable, and it could be a catalyst for motion sickness. It also could distract crew members from the business at hand, business that is too critical and valuable for such avoidable distractions.

The importance of such testing can be underscored by a Soviet incident in 1976. During the Salyut 5/Soyuz 21 spaceflight, cosmonauts experienced an unbearable acrid odor coming from their environmental control system and were forced to return to Earth before completing their mission.

In a NASA incident, the odor panel prevented a serious odor problem from occurring on Apollo 13. The charts and maps printed for that flight were tested by the sniffers only a short time prior to launch, and a new ink used by the printer on them caused blisters in the noses of all five testers. Even though the maps had been checked for toxicity, "the human nose is so much more sensitive than the analytical equipment we had at the time that the machines couldn't detect it," said Harry Johnson, manager of WSTF's Analytical, Chemical and Environmental Lab.

-more-

Materials that will go into the Shuttle's crew compartment first are checked thoroughly for toxicity and various other properties before they go under the volunteer noses. The more refined analytical equipment of today has virtually eliminated instances akin to Apollo 13, but the odor panel, whose insignia is a large-nosed skunk, can eliminate items if they find them objectionable. The job is serious, and those who conduct it and participate in it are proud of their work.

"Even though it is a volunteer project, I enjoy doing it," said Bobby Gomez, an odor panel veteran of the past 18 years. "It goes for a good cause, so that the astronauts can feel comfortable that someone's tested it all. I wouldn't want them to go through a problem."

It also is now a tradition -- the odor panel has been in existence since 1967. Literally every item that has flown in the crew cabins of NASA spacecraft since that time has passed the nosy examination.

All told, the odor panel may have smelled as many as 6,000 materials in its 22-year history, Johnson said. "The testing is set up for the safety of the human volunteers," he explained. "The human nose is very sensitive to some compounds and very insensitive to others. There's no substitute for its observations."

Currently, an average of nine materials are tested each week at WSTF, three in each of three sessions. A typical assortment may include adhesives, fabrics, potting compounds, plastics, paint, inks, shaving lotion or deodorant, Johnson said.

"Most of the time it is a material that we test, something that will be used as a component of something else," added Betty Hoffman, odor panel test conductor. "But every once in a while you get a glove, a razor, something recognizable."

The odor panel volunteers are all WSTF workers with less unusual forms of every day work. "I think it's a break from the routine for them," Hoffman said. "It's something worthwhile. It's a direct contribution to the shuttle program, something you can do personally."

Noses are given extra care on the day a test will be conducted: volunteers don't smoke that day, don't chew gum and don't wear heavy perfume or cologne. They don't eat anything for a half-hour prior to the test. The tests are conducted early in the day, so noses will be fresh from a good night's sleep.

Just to get to that point, to be selected for the odor panel, isn't easy. You have to be a bit gifted in the olfactory department. Members must go through a nose calibration every four months, sniffing a set of 10 odor samples: seven standard odors and three of only water. Members must be able to isolate the odorless water samples.

"Some people just can't pass that test, something is lacking in their sense of smell," Johnson said. "It's really not something you can train, you either have it or you don't."

The day of a test, noses are again calibrated on three samples: two with standard, distinct odors and one of water.

The tests are conducted in a special room protected from pervasive outside smells, and five sniffers grade each sample independently. The samples are subjected to the same heat and humidity they will experience aboard the shuttle and sealed in a glass jar, from which a sample sniff is drawn for each member. The grading scale includes "not detectable," "barely detectable," "easily detectable," "objectionable" and "irritating." A sample will fail the test if the average of all five sniffers falls halfway or more between an "easily detectable" and an "obectionable" rating, Johnson said.

"Normally, the ratings given by the individual odor panel members are very close, although they often differ slightly. That's why we do five people and take an average," he added. "People are very subjective on what smells objectionable, some are more acute than others. And the odor panel attempts to match the variety of sensitivities you would find among astronauts and everyone else."

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For Release

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October 3, 1989

Kari Fluegel
Johnson Space Center, Houston
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RELEASE: 89-157

NASA SEEKS SPACE STATION ASSURED CREW RETURN VEHICLE PROPOSALS

NASA today released a request for proposals (RFP) for definition studies of a new vehicle that would serve as a lifeboat for Space Station Freedom, providing the capability for assured crew return from space. Deadline for proposal submission is Nov. 16, 1989.

The Assured Crew Return Capability (ACRC) System is conceptualized as a vehicle, continuously berthed at Space Station Freedom, for crew return to Earth in event of a medical emergency or other contingencies which cannot be supported by the Space Shuttle, for any reason, including grounding of the Shuttle fleet.

The RFP encourages the use of existing technologies for a simple and reliable ACRC vehicle. ACRC necessitates that a vehicle be berthed at the station for immediate use and be reliable enough to be maintained at Freedom for long periods of time before use.

Since the beginning of the manned space program, NASA has been dedicated to assured crew return capability for its space vehicles. In the Mercury and Gemini program flights, the first orbit's trajectory assured the return of the spacecraft. Apollo missions were flown on lunar "free return" trajectories where the spacecraft could circle the Moon and return to Earth automatically. During Skylab missions, an Apollo spacecraft was docked at the facility whenever crewmembers were aboard.

NASA will award two parallel contracts providing for a $1.5 million, 6-month effort to prepare final ACRC system requirements, to assess feasible configurations and to examine cost, risks and schedules.

- more -

The contracts also will include an option, valued at $4.5 million, which, if exercised, will provide for systems definition and preliminary design of the ACRC system. The contracts (basic contracts plus options), with a potential value of $6 million each, will support efforts leading to initiation of full-scale development of a vehicle in 1992.

The definition studies will be managed by NASA's Johnson Space Center, Houston.

- end -

EDITORS NOTE: The Assured Crew Return RFP is available for press review in the Johnson Space Center newsroom and will be available in the Headquarters newsroom within 3 days.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release

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Oct. 13, 1989
Immediate

Release No.: 89-058

JSC'S INTELLIGENT TUTORING SYSTEM ENHANCES HIGH SCHOOL PHYSICS

In the midst of a busy classroom, a physics student watches his computer flash to life.

"A roller coaster moves along a horizontal surface and is observed to slow from 20 m/s to a stop in a distance of 50.0m. What acceleration did the roller coaster experience?"

The student slides the computer's mouse across his desk, selecting formulas and inserting values, when a beep sounds and the moustached face of one of the system's designers appears on the screen to coach him through a rough spot.

The student then continues with his calculations, solves the problem and moves on to the next.

NASA technology is at work once again, this time in the classroom.

The Intelligent Tutoring System helping the student through the roller coaster problem is one of eight technology spinoffs under development through JSC's Technology Utilization Office. The system adapts to high school physics the artificial intelligence technology used to train flight controllers.

In the past, classroom computers have been used primarily for drill and practice.

"Like a teacher's helper holding up flash cards," said Bowen Loftin, a University of Houston physics professor working on the system in JSC's Software Technology Branch.

The physics tutor focuses on developing students' problem solving skills rather than doing the work for them. It gives guidance, not answers.

After a student accesses the program, thus creating a progress record that the teacher can review later, he or she is

-more-

presented with a physics problem and an illustration to help in visualizing the problem. The student then must identify the type of problem, choose the correct formula and insert the correct values for the variables.

If the student makes a mistake, Loftin's face appears to remind him of the proper problem-solving methods or procedures. If the student needs help, he or she punches a key and may be greeted by a frustrated scream from the computer as the help menu materializes on the screen.

When students have problems in physics classes, the breakdown does not occur in the delivery of concepts but in the problem solving arena where frustration levels are immense, Loftin said.

Beginning students need more coaching to get through the problem solving but in classes of 20 or more students, a teacher does not have enough time to give each student adequate guidance and attention, he said.

It is at that point the tutoring system enters. The system monitors the student and intrudes when appropriate.

The system does not teach concepts and is not designed to take the place of the teacher or the textbook, said Beverly Lee, the Clear Creek High School physics teacher who is assisting the in system's creation.

"It's the next step of technology in the classroom," Lee said.

The project, which is about one year along in a three-year development process, is supported by the Software Technology Branch, JSC's Technology Utilization Office, the University of Houston, Apple Computer's Classroom of Tomorrow, Pennzoil Products Company and the Clear Creek Independent School District.

"I see it as a three-way partnership," Lee said. "It's government, education and industry coming together."

"We have tried to clone ourselves and our philosophy," Loftin said. "It behaves like we (Loftin and Lee) would behave. ... We (system creators) are taking good people and multiplying and magnifying their expertise."

The system was introduced in Lee's classroom briefly at the end of the 1988-89 year. A small group of students provided input for further development during the summer, and the revised edition has been auditioned in front of Lee's Physics I Honors class already this year.

Designers hope the Intelligent Tutoring System will begin to stem the ever-increasing flow of both physics students and teachers from the country's educational system.

During the 1987-88 school year, the most current data, Texas certified only 45 teachers for high school physics in 1,071 school districts across the state, said Clyde Howie, systems

analyst in the Texas Education Agency's division of teacher certification. That number was down from 67 in 1985-86 and from 56 in 1986-87, he said.

"And we don't believe that trend will turn upward," Howie said.

The tutoring system can help educators who are not trained as physics teachers, but who are presently teaching those classes, meet the needs of their students.

"This could be a valuable asset for teachers who know the rudiments of physics, but don't know where to go from there," Lee said.

The system also can address the decreasing numbers of students entering careers in the sciences, math and engineering. Loftin said he loses about 50 percent of his college students in the first semester of his physics course.

"This is my little attempt to reverse that trend," Loftin said.

Lee also expects the system to have a positive impact.

"It enhances understanding and decreases anxiety," she said, "and by enhancing understanding and decreasing anxiety a career in that area doesn't seem so unattainable."

The system will bring intelligent training systems full circle. The first applications of the technology were in the academic circle but were not completely successful, Loftin said. NASA took that technology, improved it and implemented a training system for flight controllers. Now it's returning to academia, and so far is receiving high grades.

"It teaches you a lot," said Vanessa Plumecocq, a senior. "You can have help, if you need it."

The tutoring system builds a model of each student, adapting to individual's abilities, behavior and progress. Students are then able to work at their own pace.

"You don't feel stupid," said Anh-Thu Pham, a junior. "You can ask it questions and you don't feel uncomfortable."

The personal prompting is important to students because when a student makes a mistake, it is not done in front of a peer, Lee said.

"It takes some of the dread and fear away from physics," she said.

The system, however, is not directed only at students who regularly make mistakes.

Chris Bauch, a junior who helped refine the system over the summer, said the individual approach allows a well prepared student to progress rapidly and slower students to work at their own pace without holding others back.

"It'll be very useful as soon as they have them in every class in the future," he said.

Artifical intelligence is the emulation of human capability through computer software and hardware made possible by the recent advances and evolution of microprocessors.

"It is exciting to be a part of a spinoff such as this that has the potential to revolutionize education and training," said Bob Savely, the Software Technology Branch manager of the activity.

The basic knowledge for artificial intelligence has been around since the mid 1950s, but the complexity of the programs prohibited its use outside the realm of research, Savely said.

Now, the more powerful technology is becoming more accessible, making this type of tutoring system available to the general public.

The potential for expansion of the Intelligent Tutoring System is exceptional. Future versions might include video action to provide students with moving examples rather than static pictures and provide students with tools to make measurements, turning the computer into a true laboratory experience.

Also, at least one additional spinoff of the physics tutor already is anticipated.

Loftin said an algebra program was built as part of the physics tutor. That part of the program could be easily produced independently.

"We could have a whole spectrum of products," Loftin said, "then you have the real ability to affect education. I can't think of a better use of NASA technology."

-30-

Forecast prepared at 3:00 p.m. Sunday, Oct. 15, 1989

Predicted weather for launch at 12:57 p.m. on Tuesday, Oct. 16:

Clouds: Scattered cumulus at 3,000 with tops to 8,000 feet
Scattered cumulus at 10,000 with tops to 13,000 feet
Broken cirrus layer at 25,000 feet extending to 29,000

Wind: Southeast at 10 knots, gusts to 15 knots

Temperature: 83 degrees Dewpoint 72 degrees

Relative Humidity: 70%

Visibility 7+ miles

JSC

Probability of violating launch weather constraints: 30%
Factors: thunderstorms/rainshowers with 20 nm
cloud ceiling below 8,000 feet

Source: Shuttle Weather Officer
Cape Canaveral Forecast Facility

RTQ: Hurricane Jerry Preparations/Impact at Johnson Space Center

Oct. 15, 1989

What action is the Johnson Space Center taking in preparation of Hurricane Jerry?

The Johnson Space Center in Houston is taking the normal precautions to protect the site from wind and water damage as Hurricane Jerry moves into the area Sunday night. A small team of center employees will ride out the hurricane as a precaution, but JSC officials do not anticipate any impact on the STS-34 mission preparations. JSC is expected to be open for business as usual Monday.

Are flight controllers being dispatched to any other locations?

No. There are no plans to send flight controllers to any other NASA locations.

Have the NASA aircraft been moved to any other locations?

Much of the JSC aircraft fleet is at the Kennedy Space Center for launch support. With those planes gone, there is adequate room in the JSC hangars for the remaining aircraft. Center officials do not have any plans to move any of the remaining vehicles.

Source: Kari Fluegel, JSC/PAO

NASA News

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For Release

October 25, 1989

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EDITORS NOTE: STS-33 NEWS MEDIA ACCREDITATION

NASA is accepting accreditation requests for news media to cover the Space Shuttle Discovery mission (STS-33), currently targeted for launch no earlier than November 19.

All news organizations wishing to send representatives to cover STS-33 must send a letter requesting accreditation for the mission. Previous requests for credentials do not apply to subsequent missions and new letters must be submitted.

Requests for credentials, launch through landing, should be submitted to:

NASA John F. Kennedy Space Center
PA-PIB/Accreditation
Kennedy Space Center, FL 32899

Please indicate the NASA location(s) from which you plan to cover the mission. Media planning to cover the landing only should submit their requests for accreditation to:

NASA Ames-Dryden Flight Research Facility
Attn: DXI/Public Affairs
P.O. Box 273
Edwards, CA 93523

-more-

Requests for accreditation must be made by a supervisory official other than the applicant on company letterhead, clearly indicating the assignment (reporter, photographer, technician, etc.) and social security number of each individual. Freelance writers and photographers must offer proof of assignment or evidence of past professional activity. The accreditation will be valid for all NASA news centers.

NASA ground rules for newspersons covering the mission are:

o NASA can make no travel or housing arrangements.

o Only working newspersons will be accredited at the news centers. Publishers and other news and advertising executives will not be accredited. These individuals should apply to NASA Public Services Division (LP), NASA Headquarters, Washington, D.C., 20546.

o Friends, dependents or relatives not covering the mission will not be accommodated.

o No one under 16 years of age will be allowed at the press site under any circumstances. Violation of this rule will result in cancellation of press site privileges for responsible parties.

o Philatelic publications must meet the criteria for general publications or be national publications of recognized philatelic organizations. Representatives of catalogs, newsletters, local clubs or profit seeking projects will not be accredited. Conducting philatelic business, other than reporting, is not permitted.

o College news media are limited to two accredited correspondents.

o You must present your letter of acceptance and a photo identification to obtain a news media badge at the appropriate center.

o Violations of the rules will result in loss of press badge and press site privileges.

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For Release

Jeffrey Carr
RELEASE NO. 89-061

October 25, 1989

NOTE TO EDITORS: STS-34 POSTFLIGHT CREW PRESS CONFERENCE

The STS-34 astronaut crew will meet with news media here at the Johnson Space Center on Wednesday, Nov. 1, to discuss the recent mission to deploy the Jupiter probe, Galileo. The event will begin at 1 pm, central time, and consist of a slide and video presentation by the astronauts, followed by questions.

News media are invited to participate on location at JSC in Building 2, room 135, or via two-way audio from NASA Headquarters in Washington, D.C., the Kennedy Space Center in Florida, the Marshall Space Flight Center in Huntsville, Alabama, or the Jet Propulsion Laboratory in Pasadena, California.

Live NASA Select television coverage will be carried on Satcom F2R, transponder 13.

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NASA News

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For Release

Jeffrey Carr
RELEASE NO. 89-062

October 26, 1989
12 p.m. CDT

FOURTH GROUP OF ASTRONAUT HOPEFULS TO BE INTERVIEWED

The fourth of five groups of astronaut applicants will arrive at the Johnson Space Center for orientation, medical evaluations, and interviews on Monday, October 30. Each group consists of between 20 and 25 applicants with a chance to be selected as astronaut candidates in January.

Included in the fourth group are Warren Anderson, M.D., of Boston, MA; USN Cmdr. Joseph C. Antonio of China Lake Naval Weapons Center, CA; USAF Capt. Mitchell B. Clapp of Edwards AFB, CA; Eladio R. Cortes-Ramos, Ph.D., of Acton, MA; USAF Capt. Charles R. Davis of Edwards AFB, CA; Philip L. Engelauf of the Johnson Space Center; USAF Capt. Ivette Falto of Onizuka AFB, CA; USAF Capt. Michael E. Fossum of Nellis AFB, NV; USA Capt. Steven C. Hadley of Wright Army Air Field, GA; USAF Maj. Robert S. Horton of Edwards AFB, CA; USN Lt. Cmdr. John N. Kohut of Miramar NAS, CA; USAF Maj. Norman K. Leonpacher of Eglin AFB, FL; Barry J. Linder, M.D., of Great Barrington, MA; Linda J. Miller of Union City, CA; Simon L. Morris, Ph.D., of Van Nuys, CA; USAF Maj. Douglas M. Moss of Edwards AFB, CA; David A. Noever, Ph.D., of Huntsville, AL; USAF Maj. Charles J. Precourt of the Naval War College, RI; USA Maj. Kevin G. Scherrer of Fort Hood, TX; USA Capt. Nancy Sherlock of the Johnson Space Center; Eugene M. Wells, Ph.D., of Huntsville, AL; and Peter J. K. Wisoff, Ph.D., of Houston, TX.

Interviewees were chosen from nearly 2500 total applicants who registered prior to the June 30 deadline. Applications received after the deadline are eligible for consideration for the next selection, in 1992.

The number of candidates selected every two years will vary based on flight rate, program requirements, and attrition.

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For Release

Steve Nesbitt
Release No. 89-063

November 6, 1989
IMMEDIATE

NOTE TO EDITORS: STS-32 BRIEFINGS, CREW CONFERENCE SET

A series of background briefings and the astronaut pre-flight press conference for space shuttle mission STS-32 set for launch in December, will be held Nov. 13 and 14 at the NASA Johnson Space Center in Houston.

Background briefings will begin at 10 a.m. CST Nov. 13 with a mission overview by the lead flight director. Briefings on the Long Duration Exposure Facility (LDEF) and other Shuttle payloads will follow. The Space Shuttle Discovery's flight, currently scheduled for launch Dec. 18, includes the deployment of a large communications satellite and the capture and return to Earth of the LDEF.

The crew pre-flight press conference is scheduled for Nov. 14 at 9 a.m.

All events will take place in Room 135 of Building 2 at JSC. Briefings will be carried live on NASA Select Television, available on Satcom F2R, transponder 13 at 3960 MHz. Two-way audio, one-way video will be available at some other NASA centers.

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For Release

David W. Garrett
Headquarters, Washington, D.C.
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December 22, 1989

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THE YEAR IN REVIEW - 1989

Major events in the nation's space program included the following:

o A new "golden era" of space science got underway as NASA sent the Magellan spacecraft to map Venus, Galileo to orbit Jupiter and drop a probe into its atmosphere and the Cosmic Background Explorer to study the origin of the universe and look for its "missing matter." Voyager II paid a spectacular visit to the planet Neptune 2.8 billion miles from Earth. By the time the 5-year "golden era" concludes, NASA will have launched 37 major science missions that may radically alter mankind's view of the universe.

o President Bush announced on July 20, the twentieth anniversary of the Moon landing, that it would be a goal of the United States to establish a permanent human presence on the Moon and use the experience gained there to begin human exploration of the planet Mars.

o Richard H. Truly became NASA's eighth administrator on July 1. The day before, he retired from the Navy as a Vice Admiral, having served more than 30 years. A former astronaut, he headed NASA's Office of Space Flight for almost 3-1/2 years.

o NASA launched five successful Space Shuttle missions, deploying - in addition to the Magellan and Galileo science missions - a Tracking and Data Relay Satellite to complete the TDRS network.

o Truly consolidated the Space Flight and Space Station Freedom offices and announced plans to merge the offices of Exploration and Aeronautics and Space Technology. In both cases the goal is close coordination of programs. Final Space Station agreements were signed by the United States and its international partners.

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SPACE SCIENCE AND APPLICATIONS

SOLAR SYSTEM

Planetary science spearheaded accomplishments in 1989 with Voyager 2's exploration of Planet Neptune and departure from the solar system and the launch of two probes that began "a new Golden Age of Space Science," in the words of Dr. Lennard A. Fisk, NASA's Associate Administrator for Space Science and Applications.

Voyager 2's close-up view of Neptune showed a bright blue planet with winds of 1,500 mph and six previously unknown moons. Triton posed several new challenges for planetary geologists, the most interesting being how the coldest known body in the solar system could be one of the most geologically active, with four ice volcanoes.

Months before Voyager's main mission ended, the second phase of planetary exploration had begun. In May, the Space Shuttle deployed the Magellan spacecraft, which will map the surface of Venus. In October, Galileo began its roundabout trip to Jupiter, where it will drop a probe into the Jovian atmosphere in the first direct study of the solar system's largest planet.

Closer to home, NASA scientists discovered last spring that on March 23 an asteroid a half-mile or more in diameter passed within 500,000 miles of Earth, about twice the distance between the Earth the Moon. "On the cosmic scale of things, that was a close call," said Dr. Henry Holt of the University of Arizona, who discovered the asteroid while working on a NASA-funded project for the U.S. Geological Survey.

In the fall, scientists at the Arecibo Observatory in Puerto Rico used the radio telescope there to map another asteroid that passed within 2.5 million miles of the Earth. Images showed a two-lobed body a mile long spinning like a propeller every four hours.

ASTROPHYSICS

In November, NASA launched the Cosmic Background Explorer, an unmanned observer that will measure the cosmic radiation remaining from the "Big Bang" in hopes of developing a clearer picture of the early history of the universe.

Astronomers at the Space Telescope Science Institute, following research sponsored by NASA, reported unanticipated gas emissions from a "white dwarf" star. White dwarves had been

thought to mark the end of some stars' lifespans, precluding such emissions. At the end of the year, NASA and science institute scientists were continuing preparations for the Shuttle deployment in March 1990 of the Hubble Space Telescope, which many astronomers believe will open a new era for the field.

EARTH SCIENCES

In February, NASA announced the selection of scientific instrument investigations for the proposed Earth Observing System, a multi-purpose platform for launch in late 1997. EOS would be an interdisciplinary program conducted with the European and Japanese space agencies using four platforms in polar orbits to examine Earth on a global scale.

EOS would be one of the largest science missions ever undertaken, providing 15 years of comprehensive data on Earth's atmosphere, oceans and land. EOS is part of the Mission to Planet Earth concept discussed by President Bush in July. Mission to Planet Earth would be a major interagency effort to understand the complex interactions of our environment, to assess humanity's role in shaping them and to build credible models capable of predicting future change.

This year a NASA satellite gathered further evidence of humans' effect on their environment as the Total Ozone Mapping Spectrometer showed the ozone levels over Antarctica between August and October were as low in 1989 as the record low levels measured in 1987. Earlier aircraft campaigns had already shown that the ozone hole over Antarctica was due to human activities, specifically the release of chlorine compounds.

Scientists from the Soviet Union, Canada, the United Kingdom and France joined NASA in Kansas over the summer to continue the first field experiment for the International Satellite Land Surface Climatology Project. The experiment investigated the role of biological processes in controlling atmosphere-vegetation interactions and investigated the use of satellite and airborne observations to infer how land-surface conditions affect climate.

SPACE PHYSICS

NASA signed a memorandum of understanding with the European Space Agency to conduct a series of missions as part of the International Solar Terrestrial Physics Programme, which will track solar energy from its source, through space and as it reaches and passes the Earth. A similar agreement for a Japanese-U.S. mission is in the final stages of negotation.

NASA launched four suborbital rockets over Canada to measure Earth's electric fields aligned with its magnetic field and possibly explain how aurora are created. The rockets released barium payloads, creating greenish-purple clouds over parts of Canada and the north-central United States.

NASA has provided a payload instrument (PEGSAT) for flight aboard the experimental air-launched vehicle Pegasus now undergoing flight tests with an anticipated launch date of late January 1990. The instrument will conduct studies of the Earth's magnetic field and ionosphere.

LIFE SCIENCES

U.S. and Soviet scientists confirmed the adverse physiological and biomedical effects of prolonged space flight after analyzing data from the cooperative life sciences experiments flown aboard an unmanned Soviet satellite. The United States has invited Soviet scientists to participate in the analysis of life science experiments to be flown aboard the June 1990 Spacelab mission.

NASA scientists identified the molecular structure of blood protein using special X-ray techniques. Their discovery may help in the design of new or improved disease-fighting drugs.

SPACE FLIGHT

In 1989, 25 astronauts orbited the Earth aboard Space Shuttles Discovery, Atlantis and Columbia. As a result, sophisticated interplanetary spacecraft, Magellan and Galileo, are speeding toward orbital encounters with Venus and Jupiter, a new Tracking and Data Relay Satellite had been deployed and experiment data have been sent to investigators nationwide.

With the exception of a handful of small-class Scouts, the stable of NASA-owned expendable launch vehicles (ELVs) was emptied in 1989 with the successful launches of the Atlas-Centaur/FLTSATCOM and Delta/Cosmic Background Explorer missions. Procurement of future medium- and intermediate-class launch services from the private sector accelerated during the year as NASA/industry launch teams looked forward to a new way of doing ELV business.

Among Space Flight highlights, 1989 are:

- January 20: Sixth and final full-scale static test firing of NASA's redesigned Space Shuttle solid rocket motor took place successfully.

- March 2: NASA's Marshall Space Flight Center selected Aerojet General Corp., Rockwell International and United Technology Corp. to develop efforts for demonstrating mature new propulsion technologies for the Nation's Advanced Launch System.

- March 13: Space Shuttle Discovery was launched with STS-29 Astronauts Coats, Blaha, Buchli, Springer and Bagian on board to deploy a new Tracking and Data Relay Satellite. Landing was March 18.

- April 21: NASA selected Lockheed Missile Systems Division and its principal subcontractor, Aerojet Space Booster Company, for final negotiations leading to award of a contract to design, develop, test and evaluate a Space Shuttle advanced solid rocket motor (ASRM) and a contract for construction of facilities for production and testing of the ASRM hardware.

- May 4: Space Shuttle Atlantis was launched with STS-30 Astronauts Walker, Grabe, Thagard, Cleave and Lee on board to deploy the Magellan spacecraft on a mission toward Venus. Landing was May 8.

- June 19: NASA held the first of two Commercial Launch Services Symposia to better understand specific industry concerns about the agency's launch services procurement practices. A follow-up symposium was held in August during which NASA responded to industry concerns expressed in June.

- June 30: NASA selected Boeing Co. and Martin Marietta Corp. for negotiations leading to award of contracts to study future Space Transfer Vehicle concepts.

- July 18: NASA selected McDonnell Douglas Space Systems Co. for negotiations leading to award of a contract for up to 15 medium-class expendable launch vehicle services.

- August 8: Space Shuttle Columbia was launched with STS-28 Astronauts Shaw, Richards, Leetsma, Adamson and Brown on board this dedicated DoD mission. Landing was August 13.

- September 25: NASA successfully launched its final Atlas/Centaur launch vehicle from Cape Canaveral Air Force Station. The payload was a FLTSATCOM Navy communications satellite.

- October 18: Space Shuttle Atlantis was launched with STS-34 Astronauts Williams, McCulley, Baker, Chang-Diaz and Lucid on board to deploy Galileo spacecraft on a mission toward Jupiter. Landing was October 23.

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- November 16: Proposals were received by NASA from two industry teams for the performance of definition studies for a new vehicle -- the Assured Crew Return Vehicle -- to serve as a lifeboat for Space Station Freedom astronauts.

- November 18: NASA successfully launched its Cosmic Background Explorer spacecraft from Vandenberg Air Force Base, Calif., aboard the final NASA-owned Delta launch vehicle.

- November 22: Space Shuttle Discovery was launched with STS-33 Astronauts Gregory, Griggs, Musgrave, Thornton and Carter on board this dedicated DOD mission. Landing was November 27.

SPACE STATION FREEDOM

Major changes in the the organization and management of the Space Station Freedom program occurred 1989. In additional to being named Associate Administrator for Space Station, Dr. William B. Lenoir developed and implemented a plan consolidating the Space Station and Space Flight offices.

A major review of the Space Station Freedom project, brought on by the changes in the management of the multi-national project and under threat of a significant budget cut for Fiscal Year 1990, resulted in modifications to the project and a revised timetable for its development and deployment.

Under direction from the NASA Administrator, newly appointed Space Station Freedom Project Director Richard H. Kohrs led the program through a major technical, budget and schedule evaluation, resulting in changes to the station's baseline configuration and assembly schedule.

The scheduled date for the first launch of an element of Freedom was held to March 1995. Subsequent milestones for achieving a man-tended configuration and a permanent manned capability were adjusted 5 and 7 months, to April 1996 and July 1997, respectively, and assembly completion was delayed 18 months to August 1999.

System modifications made as a result of the review included changing from a hydrogen/oxygen propulsion system to a modular hydrazine system and switching from a hybrid ac/dc system to an all-dc system for distributing electrical power throughout Freedom. Development of high-pressure space suits for extravehicular activities was put off indefinitely in favor of using current, Shuttle-based suits for assembly and maintenance of Freedom. Various subsystems, such as the closed-loop environmental control system, data management and communications and tracking, will be incrementally brought to their full capability as the station is being assembled.

The final agreement between NASA and its international partners, which together are developing Freedom, was signed March 14 as the former NASA Administrator James Fletcher and Japanese ambassador to the U.S. H. E. Nobuo Matsunaga signed a memorandum of understanding on cooperation in the detailed design, development, operation and utilization of the space station. Similar agreements with the European Space Agency and Canada were signed in September 1988. Japan will provide the Japanese Experiment Module to the Freedom program.

In April, NASA's Goddard Space Flight Center, Greenbelt, Md., selected Martin Marietta Space Systems Co., Denver, to build the Flight Telerobotic Servicer, a space station-based robot to aid in the assembly and maintenance of Freedom.

EXPLORATION

On July 20, 1989 President Bush announced a national commitment to an evolutionary program to complete Space Station Freedom, establish a manned lunar outpost, begin the exploration of Mars and eventually to move beyond.

The work of the NASA Office of Exploration over the past 2 years laid the foundation for that decision. In 1989, the office also initiated a variety of activities to better understand technology needs and science opportunities involved in expanding the human presence beyond Earth orbit. The office continued to develop multiple options for human exploration through the case study framework.

Three case studies were evaluated in 1989: Lunar Evolution, Mars Evolution and Mars Expedition. These case studies refined NASA's understanding and broadened its knowledge of human exploration options, the investments required to support them and the scientific and technological capabilities and benefits they would spawn.

Other key developments in 1989 included:

- Formation of a NASA Advisory Council Exploration Task Force to provide independent advice to NASA and the Office of Exploration. The Task Force is chaired by Robert McC. Adams, Secretary of the Smithsonian Institution, Washington, D.C.

- Support of and participation in preparation of NASA's "Report of the 90-Day Study on Human Exploration of the Moon and Mars". The report was commissioned by NASA Administrator Richard H. Truly to help the National Space Council develop recommendations to President Bush on ways to achieve his exploration goals.

- Initiation of an Innovative Studies Program designed to encourage innovative concepts and support independent studies that may offer unique capabilities for human exploration. The program encompassed three areas in 1989: an "Innovative Outreach" program designed to solicit original and creative ideas from traditional and non-traditional sources; a lunar enterprise study to provide a non-NASA perspective on commercial uses of the Moon; and a study designed to define a potential operational lunar mining system. More than 100 proposals were submitted under the "Innovative Outreach" program.

The 20 proposals selected for funding came from groups located in 12 states and included five industry-related firms, two space support-related organizations and 13 universities. The subject matter of the selected studies ranges from nuclear thermal rockets using Martian propellants to pneumatic structures for lunar and Martian habitats.

AERONAUTICS AND SPACE TECHNOLOGY

Aeronautics

The National Aero-Space Plane (NASP) program, a joint NASA/Department of Defense program, continued technology development that could lead to a unique flight research vehicle, called the X-30, capable of taking off horizontally, accelerate into Earth orbit and returning through the atmosphere to land on a conventional runway.

NASA's Lewis Research Center, Cleveland is leading an effort to develop "slush" hydrogen as a high-energy NASP propellant. It is denser than liquid hydrogen and may result in smaller, lighter fuel tanks that could reduce the X-30's takeoff weight by up to 30 percent.

Lewis also tested a Mach 5 (five times the speed of sound) engine inlet to verify computer codes used in analysis of the inlet's performance. This research will apply to the NASP program and other future high-speed aircraft.

Langley Research Center, Hampton, Va., has wind-tunnel tested the performance characteristics of NASP advanced engine concepts at 4 and 8 times the speed of sound. Scientists at Ames Research Center, Mountain View, Calif., have used wind tunnel tests and computational methods to research questions on high-temperature materials for structures and structure coatings.

NASA's high-performance aircraft based at Ames-Dryden Flight Research Facility, Edwards, Calif., made important contributions to the agency's aeronautics research program. The F/A-18 High-

Alpha Research Vehicle completed the first phase of a three-part program to validate computer codes and wind tunnel predictions of airflow during high angle-of-attack flight. Results from this program will yield a better understanding of airflow phenomena at various flight angles, which should lead to improved maneuverability in future high-performance aircraft.

The first experimental forward-swept-wing X-29 aircraft wrapped up a highly successful test program after 242 flights that demonstrated its unique wing configuration is practical. The second X-29, modified to fly safely at angles-of-attack up to 70 degrees, also made its first research flight. As part of the NASA/DOD Self-Repairing Flight Control Program, computers aboard Ames-Dryden's F-15 research aircraft correctly identified and isolated a simulated failure in the flight control system.

NASA also continued efforts to enhance the efficiency of commercial air travel. The Propfan Test Assessment aircraft, a Gulfstream II business jet modified with an eight-bladed advanced turboprop engine on its left wing, wrapped up flight tests at Lewis Research Center.

The program was the end result of a major NASA-industry-university effort to develop the aerodynamic, structural, mechanical and acoustical technologies needed to verify the performance of such unique, fuel-efficient propellers.

At NASA's Langley Research Center, scientists and engineers conducted a series of high-speed ground tests to study the effect of heavy rain on the performance of aircraft wings. A full-scale commercial airfoil section mounted atop a tubular steel carriage made repeated runs through a curtain of simulated "rain" at typical takeoff and landing speeds. Initial results tend to confirm wind tunnel data that there is a loss of wing lift at extremely high rainfall rates.

Langley officials also announced development of an innovative new tool to help pilots make the critical go/abort decision during the takeoff roll. The Takeoff Performance Monitoring System provides continual "real-time" updates on an aircraft's performance, graphically presenting its progress relative to a normal takeoff for that type of airplane under the existing flight conditions.

Recognizing that U.S. leadership in the production and sale of commercial airliners is being challenged, NASA greatly expanded its research into advanced "composite" structures made from epoxy-type resins and high-strength carbon fiber. Use of such materials in the wings and fuselages of future transport aircraft could significantly reduce their weight, improve their fuel efficiency and reliability.

Space Technology

The Civil Space Technology Initiative addresses near-Earth orbital requirements in areas such as automation and robotics, space power and information technology. Space systems of the next decade will use these technologies for cost-effective and reliable operations in Earth orbit. The Pathfinder program focuses on technology research for future solar system voyages in four broad areas: surface exploration, in-space operations, transfer vehicles and humans in space.

In May, NASA's Ames Research Center, Mountain View, Calif., successfully demonstrated a low-cost, parallel-processing computer that potentially rivals today's most advanced supercomputers. The research program, a joint effort by NASA and the Defense Advanced Research Projects Agency, may allow applications such as structural analysis, artificial intelligence and computational electro-mechanics to run on smaller, more easily-affordable computers.

Scientists at Lewis reached a milestone in the application of high-temperature superconductors in July, when they produced the first electronic circuit able to operate at 33-37 Gigahertz -- three times higher than frequencies previously obtainable.

The circuit was fabricated from yttrium barium copper oxide, a material recently found to become superconductive at 77 degrees Kelvin. The use of these ultra-high frequencies will allow satellites to process data at much faster rates, tripling the number of communications linkups they can handle.

Voyager 2's encounter with Neptune gave researchers at the Jet Propulsion Laboratory, Pasadena, Calif., an opportunity to demonstrate a new "artificial intelligence" computer program to detect and analyze spacecraft and ground data system anomalies. The Spacecraft Health Automated Reasoning Prototype helped to identify a problem in the science data streaming down from Voyager prior to its Neptune fly-by.

During the encounter, the prototype detected three telecommunications errors simultaneously with human operators. The demonstration may lead to future expert systems that will increase the efficiency of mission operations and reduce the work force needed during planetary encounters.

NASA is preparing Shuttle Mission 32 to retrieve the Long Duration Exposure Facility that has carried 57 science, technology and applications experiments in Earth orbit since April 1984. Scientists expect the facility, managed by Langley Research Center, to provide a "treasure trove" of data about the

effects of long-term exposure to space on components and materials -- invaluable knowledge in designing future spacecraft.

SPACE OPERATIONS

The Tracking and Data Relay Satellite (TDRS-4) was successfully deployed in March from the Shuttle Discovery, marking completion of the TDRS system. In June the system was declared operational following completion of a switchover involving TDRS 1, which was moved to 79 degress west longitude, to serve as backup to TDRS-4 and TDRS-3, also known as TDRS-East and TDRS-west, respectively.

The TDRS system covers at least 85 percent of each low-Earth-orbiting spacecraft's orbital period and facilitates a much higher information flow rate between these spacecraft and the ground.

The system will support up to 23 user spacecraft simultaneosly and provide both multiple-access service relaying data from as many as 19 low-data-rate user spacecraft at the same time and a single-access service that provides two high-data-rate communications relays from each satellite.

NASA concluded an agreement with INTELSAT, Washington, D.C., for the use of the C-Band capacity on two Tracking and Data Relay Satellites for international telecommunications purposes.

SAFETY, RELIABILITY, MAINTAINABILITY AND QUALITY ASSURANCE

NASA's Lewis Research Center (LeRC), Cleveland, was selected by the Office of Management and Budget (OMB) as a quality improvement prototype, which is one of the highest honors a federal government facility can achieve for quality and productivity. The award is part of the Presidents' Productivity Improvement program. The program is administered by OMB and is the second year the national award was presented.

The Lockeed Engineering and Sciences Co. (LESC), Houston, one of eight finalists selected in May, was named recipient of the NASA 1988-89 Excellence Award for Quality and Productivity. LESC was selected by the NASA Quality and Productivity Steering Committee and endorsed by the Administrator based on review of the findings report and recommendations of the Excellence Award Evaluation Committee.

To encourage more small businesses to improve their quality and productivity processes, NASA established a separate small business category for the 1989-90 Excellence Award Program.

Key goals of the NASA Excellence Award are to institutionlize quality and productivity practices throughout NASA and the agency's contractors.

The Aerospace Safety Advisory Panel (ASAP) released its annual report in March praising NASA for its work on return-to-flight. The main focus of the ASAP was monitoring and advising NASA and its contractors on the STS recovery program. The report stated that efforts restored the flight program with better management, safety and quality assurance orgranizations and management communications.

INTERNATIONAL AFFAIRS

NASA's international cooperative activities in 1989 included:

o In October 1989, the Galileo spacecraft to Jupiter was successfully launched. Galileo is an international cooperative project with the Federal Republic of Germany, which provided the orbiter's retropropulsion module to perform mission maneuvers and permit insertion of the spacecraft into Jovian orbit. There are two German scientific experiments on Galileo as well and German scientists are participating in five other experiments.

o NASA signed a memorandum of understanding with the government of Japan in March, completing the international agreements for the construction and use of Space Station Freedom. Under the agreement, Japan will provide the Japanese Experiment Module consisting of a pressurized laboratory and an exposed facility. The European Space Agency and Canada had signed agreements for their participation in the project in September 1988.

o In July, NASA and the German Minister for Research and Technology signed a memorandum of understanding to launch German Spacelab payloads on the Space Shuttle. This agreement confirms general understandings of the terms and conditions with which NASA will furnish launch and associated services for both reimbursable flights and cooperative activities.

0 In September, the U.S. government and the government of Japan exchanged diplomatic notes approving cooperation on the Geotail Mission. Geotail is a Japanese-built spacecraft which will make solar-terrestrial physics measurements using Japanese and U.S. science instruments. NASA will launch the spacecraft in 1992.

o In December, NASA and the European Space Agency concluded an agreement for cooperation in the joint Solar Terrestrial Science Programme. This program consists of two missions, the Solar

Heliospheric Observatory (SOHO) and Cluster (four spacecraft that will fly in formation to observe the Earth's plasma environment). Under this agreement, ESA will develop the spacecraft for SOHO and Cluster. NASA will launch and operate SOHO and ESA will launch and operate Cluster. Experiments on the spacecraft will be provided by the U.S. and European scientists.

o Cooperation with the Soviet Union continued to progress under the U.S./USSR Joint Working Groups on Space Biology and Medicine; Solar System Exploration; Space Astronomy and Astrophysics; Solar-Terrestrial Physics and Earth Sciences. Key activities included:

--A telemedicine spacebridge for Armenia, linking U.S. and Soviet hospitals, permitted medical consultation to assist with the longer-term consequences of the Armenian earthquake and injuries from the train explosion in Ufa. Comsat and Intelsat provided satellite transponders free of charge. Discussions continue on how the experience gained can be applied both to space flight and to terrestrial needs.

--Twenty-nine NASA science experiments were flown on the September Soviet Biosat mission

--Progress was made in feasibility discussions on the proposed flight of the U.S. Total Ozone Mapping Spectrometer on a Soviet Meteor-3 meteorological satellite and the flight of a French receiver to support Mars surface measurements planned for the Soviet Mars '94 mission.

--The Soviets selected two U.S. instruments for flight on the Soviet Spectrum-X astrophysics mission, and NASA accepted, in principle, a Soviet proposal to fly the gamma-ray burst instrument KONUS on the U.S. WIND spacecraft scheduled for launch in 1992.

o Planning accelerated in 1989 for NASA's Earth Observing System (EOS), the cornerstone of the Mission to Planet Earth. A group of 41 instruments from the U.S., Canada, Japan and Europe was selected this year for flight on EOS and over 500 scientists from 13 countries, from as far away as China, Australia and Brazil, have been identified to participate in the EOS program.

o In February, NASA convened a panel of experts on Earth science and technology, which met in Abingdon, England, and generated 10 projects in the Earth sciences which will be implemented internationally in observance of International Space Year (ISY) in 1992.

COMMERCIAL PROGRAMS

Significant progress was made in 1989 by NASA's Office of Commercial Programs (OCP) in defining an overall program of commercial space development.

The Commercial Programs Advisory Committee (CPAC) conducted a thorough review of commercial space issues and formulated a series of key recommendations for consideration by the nation's leaders. These recommendations, addressed in the CPAC's first formal report entitled "Charting the Course: U.S. Space Enterprise and Space Industrial Competitiveness," are helping to shape the commercial development strategy.

Also supporting the OCP strategic planning effort was a study conducted by the American Institute of Aeronautics and Astronautics (AIAA) to lay groundwork for the strategic plan by defining issues and potential objectives associated with the commercial development of space. The AIAA formed a steering committee consisting of senior level private sector managers.

The resulting study document, "Issues in Strategic Planning for Commercial Space Growth," representing inputs from more than 90 industry representatives, addresses overall goals and objectives, the scope of commercial space activities and the role industry, academia and government, explores issues and barriers and suggests federal actions and policy changes.

A resurgence of industrial research and development activity took place this year following the successful return of the Space Shuttle to flight operations in 1988. In 1989, the OCP sponsored commercial development payloads on three Shuttle missions and funded the first U.S. commercial launch of a materials science payload. Commercial experiments flown on the Shuttle included:

*Protein Crystal Growth, an experiment package flown by the NASA-sponsored Center for Macromolecular Crystallography located at the University of Alabama in Birmingham, was carried aboard STS-29 in March. The experiment, conducted in collaboration with industrial partners, also will be flown on STS-32.

*Fluids Experiment Apparatus, flown on STS-30, is scheduled to fly on STS-32. The FEA, a modular microgravity chemistry and physics laboratory, is being flown under a NASA-Rockwell International Corp. joint endeavor agreement (JEA) in the field of floating zone crystal growth and purification research.

*Polymer Morphology, a 3M-developed organic materials processing experiment, was designed to explore the effects of microgravity on polymeric materials as they are processed in

space. The experiment, conducted on STS-34 in October, was 3M's fifth space experiment and the first under the company's 10-year JEA with NASA for 62 flight experiment opportunities.

In an effort to match space transporation and support capability with the anticipated growth in industry requirements, NASA in 1989 initiated a grant funding for a commercial sounding rocket program. Consort 1, a package of materials science investigations launched successfully on March 29 atop the commercially provided Starfire rocket at White Sands Missile Range, N.M., was the first flight conducted under this effort.

Consort 2, launched Nov. 15 at White Sands, was only a partial success due to a malfunction in the rocket's guidance package, resulting in termination of the mission as the rocket strayed off course. However, the experiments payload parachuted safely to Earth and suffered only minor damage. Important payload data was recorded during the brief flight and indicated that the experiment equipment performed flawlessly. The payload will be launched again at a later date.

Other key OCP activities in 1989 included:

*Announcement of new digital, visual-filtering technology, developed by a researcher at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., to aid sufferers (mostly elderly) from maculopathy or central spot blindness. Visualtek, Inc., Santa Monica, Calif., is collaborating with JPL to market an effective, inexpensive commercial product by the end of 1991.

*Introduction of an implantable, rechargeable physiologic sensor to monitor glucose marked a major advance for insulin-dependent diabetics. The sensor is now being developed in a collaborative effort among the Johns Hopkins University Applied Physics Laboratory, Laurel, Md.; the University of New Mexico, Albuquerque; and NASA's Goddard Space Flight Center.

*The collaboration of the Center for Commercial Development of Space Power, Auburn University, Ala., and Maxwell Laboratories, San Diego, to develop a stronger, more efficient power supply for lasers, x-rays, spacecraft and other users. The advance, which will result in commercial uses of the technology on Earth, represents the first technology spinoff from NASA/industry-supported research at NASA's 16 Centers for Commercial Development of Space.

*NASA's Ames Research Center, Mountain View, Calif.; Genentech Inc., South San Francisco, Calif.; and Penn State's Center for Cell Research, announced collaboration on a ground-

based and Space Shuttle experiment program to increase medical knowledge to treat human bone diseases, organ regeneration and transplantation, and immune and skeletal muscle cell definiciency.

The Small Business Innovation Research Division awarded 248 Phase I and 84 Phase 2 contracts to small, high technology firms. Additional Phase 2 selections, to be made in early 1990, are expected to bring the total number of selections to more than 100 and the total procurement value to more than $50 million.

EDUCATIONAL AFFAIRS

The first 17 Designated Space Grant Colleges/Consortia were selected on Aug. 31, 1989, initiating NASA's National Space Grant College and Fellowship Program. These designated colleges/consortia, already significantly involved in space-related activities, will receive up to $225,000 in grants and $100,000 in fellowships, beginning in Fiscal Year 1990 for 5 years. The program is designed to create a network of universities capable of contributing to aerospace science and technology and training a highly skilled workforce.

President Bush selected "Endeavour" as the name for the replacement Space Shuttle orbiter on March 20, 1989. The name resulted from a nationwide competition supported by educational projects created by student teams in elementary and secondary schools. Over 6,100 entries, involving over 71,000 students, were evaluated. The national winner in the kindergarden-6th grade division was the 5th-grade class from Senatobia Middle School, Miss. The national winner in the 7th-12th grade division was a team from the Tallulah Falls School, Inc., Ga.

NASA announced the opportunity for educators to participate in the first experiment ever to study the effects of long-term space exposure on living tissue. With the return of the Long Duration Exposure Facility, deployed in Earth orbit in April 1984, 12.5 million tomato seeds, packaged in kits, will be available to teachers in grades 5 through university. The program encourages student involvement by providing them the opportunity to design their own experiments and make decisions, gather data and report final results to NASA by June 15, 1990.

Through a pilot program, NASA Marshall Space Flight Center, Huntsville, Ala., has opened its computerized science data bases to the nation's universities to stimulate "cottage industry" space research by professors and entice more students into science and engineering studies. The Joint Venture (JOVE) Program, makes NASA's scientific and engineering data, generated

from space missions, available to universities in exchange for analysis and interpretation by faculty members and students.

Three student experiments, selected under the Space Shuttle Student Involvement Program, flew aboard the Space Shuttle in 1989. On STS-29, student investigator John Vellinger, Lafayette, Ind., flew 32 chicken eggs to determine whether a chicken embyo can develop normally in a weightless environment. Also flown on STS-29 was an experiment designed by Andrew Fras, Binghamton, N.Y., to determine whether rat bone healing is impeded by the loss of calcium and the absence of weight-bearing during space flight.

An ice crystal experiment was flown on STS-34 to observe geometric ice crystal shapes formed at supercooled temperatures without the influence of gravity. Proposed by Tracy Peters, Concord, Calif., the experiment results could aid in the design of radiator cooling and cryogenic systems and in understanding of high altitude meteorology and planetary ring structure theories.

In its 8th year, the Space Science Student Involvement Program selected eight national winners in the Space Station category. Top honors, plus a $3,000 scholarship and a computer, went to Diane Fogel, Landsdale, Pa., for her proposed experiment to test remedies for bone loss during space flight. Also honored were the winners of the student newpaper competition, Allen Chen, Columbus, Ind., and Paul Schumacher, Yuma, Ariz., and a team of Mechanicsburg, Pa., students who won a pilot project to design and plan the first permanent manned Mars colony.

The Aerospace Education Services Project continues to be one of NASA's most popular education programs. During 1989, over 1.2 million students and 28,000 teachers participated in school visits, classroom lectures and teacher workshops conducted by the NASA project.

During the summer, educators spent 2 weeks at one of NASA's nine field centers learning the latest in aerospace science, working with educational specialists to fit materials into classroom curriculum. There were 115 elementary school teachers participating in NASA's Educational Workshop for Elementary School Teachers and 100 teachers participating in NASA's Educational Workshops for High School Math and Science Teachers.

Over 20,000 educators in the 50 states and parts of Canada tuned in for NASA's satellite video conferences. NASA projects covered in the live, interactive program this year included planetary exploration, flight testing, future explorations and technology for the classroom.

Over $8 million was awarded to 496 students at 110 universities for advanced study in engineering and space, physical, life and environmental sciences under NASA's Graduate Student Researcher's Program, including the Under-represented Minority Focus component.

In the University Advanced Design Program, 36 universities received 3-year grants to study topics in space and aeronautical missions in the post-Space Station era, such as manned Mars aircraft and delivery systems, long-term space habitat, lunar launch and landing facilities and high-speed civil transport. The grants are $32,000 per year for each new participant and $20,000 per year for each school participating in the previous design program.

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