NASA News

National Aeronautics and
Space Administration
Langley Research Center
Hampton, Virginia 23665
AC 804 827-2934

For Release:

Jean W. Saunders
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Upon Receipt

RELEASE NO. 83-8

NASA MANAGER NAMED PENINSULA ENGINEER OF THE YEAR

Hampton, VA, Roy V. Harris, Jr., Chief of the High-Speed Aerodynamics Division at NASA's Langley Research Center, has been named Engineer of the Year by the Peninsula National Engineers Week Committee.

Harris' award will be presented at a dinner dance February 26 which will highlight the Peninsula's observance of National Engineers Week. Harris, who joined the Langley staff in 1958 as a research engineer in high-speed aerodynamics, was nominated by the local chapter of the American Institute of Aeronautics and Astronautics.

National Engineers Week, February 20-26, has, since 1951, been traditionally observed during the week of Washington's birthday to celebrate the first president's civil engineering background. This year's theme, "Engineers: Turning Ideas into

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Reality," will focus on familiarizing the public with the work of engineers. The annual celebration is sponsored by the National Society of Professional Engineers.

Among scheduled activities are an Engineers Week Seminar, sponsored by AIAA, Wednesday, February 23, at the Langley Activities Center, Building 1222, at 7 p.m. The theme of the seminar is "General Aviation," and the target audience is the general community with special emphasis for middle and high school students and college students with mathematics and physics backgrounds.

A series of lectures and film presentations will be made at Hampton, Newport News, Poquoson, York County and Peninsula Catholic High Schools. Topics to be presented by engineer role models include computer design; engineering careers; and engineering educational requirements. There will also be a Career Day for local high school students at the Langley Research Center.

Engineers Week will conclude with the dinner dance beginning at 6 p.m., February 26, at the Langley Air Force Base NCO Club. The guest speaker for the evening is former Langley manager, Dr. Walter B. Olstad, who is Associate Administrator for Management at NASA Headquarters, Washington, D.C.

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Harris' award will not be his first. Past commendations have included the AIAA Lawrence Sperry Award and the NASA Special Achievement Award for Exceptional Service in 1968 for his research which led to "a significant technological foundation for the development of supersonic aircraft." In recognition of his leadership in high-speed aerodynamics research programs which have had direct application to several of the nation's current military aircraft, he was awarded a Langley Special Achievement Award in July 1982 and the NASA Medal for Outstanding Leadership in Octoer 1982.

Harris has played an active role in the AIAA for more than 20 years at the local, national and international levels and has attained the rank of Associate Fellow. In 1980 he was elected by the entire AIAA membership to serve as a Technical Director for the institute and member of its Board of Directors and Technical Activities Committee.

Harris has served as Chief of the High-Speed Aerodynamics Division since Octoer 1974. In this capacity, he plans, directs and coordinates the center's research programs in turbulent drag reduction, supersonic and hypersonic aerodynamics, hypersonic propulsion, and computational methods for high-speed flows. He is responsible for the operation of a variety of wind tunnels and

research equipment, including the Unitary Plan Wind Tunnel, Hypersonic Aerodynamics Laboratory and the Hypersonic Propulsion Laboratory.

A native of Augusta, Ga., Harris received a bachelor of science degree in aeronautical engineering from the Georgia Institute of Technology in 1958. From 1959 to 1962 he was an Air Force Officer assigned to NASA. He was appointed Head of the Advanced Configurations Branch in 1973, where he served until appointed to his present position.

Harris and his wife, Mary Sue, have two daughters. They live in Newport News.

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RELEASE NO. 83-9

CAREER DAY SCHEDULED AT NASA'S LANGLEY RESEARCH CENTER

Hampton, VA--Peninsula high school seniors will visit NASA's Langley Research Center on February 24 to take part in the ninth annual "Career Day," held in association with National Engineers Week.

The purpose of the week is to acquaint the public with the work of engineers and to honor outstanding members of the profession.

Approximately 300 seniors who are interested in engineering will take part in the 9 a.m. to 12 p.m. program, designed to expose students to different engineering fields.

The program will be opened by Steve Yaros, chairman of the Virginia Peninsula Engineers Week Committee and an engineer at Langley. Yaros will introduce the guest speaker, Gary D. Shulenburg, Director of Engineering, Newport News Shipbuilding and Dry Dock Company, who will speak on "Opportunities and Challenges of an Engineering Career."

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Following Shulenburg's talk, there will be a panel discussion, "Life as a Co-op," by engineering cooperative education students from NASA and the Newport News Shipbuilding and Dry Dock Company, a Space Shuttle film, and individual meetings with representatives from 18 Peninsula engineering societies and Langley engineers.

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February 15, 1983

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RELEASE NO. 83-7

NEW RESEARCH PROGRAM TO STUDY REDUCTION OF HELICOPTER NOISE

Helicopter noise will be the focus of a new NASA/industry research program that will study ways to greatly reduce noise and its causes in present and future helicopter designs.

The five-year National Rotorcraft Noise Reduction Program will be conducted by NASA's three aeronautical research centers and the industry-sponsored American Helicopter Society (AHS). The helicopter industry will supplement the $10 million NASA program with its own helicopter noise research.

Noise has always been a significant concern with helicopters, but it was formerly considered to be an unwanted "side effect" of the design considerations of these aircraft. Increased concern about the environment, however, has led the Federal Aviation Administration (FAA) to develop practical noise standards as a design requirement for all future helicopters.

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February 16, 1983

RELEASE NO. 83-7

A government and industry agreement to study and reduce helicopter noise has been reached through a Working Group on Rotorcraft Noise, composed of NASA, the AHS, the FAA and the Helicopter Association International. That agreement, signed January 21, led to establishment of the new program.

NASA's Langley, Ames and Lewis Research Centers, in Hampton, Va.; Mountain View, Ca.; and Cleveland, respectively, will study different aspects of the noise abatement program, working with industry members of the AHS-sponsored program. They are Bell Helicopter Textron, Dallas; Boeing Vertol, Philadelphia; Hughes Helicopter, Culver City, Ca.; and Sikorsky Aircraft, Stratford, Ct.

The research program will encompass the development of helicopter noise prediction and reduction technologies, noise certification, criteria for the location of heliports and low-noise operational procedures.

Government funding for the five-year project will be provided by NASA's Office of Aeronautics and Space Technology in Washington, D.C. Additional resources will be provided by the four U.S. helicopter manufacturers.

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RELEASE NO. 83-12

NASA-LANGLEY TO HOST CONFERENCE ON SHUTTLE LESSONS LEARNED

Hampton, Va.--The initial Shuttle flights have generated a rather widespread activity to examine and analyze the data obtained. General objectives of this effort have been to certify the vehicle for operational use and to examine NASA's ability to predict the performance of a complex entry configuration.

A number of papers given at recent conferences have reported on some aspect of the Shuttle's flight performance and compared it to prediction or the pre-flight data base. As yet, however, a forum has not been specifically designated for a comprehensive review of this work.

To fulfill this need, NASA's Langley Research Center is sponsoring a conference, titled "Shuttle Performance: Lessons Learned," March 8-10, in the Activities Center, Building 1222.

The program includes two sessions each on launch and ascent performance, entry aerodynamics and aerothermal environment; and single sessions on thermal protection system, guidance, navigation and control, and measurements and analysis techniques.

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February 25, 1983

The conference is an opportunity for researchers from universities, private industry, NASA and other government agencies, to exchange information and ideas on the interpretation of data provided by the Orbiter Flight Test Program and to make a critical examination of the methods used to predict performance from wind-tunnel data and analytical techniques. Over 50 papers, covering a variety of disciplines and aspects of the vehicle's performance, will be presented by attendees from NASA's Johnson Space Center, Marshall Space Flight Center, Ames Research Center and Langley; the Air Force; Rockwell International; McDonnell Douglas; Lockheed Missiles and Space Company; and others.

Co-chairmen of the conference are James P. Arrington and Jim J. Jones of Langley. Session chairpersons include Bernard Spencer, Jr.; David A. Throckmorton, Howard W. Stone, Jr., George M. Ware, Dr. Richard E. Snyder, E. Vincent Zoby, William I. Scallion, Harold R. Compton and C. L. W. Edwards of Langley; James C. Young, Dorothy B. Lee, Dr. Kenneth J. Cox, Ernest R. Hillje and Barney B. Roberts, from the Johnson Space Center; Donald C. Schlosser and Tru E. Surber, Rockwell International; Howard E. Goldstein, Ames Research Center; and Dr. John J. Bertin, University of Texas at Austin.

Additional information concerning the conference may be obtained by calling Bettie Messier at (804) 865-3031 or 928-3031.

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RELEASE NO. 83-16

THE IMPACT OF SCIENCE ON SOCIETY IS TOPIC FOR PUBLIC LECTURE SERIES

Hampton, Va.--In recognition of NASA's 25th anniversary, the 1983 NASA Langley Research Center and the College of William and Mary Public Lecture Series will emphasize science and its impact on mankind, society and the universe. Leading off the series will be internationally known TV host, writer and producer, James Burke, from London, England. Burke will speak on "The Impact of Science on Society," Monday, April 4, at 8 p.m. at the Hampton Coliseum.

For more than a decade, Oxford-educated Burke has been one of the British Broadcasting Company's outstanding writers, hosts and producers. Among his science features are the 1972 Royal Television Society gold-medal winner "The Burke Special," coverage of the U.S. Space Program, and "The Invention of America" for the U.S. Bicentennial. His 10-part series "Connections," surveying the history of technology and social change, attracted one of the largest followings ever for the Public Broadcasting Station documentary series and the related

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book was a best seller in both the U.S. and England. The show traced the evolution of eight major modern inventions - the atom bomb, telecommuications, computer, production line, jet aircraft, plastics, rocketry and television. Burke's most recent TV show "Burke - The Real Thing" is a six-part series on the brain and human perception.

Burke believes that technological change can be triggered by a variety of unrelated factors. In turn, these technological innovations have their own triggering effects, sometimes in totally unrelated fields. In his lecture, Burke will review some of these changes and examine how society lives with perpetual innovation that transforms its attitudes, morals and values.

Free tickets for family attendance at the 8 p.m. lecture at the Hampton Coliseum are available by mail by phoning 877-9231, ext. 60, 63, or 64, prior to March 30, and in person from the Coliseum Box Office or door after March 30.

Prior to these lectures, Burke will guest on the WTAR AM-790 Radio Talk Show from 8 to 9 p.m., Sunday, April 3.

NOTE TO EDITORS: Burke will give the same lecture at a NASA Langley Colloquium that afternoon. The lecture will be held in the Activities Center, Building 1222, at 2 p.m., preceded by a press briefing at 1:15 p.m.

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RELEASE NO. 83-17

NASA SELECTS TEST CARRIAGE CONTRACTOR

Hampton, Va.--Chicago Bridge & Iron Co., of Philadelphia, has been selected for negotiation of a contract to build a main test carriage for the Aircraft Landing Dynamics Facility at NASA's Langley Research Center.

The facility is used to conduct aeronautical experiments with various landing devices under simulated airport runway conditions. Different test vehicles and experiments are mounted aboard the test carriage and sped along a track.

Construction, testing and delivery of the main carriage is part of an overall modification of the facility. The track will be extended 600 feet, to a total length of 2,800 feet, to accommodate present and future test requirements for aircraft and spacecraft landing gear research.

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The main carriage will weigh approximately 100,000 pounds, depending on the weight of a test vehicle, and can accelerate to about 253 miles an hour during a test run.

The firm-fixed-price contract is valued at approximately $1.27 million. Work is scheduled to be completed within 495 days from the time the contract begins.

Chicago Bridge & Iron will build and test the carriage in Memphis, Tenn., and at NASA-Langley.

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RELEASE NO. 83-18

DOVE, GARREN NAMED ASSISTANT CHIEFS OF NASA-LANGLEY DIVISION

HAMPTON, Va.--Billy L. Dove and John F. Garren, Jr., have been designated Assistant Chiefs of the Flight Control Systems Division at NASA's Langley Research Center in Hampton, Va. Dove is former Technical Program Manager and Garren is former Head of the Flight Management Branch in the same organization.

In his new position, Dove will have technical responsibility for programs relating to flight crucial systems for future aircraft and spacecraft. Garren will assist the division chief in flight management research programs, such as avionic and other technology advances for improved efficiency and safety of aircraft operations.

Dove began his career in June 1956 as an aeronautical research intern. He served in the U.S. Army from August 1956 to September 1958. Upon his return to Langley, he was a research engineer assigned to the Flight Research Division. He became

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Head, Spacecraft Instrumentation Development Section, Instrument Research Division, in 1963; Head, Aircraft Instrumentation Branch, Flight Instrumentation Division, in 1969; and Technical Program Manager in 1981.

He has specialized in fault tolerant computing, and aircraft and spacecraft electronic instrumentation systems. He is a U.S. member of the Avionics Panel, AGARD-NATO.

Dove received a bachelor of science degree in physics from North Georgia College in Dahlonega, Ga., in 1956.

He and his wife, Nell, live in Wake, Va. They have three boys.

Garren joined the Langley staff in 1959 as an aeronautical research engineer in the Flight Research Division. He was Head, Control and Guidance Section, Low-Speed Aircraft Division, from March 1971 to May 1981; Head, Flight Management Branch, Flight Mechanics Division, now the Flight Control Systems Division, from May 1981 until he was appointed to his new position.

He has specialized in in-flight simulation techniques, aircraft stability and control, aircraft handling qualities, flight operating procedures and techniques, and pilot information requirements.

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RELEASE NO. 83-19

STUDENT-DESIGNED EXPERIMENT TO FLY ON FIRST LDEF MISSION

HAMPTON, VA.--When the Long Duration Exposure Facility (LDEF) is transported into space by a Space Shuttle, it will carry an experiment designed by Georgia Institute of Technology alumnus Marie Fair. She recently visited NASA's Langley Research Center for the flight certification test of her optical systems experiment.

LDEF, designed and built at Langley, is a simple, reusable facility that will expose a wide variety of experiments to the environment of space.

Fair's experiment, called Active Optical System Components (AOSC), will expose basic elements of electro-optical systems to the space environment for approximately 12 months. It will then be returned to Earth and analyzed to see how the elements held up during the long exposure. The samples to be exposed include lasers, crystals, detectors, paints, filters, mirrors, window samples and film.

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March 28, 1983

"We will check to see if the parts have degraded and, if so, how much," Fair explained. "A lot of the components have special types of coatings on them to keep component temperatures below levels at which deterioration can occur. We want to see what happens to these coatings--will they flake or fall off? We will also determine the effects of long-duration space exposure on the performance parameters of the radiation detectors, lasers and selected optical components."

In the future, optical and electro-optical systems will find increasing applications in space-based systems and the components must survive space hazards. Environmental hazards peculiar to space include radiation-induced discoloration, electrically active flaws or distortions. These may arise from sublimation, outgassing and decomposition effects, as well as deposition of such products and other debris onto component surfaces. Other hazards are abrasion or cratering of surfaces caused by meteoroids and cosmic dust.

LDEF will permit exposure of electro-optical components to a true space environment at a reasonable cost. LDEF will be delivered to Earth orbit by the Orbiter Challenger on its sixth flight. Once in orbit, LDEF will be removed from Challenger's payload bay by the Remote Manipulator System, the Canadian-built

grappling arm, and then deployed. Fair said that LDEF will be the largest satellite that has been deployed by the manipulator arm.

After about 12 months in space, LDEF will be retrieved by the Orbiter Atlantis on its maiden voyage, which is scheduled to be STS-25. The arm will again be used to replace the satellite in the payload bay. Once LDEF is returned to Earth, the experiments will be removed and returned to the experimenters for analysis.

LDEF operations focus on selected experimenters who design, build and mount their experiments, such as the AOSC, in trays for attachment to the LDEF structure.

"All the parts for the AOSC experiment fit into a tray, which is divided into six subtray panels," Fair explained. "They are bolted to a plate in a manner which simulates their likely surroundings in an operational system and covered with machine-sewn fiberglass strips and a sun screen. The experiment is designed for certain tolerances so it will not get much vibration and will not slide or shatter."

A total of 163 components have been acquired for the AOSC experiment. "Different parts have been supplied by NASA, others by the manufacturers of the components," Fair said. "Some

companies have given us the parts and said, 'If you test it, it is yours; let us know what happens to it when you get it back.'"

Four Langley researchers have contributed components to be included in the experiment. Dr. James B. Robertson, Flight Control Systems Division, and Ivan O. Clark and Dr. Roger K. Crouch, Instrument Research Division, have installed pyroelectric infrared detectors to determine the effects of long-duration space exposure and launch environment on their performance. The detectors are used for air-pollution monitoring and thermal mapping of the Earth. Because pyroelectric detectors can detect radiation in the infrared region while operating at room temperature, they are a prime candidate to fill NASA's thermal infrared detector requirements.

Gale A. Harvey, Atmospheric Sciences Division, contributed ultraviolet optical materials and detectors to Fair's LDEF experiment. His experiment will measure the type and extent of deterioration of the components in a typical Shuttle-Spacelab environment. These components may be used in diffuse radiation mapping and Earth looking mid to far ultraviolet measurements.

The AOSC experiment, one of 48 experiments from nine countries to fly on the first LDEF mission, now scheduled for April 1984, began in 1977 as a study activity between Georgia Tech and NASA.

Fair said she began developing the experiment in 1978 while a student at Georgia Tech. She worked with Dr. Donald Blue, principal investigator, at the Engineering Experiment Station, which is the applied research arm of Georgia Tech. She said the experiment was basically designed around that time, but was not completed until about a year ago. After the first successful launches of the Space Shuttle, Fair began reworking, upgrading and changing some of the components, getting it ready for the flight certification tests.

"It was important to me to come to Langley and see the experiment that I designed accepted for flight, especially after being with it for so long. No way was I going to the West Coast without seeing the experiment certified," said the Georgia native, who plans to live in Los Angeles now that she has graduated from Georgia Tech.

The experiment has been accepted for flight and is in storage, where it will remain until four or five months before launch. Several components, such as Harvey's special short wave radiation film that must be fresh at launch time, will be added before the AOSC experiment is shipped to the Kennedy Space Center. There the experiment will be integrated on LDEF and placed into the cargo bay of Challenger.

"This (designing the experiment and seeing it certified for flight) has been a very rewarding experience," Fair said. "I learned a lot that many people never have the chance to learn. Not many people have a chance to design something that is going to fly in space. It has been very interesting knowing that what I did design is going to be aboard the Space Shuttle. I just happened into this experience and it is very, very exciting."

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Release No. 83-20

STS-6 CARRIES LANGLEY ORBITER EXPERIMENT

A package of highly-sensitive instruments are installed on the Shuttle Orbiter Challenger for STS-6, the sixth flight of the Space Transportation System (STS), at the request of NASA's Langley Research Center, Hampton, Va.

Called HIRAP, for High Resolution Accelerometer Package, the experiment is designed to measure vehicle accelerations caused by aerodynamic forces acting on the shuttle orbiter during the high altitude portion (above 45 mi./ 73 km) of atmospheric reentry. Langley researchers will use data from HIRAP to determine aerodynamic characteristics of the orbiter at altitudes where the atmosphere is rarefied, or extremely thin. Aerodynamic flight at these altitudes cannot be simulated in ground facilities.

Aerodynamic data resulting from the experiment are important to development of future reusable orbital transfer vehicles now in the conceptual stage. These vehicles will one day carry payloads from the low-Earth orbit of shuttle to geosynchronous orbit, and return for reuse. Upon return, orbital transfer vehicles may use aerodynamic maneuvering in the upper atmosphere for braking and guidance to place them back into lower orbits for rendezvous with the shuttle and return to Earth.

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This aerodynamic maneuvering will occur in the same altitude range as that in which the HIRAP experiment will operate. Currently used vehicle stages for orbital transfer are expendable and can only deliver payloads to higher orbits, not return them.

The experiment package was developed as part of the Orbiter Experiments Program of NASA's Office of Aeronautics and Space Technology. This program provides for research experiments to be flown aboard the shuttle orbiter to obtain data with which researchers may expand and improve the technology base required for development of second generation space transportation systems.

The HIRAP experiment will be carried on all Challenger flights for the next several years. A twin HIRAP instrument is also being installed on the Orbiter Columbia during its modification, currently underway at Kennedy Space Center.

Principal technologist for HIRAP is Robert C. Blanchard of Langley's Space Systems Division.

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RELEASE NO. 83-21

CONWAY APPOINTED ASSISTANT CHIEF OF NASA LANGLEY DIVISION

HAMPTON, VA.--Bruce A. Conway, a native of Hampton, has been appointed Assistant Chief, Flight Electronics Division, at NASA's Langley Research Center. He is former Technical Assistant to the Director for Electronics.

In this position, Conway will be responsible for assisting the chief in directing a broad program of spacecraft and aircraft instrumentation engineering research and applications. He will take part in the overall management and technical direction of electronics sensor, communications and information systems technology activities in support of Langley's spacecraft flight projects and research programs.

Conway began his NASA career in 1961 as a student trainee in the cooperative engineering program between Langley and Virginia Polytechnic Institute and State University. From 1965 to 1972 Conway was an aerospace technologist. He served as the Technical Assistant, Flight Dynamics and Control Division, from 1972 until July 1975. From August 1975 to July 1976 Conway served a one-year tour as Chief of Avionics at NASA Headquarters in

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Washington, D..C., as part of the NASA Career Development Program.

Upon his return to Langley in August 1976, he became Staff Assistant to the Director for Electronics. In March 1981 he was appointed Technical Assistant, where he assisted the Director for Electronics in the conception, monitoring and implementation of research programs in electronics for aerospace applications. He also participated in the management of Directorate activities, such as computation and instrumentation which support virtually all of Langley's in-house research programs.

Conway graduated from Hampton High School in 1960 and received a bachelor of science degree in aerospace engineering from Virginia Polytechnic Institute and State University in 1965. He earned a master of science degree in aerospace engineering from George Washington University in 1974.

The author of five technical papers, Conway has received two Langley Group Achievement Awards, a NASA Group Achievement Award and a Skylab Achievement Award.

Conway and his wife, Carol, live in Seaford, Va. They have two children: Robert, a junior at Georgetown University, and Cathy, a senior at York High School.

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Release No. 83-22

NASA STUDIES FIRST GLOBAL 'SNAPSHOTS' OF OZONE

A high-flying satellite experiment is providing NASA researchers with their first instantaneous views of ozone on a global scale.

These large-scale "snapshots" are made possible by modifications to a University of Iowa instrument orbiting the Earth at 20 times the altitude of previous ozone-measuring systems. From this lofty height, scientists can remotely monitor the movement of this environmentally important gas for hours at a time and have, already, detected significant short-term variations in ozone features.

These results were reported recently by Gerald Keating, a senior scientist at NASA's Langley Research Center in Hampton, Va., at international scientific meetings in Canada and England. Keating says that "scientists are generally excited when they see these informative, yet beautiful, images of ozone from space."

Most atmospheric ozone (which shields the Earth's surface from harmful solar ultraviolet radiation) resides above the cloud tops in the lower stratosphere. Meteorologists suspect that, in areas of low pressure at these altitudes, the base of the stratosphere drops and ozone-rich stratospheric air fills in the region, causing an increase in the total column of ozone; thus the dynamics of the lower stratosphere will be

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mirrored by the variations of ozone concentrations.

For example, by viewing the short-term variations of ozone, scientists can detect changes in the location of the jet stream — a high-altitude core of strong winds. Knowledge of these variations in the jet stream, which is often a trigger for severe storms, may improve predictions of tornadoes and other weather phenomena.

Since jetliners use the jet stream to give them a tailwind boost, knowing the short-term changes in the jet stream could improve aircraft fuel economy. Studies performed by Northwest Airlines, using data from a NASA satellite (the Total Ozone Mapping Spectrometer aboard Nimbus 7), demonstrated the value of knowing the ozone distribution to improve airline routing. Detailed information on regions of high ozone could also reduce the hazard of high ozone cabin levels in commercial aircraft.

Images of the instantaneous distribution of ozone over the Pacific Ocean, like those being analyzed at Langley, could also improve estimates of the altitude variations of the base of the stratosphere. This, in turn, has potential for improving weather predictions for North America.

Data for the ozone images are collected for beaming to Earth by an instrument known as the Spin-Scan Ozone Imager. It is part of a larger optical system, built by the University of Iowa, aboard NASA Goddard Spaceflight Center's Dynamics Explorer I spacecraft. The optics were designed principally to view the aurora and airglow in the Earth's extreme upper atmosphere.

In December 1980, the principal investigator of the University of Iowa optical system, Lou Frank, and colleague John Craven, contacted Keating concerning the possible addition of filters to their instrument to study atmospheric ozone. Keating proposed a set of filters to view the ozone distribution using solar radiation scattered by the atmosphere. Within months, these filters were built and launched into orbit in August 1981 aboard Dynamics Explorer I.

Data for an image of the Earth's ozone distribution can be collected in 12 minutes, with resolution ranging from 120 km (75 mi.) to 3 km (1.9 mi.), depending on the altitude of the spacecraft. Its highly elliptical (oval) orbit is as high as 23,296 km (about 14,450 mi.) to as low as 560 km (about 350 mi.).

Keating says that major savings in costs and development time have been made by modifying computer software developed for NASA by Systems and Applied Sciences Corp. of Riverdale, Md.

Working with Keating is SASC's David Young, who explains that each ozone image consists of tens of thousands of individual measurements. "In order to generate an ozone image, complex calculations concerning the absorption of sunlight by ozone must be made for each measurement. The resulting image is then displayed on a computer screen from which it is photographed," Young says.

The images bear a striking resemblence to upper atmospheric weather maps. Regions of high and low ozone, similar to high and low pressures on a weather map, are clearly seen moving to the east at mid latitudes. Generally, high ozone concentrations occur in regions of low pressure, near the base of the stratosphere, and low ozone concentrations occur in regions of high pressure. Near the equator the variations in ozone appear to be much smaller and the average concentrations are lower. A sharp change in ozone concentrations is generally evident near the location of jet streams and, from this signature, the jet stream can be clearly observed meandering snakelike across the globe.

Keating, who heads Langley's science team for the experiment, is also studying images for possible ozone signatures of "folding events." These localized events occur at the boundary between the stratosphere and the lower atmosphere near the location of strong jet streams. During folding events, this boundary lowers in altitude and folds back on itself, creating an area where mixing between these two atmospheric regions is

greatly enhanced. Through these folds, ozone may be lost from the stratosphere by escaping into the lower atmosphere, where it is subsequently destroyed. By understanding the formation, evolution, and extent of these folds, researchers are hoping to better understand the natural loss mechanisms of the Earth's ozone.

The satellite ozone measurements are being compared with measurements obtained by approximately 100 ground-based ozone stations around the world. Although coverage from these stations is sparse, the two data sets agree remarkably well. There are plans to compare these data with measurements made by lower orbiting satellites, such as the Total Ozone Mapping Spectrometer, and with measurements made during the November 1981 flight of the Space Shuttle Columbia.

"Perhaps one day," Keating says, "an operational instrument similar to our experimental model could fly on a geosynchronous weather satellite and be used routinely for a number of applications, ranging from improved weather predictions to greater fuel economy for airlines."

Others working in the ozone investigations include Walter Bressette and Alton Mayo of Langley, Kent Ackerson of the University of Iowa, John Nicholson III, P.K. Bhartia and Ken Klenk of Systems and Applied Sciences Corp., Carl Mateer of Atmospheric Environmental Service (Canada), Mel Shapiro of the National Center for Atmospheric Research and Ted Pepin of the University of Wyoming.

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(NOTE: NASA-LANGLEY PHOTOS L-82-10,928 (COLOR) AND L-82-10,929 (B/W) ARE AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL BE PROVIDED BY PHONING KEITH HENRY AT 804-865-2934/2932. (VIDEO TAPE ALSO AVAILABLE, CONSISTING OF TIME-LAPSE COLOR IMAGES SHOWING MOVEMENT OF THE OZONE DISTRIBUTION.)

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NASA-LANGLEY RESEARCHER COMPETES FOR SPACELAB PAYLOAD SPECIALIST POSITION

HAMPTON, VA.--A NASA-Langley Research Center researcher who has always dreamed of flying may have that dream fulfilled in 1984, despite a handicap he has had since birth.

Dr. Roger K. Crouch, who is color blind, is a candidate for a payload specialist position to fly aboard Spacelab 3, scheduled for launch in November 1984.

Crouch explained that he always wanted to be an astronaut and a pilot, but he could not get a pilot's license because the Federal Aviation Administration requires full color vision in order to fly. He put the flying idea aside and came to work for NASA in June 1962.

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April 26, 1983

Four years ago, Crouch became involved in a program for materials processing in space and was a member of a working group on experiments for Spacelab 3. About that same time, he found out about the payload specialist program. NASA had already selected specialists for Spacelabs 1 and 2, but not for the Spacelab 3 mission. The Materials Processing in Space Office at NASA Headquarters was funding the experiments. "I told them that I wanted to be a specialist and I applied. I felt that getting involved in the program would be my best opportunity and probably my only chance to qualify for flight," Crouch said.

Not long after he applied, NASA cancelled the program. When it started again in January 1983, the previous applications were reviewed and applicants were called to see if they were still interested in becoming payload specialists. "'You betcha,' was my answer. I was so excited. I told them they had made my day," Crouch said.

The applicants were screened and tested. The list was narrowed from approximately 15 to seven, to four, and now two will be selected. "I recently passed my physical in Houston," Crouch said. "That was half of the battle. I think I have convinced NASA that I don't need to see every color accurately to conduct the planned experiments on Spacelab 3. My color deficiency really won't affect managing the experiments. I can

detect color contrasts enough to know how an experiment is doing." He explained that it depends on the type of experiment being managed in space as to how much color vision a specialist needs to conduct the experiments.

Crouch went to the Jet Propulsion Laboratory in California April 6 for the final selection interview. The announcement is expected to be made by NASA Headquarters within the next few months. "All I can do now is wait. I'm optimistic. I'll fly; I know I will."

The selected specialists will go to the Johnson Space Center for three months of astronaut training, becoming familiar with the Space Shuttle and flying in a KC-130 training plane. The specialists will spend some time with the principal investigators of the experiments that will fly on Spacelab 3, learning about the experiments and what results are expected from each.

An aerospace technologist in the Physical and Optical Electronics Branch, Instrument Research Division, Crouch's expertise is in growing crystals. If he is selected to fly, he will attempt to grow crystals with higher purities, to make detectors out of them and to compare growing them in space with growing them on Earth.

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Crouch has conducted research in growing crystals since 1975. "I was the 1979 recipient of the Floyd Thompson Fellowship and was privileged to study under Dr. August Witt and Harry Gatos at the Massachusetts Institute of Technology. They had experiments on Skylab and Apollo missions. My research involved studying the effects of gravity on semi-conductor crystal growth and materials processing in space. The fellowship gave me the credibility I needed and I believe my work at MIT was impressive to the selection committee.

"That year at MIT also gave me more confidence in myself and my work. I started feeling better about myself and about Langley. In fact, Langley has been very supportive in my endeavor," Crouch said. Langley has already had a test pilot selected as an astronaut. Fred Gregory has been named as the pilot for STS-18. Gregory worked at Langley from 1974 to 1978.

Langley is also involved in other experiments that will fly on future missions. Three researchers, Dr. Archibald L. Fripp Jr., William J. Debnam Jr. and Ivan Clark, are doing work in materials processing in space. They will have a crystal growth experiment, Materials Experiment Apparatus (MEA-A2), on STS-12. "It's a small effort, but we are getting recognized in the outside community of crystal growers, and that's good," Crouch said.

Crouch, Clark and Dr. James B. Robertson have contributed pyroelectric infrared detectors and Gale Harvey has contributed ultraviolet optical materials and detectors to the Active Optical System Components (AOSC) experiment that will fly on the Long-Duration Exposure Facility (LDEF), designed and built at Langley, on STS-13.

Excited and optimistic about the prospects of flying on the Space Shuttle, Crouch said that if he does not make the rank of payload specialist--prime or backup-- this time, he will try again. "I love my life and I love my work," he said. "I like to know where I'm going, but I like to enjoy what I'm doing on the way there. I may not fly on Spacelab 3, but I will fly someday."

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RELEASE NO. 83-24

REMSBERG, MAESTRELLO RECEIVE FLOYD THOMPSON FELLOWSHIPS AT NASA-LANGLEY

HAMPTON, VA.--Two NASA-Langley Research Center researchers have been awarded Floyd L. Thompson fellowships for 1983-84.

Dr. Lucio Maestrello, Transonic Aerodynamics Division, will spend one academic year at the California Institute of Technology. Dr. Ellis E. Remsberg, Atmospheric Sciences Division, will study at the University of Washington.

The Thompson Fellowship Program was established in 1977 to encourage the development of research potential among the Langley staff. The Fellowship allows researchers who have demonstrated continued growth in research to spend up to 12 months at an educational or research institution. It is named in memory of Dr. Floyd L. Thompson, Langley Director from 1960 to 1968.

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April 26, 1983

While at the California Institute of Technology, Maestrello will study and quantify experimentally active control of laminar-turbulent transition and develop a theory. "This research work is designed to extend the Liepmann-Nosenchuck experimental work, which was done in water, to air where the boundary layer excitation is produced by incoming sound waves," Maestrello explained. "Liepmann and Nosenchuck succeeded in controlling the boundary layer in water in a time dependent frame, thus delaying the rapid evolving transitional stages."

Maestrello said active control is a new, powerful method used in flow control and is made possible by the developments and improvements of computer controlled experiments. This new concept is of great scientific interest and has tremendous potential for reducing drag. The energy required to stabilize flow using active control can be very small compared with passive methods. "The eventual goal of this research effort is to control the forced instabilities, using the active control method pioneered by Liepmann and Nosenchuck," Maestrello said.

"The opportunity to be associated and work with internationally recognized leaders in fluid mechanics, along with a relatively undisturbed and intensive period of research, will enhance and improve the center's position in planning and

conducting analytical and experimental efforts toward aerospace vehicle drag reduction," Maestrello said.

Remsberg has produced several high accuracy data sets about the properties of the upper atmosphere based on the results of the Limb Infrared Monitor of the Stratosphere (LIMS) experiment.

He said he will be working with people who have extensive experience in combining such large satellite data sets with complementary conventional meteorological data sets in order to draw specific scientific conclusions about the upper atmosphere.

"I want to learn essential details of these procedures, work with counterparts there on refining the theory of ozone distribution in the mesosphere, based on data recently acquired at Langley, and to discuss a recently approved research proposal dealing with the photochemistry and dynamics of the upper atmosphere," Remsberg explained.

"The proposed research at the University of Washington is highly relevant to the Langley charter to maintain excellence in remote sensing technology and atmospheric sciences," Remsberg said.

Maestrello began his Langley career in July 1970 as an aerospace engineer. He has worked as an acoustician and

aerodynamacist conducting experimental, analytical and numerical studies in aeroacoustics and flow stability. He was Head of the Aeroacoustics Section from May 1975 to February 1977. His present work in the Airfoil Branch includes theoretical, experimental and numerical research in aero-fluid mechanics, specifically drag reduction through active control. He is also involved in the design of a unique test apparatus, the Laminar Flow High Reynolds Number Transition Research Apparatus.

Before coming to NASA, he was a research specialist at the Boeing Company, the University of Toronto and Imperical College, University of London.

A native of Legnago Verona, Italy, Maestrello received a bachelor of science degree in mechanics from Istituto Galileo Ferraris, Verona, in 1950. He earned his doctorate in acoustics from the University of Southampton, England, in 1976.

The holder of one patent, Maestrello is the author or co-author of about 70 technical papers. He is a Fellow of the Acoustical Society of America, Associate Fellow of the American Institute of Aeronautics and Astronautics and a member of the American Physical Society.

He has received NASA's Exceptional Scientific Achievement Medal and several Group Achievement and Special Achievement awards.

Maestrello and his wife, Caterina, live in Newport News. They have two daughters and two sons.

Remsberg joined the Langley staff in 1973 as an aerospace technologist in the Lidar Applications Branch. In 1977 he was assigned to the Atmospheric Sciences Branch, now known as the Theoretical Studies Branch. His present research involves remote sensing of the atmosphere and analysis of data from the Nimbus 7 LIMS experiment. He is particularly interested in the distribution of stratospheric ozone and water vapor, and has specialized in atmospheric physics and chemistry and passive and active remote sensing.

He has been a junior research assistant with the National Radio Astronomy Observatory, a geophysicist with the Department of Commerce, a research assistant with the University of Minnesota, and has taught at the University of Wisconsin, College of William and Mary and Old Dominion University.

Remsberg received a bachelor of science degree in physics from Virginia Polytechnic Institute in 1966 and a master of science degree and a doctorate in meteorology from the University of Wisconsin in 1968 and 1971, respectively.

The author or co-author of 66 technical publications, Remsberg has received two Group Achievement awards, two Special

Achievement awards and an award for writing the outstanding publication within the Space Directorate for 1980.

He is a member of the American Meteorological Society and the American Geophysical Union.

Remsberg and his wife, Judy, live in Grafton. They have a daughter and a son.

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RELEASE NO. 83-26

LANGLEY RESEARCHER NAMED NASA INVENTOR OF THE YEAR

HAMPTON, VA.--A researcher at the Langley Research Center has been named NASA Inventor of the Year for 1982.

Dr. Joseph S. Heyman, a section head in the Instrument Research Division, was presented the award by Langley Director Dr. Donald P. Hearth during a special ceremony honoring Langley inventors April 27.

Heyman received the award for inventing an ultrasonic (very high acoustic frequency) instrument, called a pulsed-phase, locked loop strain monitor. The instrument can precisely measure changes in acoustic propagation time with application to residual stress in materials; material curing, such as composites; and measuring thickness variations in materials.

"We are primarily interested in materials characterization for non-destructive examination," Heyman said. "The instrument allows a material to vibrate at its own natural frequency. By

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measuring this natural frequency, we can determine properties of the material, such as the elastic constants, the thickness or the composite's curing state, so that it can be examined. From that, we can tell if the material is properly made or in a proper state--the amount of stress placed on the material--with the ultimate goal of extending the 'safe life' of the material. Such a science base could prove invaluable in operational monitoring of space platforms, for instance."

Heyman said that the instrument is about one thousand times more sensitive than any other ultrasonic measurement. He considers it a major breakthrough and is now building a multiple pulsed-phase locked loop for imaging. "We will be able to take a material and get a picture, painted in the light of those same properties, for further examination," he explained.

Heyman has received numerous awards for his research, including the IR-100 award, presented by Industrial Research Development Magazine for each of the 100 most significant technical developments of the year. He is the first person in the history of the award to receive four IR-100s, for the years 1974, 1976, 1978 and 1981. He was presented the Arthur S. Flemming Award by the Downtown Jaycees of Washington, D.C., as one of 10 outstanding young federal government employees of 1981. He was presented a NASA Exceptional Service Medal and a Langley Technology Transfer Award in 1979.

A native of New Bedford, Mass., Heyman graduated from Tabor Academy in 1961. He attended Cornell University and Northeastern University, Boston, where he received a bachelor of arts degree with honors in physics in 1968. He earned master of arts and doctorate degrees from Washington University, St. Louis, in 1971 and 1975, respectively. In 1979 he was appointed adjunct professor of physics at the College of William and Mary.

Heyman began his NASA career as a cooperative education student in 1964. He is a research physicist and head of the Materials Characterization Instrumentation Section, where he coordinates a basic research program in ultrasonic interactions in materials and a program of applications of ultrasonic techniques to materials physics, solid state physics and electronic materials.

The author or co-author of more than 100 technical publications and presentations, Heyman holds 13 patents. He is a member of Sigmi Xi, the American Physical Society, the American Association for the Advancement of Science, the Society for Experimental Stress Analysis and the Institute of Electrical and Electronics Engineers, Sonic and Ultrasonics. He serves on a number of government committees for non-destructive examination.

Heyman is married to the former Berna Judith Levine, and has one daughter, Laura Dawn. They live in Williamsburg.

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RELEASE NO. 83-33

NASA TESTS NEW FABRICATION PROCESS FOR SPACE SYSTEM COMPONENTS

HAMPTON, VA.—Scientists at NASA's Langley Research Center are experimenting with a fabrication process for composites materials that one day may be used to manufacture components for large space structures and space transportation systems.

"Many space system components require long continuous structural lengths of very high specific strength," said Ian O. MacConochie, Vehicle Analysis Branch, Space Systems Division. "Therefore, we think this process may lend itself to the manufacture of components for future earth-to-orbit transportation systems and to ground or on-orbit manufacture of continuous members for large antennas, space platforms, space planes and other structures.

MacConochie explained that on-orbit manufacture is especially advantageous, since structural members would not be limited in length to that of the delivery vehicle's cargo bay.

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In the process, (called pultrusion) reinforcing fibers are continuously pulled from a creeling system, collimated (placed parallel), and saturated with a resin which becomes the composite matrix. The material then travels through a series of dies to eliminate excess resin, consolidate and compact the material, and begin shaping the cross-sectional profile to the desired configuration. A heated die then cures the resin and the polymerized composite now can be cut to any length.

Structural components can be produced continuously without splices or mechanical joints and at a speed of up to six feet per minute.

Before pultrusion, composite parts were limited to the size of vacuum and curing ovens in which they were processed. That process was time consuming, because it was a batch, rather than an automated continuous process. The automated process can save many manhours compared with the time required to hand lay the materials. "Hand lay-ups are heavier, inconsistent in thickness and are too time consuming," explained Maywood Wilson of the Fabrication Division's Materials Processing and Development Section.

Wilson and Bruce Bishop, also of the Fabrication Division, have been experimenting with Langley's pultruder for several years. "Basically, the process was started to pultrude structural beams and articles that would be used in recreational areas," Wilson said. "However, at Langley the original concept centered around in-space manufacturing processes, pultruding in the bay of the Shuttle. Materials could be shuttled up into space, then pultruded into shapes that could be expanded into large space structures.

"We are experimenting now with new lightweight materials and new reinforcing fibers," Wilson said. He explained that a structural member made of fiberglass-reinforced polymer would be 78 percent lighter than steel, 37 percent lighter than aluminum, and stronger than structural steel. The same structure made of graphite fiber reinforcement would be even lighter and stronger.

Wilson said that Langley is the only NASA center developing the process, but that the Marshall Space Flight Center, Huntsville, Ala., is doing subcontract work in this area.

Pultrusion experiments have been conducted for the Materials, Fabrication, Space Systems and Structures and Dynamics divisions. The work for the Materials Division involved the pultrusion of thermoplastics reinforced with fiberglass.

The Fabrication Division is constructing lighter weight wind tunnel model components, such as wing spars, wing skins and stringers, which are made of fiberglass and polyester and can withstand the shock from various tests.

A demonstration model of a one-kilometer-long Kevlar reinforced cable is being fabricated for the Space Systems Division. The cable could be used to tow a structure from one orbit to another or as a tether to suspend experiments or spacecraft from the Shuttle or a space station in a high orbit to a lower orbit.

Experimental pultrusions have been made for the Structures Directorate from both polyester and thermoplastics reinforced with fiberglass. Robert Miserentino of the Structural Dynamics Branch is project engineer for the pultrusion of a 35-foot-long (10.66 meters) suspension beam to be used in dynamic tests of very low frequency members. The intended applications are model space booms, such as for the proposed

Mast program and space station. The space station model will eventually consist of several components, including connecting devices, pressurized aluminum cylindrical shells, long thin plates and long booms. Future models will be used to develop ground tests methods to evaluate structural dynamics modeling and analytical techniques, thermal distortion effects, deployment within ground test limits, damping phenomena, techniques for low-frequency response control and performance of pointing control.

"Technology exists to pultrude practically any shape whose planes are parallel to its central axis, and technology is being advanced to pultrude and rollform or rollshape in the same operation," Wilson explained. Pultrusion, he continued, is now centered on thermoset (crosslinked) polymer matrix materials reinforced with fiberglass, graphite, Kevlar or hybrids of these reinforcement materials. Resins generally used are thermoset polyesters, vinylesters and epoxies. Resins in the development stages include high temperature thermoplastics.

The real future of pultrusion in the aerospace industry lies in developing the technology to pultrude and rollform high temperature (315 degrees C. or 600 degrees F.), continuous fiber reinforced thermoplastics.

Due to the chemistry in curing, thermoplastics (such as a common, low-temperature polyethylene) can be reheated and formed to a given shape from stock material; whereas thermosets are locked in a fixed position during the cure cycle and cannot be reheated and reshaped. Thermoplastics are also weldable after cure, which is desirable in fabrication.

Pultrusion has great potential for manufacturing component material parts for large space structures and space transportation systems. This process should have a strong influence on the way future space systems are designed and fabricated.

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(NOTE: NASA-LANGLEY B/W PHOTOS L-82-9422 AND L-82-12,229 ARE AVAILABLE TO ACCOMPANY THIS RELEASE AND WILL BE PROVIDED BY CALLING JEAN SAUNDERS AT 804-865-3006.)

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RELEASE NO. 83-34

LANGLEY SCIENTISTS FLY ADVANCED REMOTE SENSING DEVICE

The most advanced laser atmospheric remote sensor in the world is now being flown onboard a NASA Electra aircraft, according to scientists at Langley Research Center, in Hampton, Virginia. The system, which has the unique capability to remotely measure gas and airborne particle concentrations in the lower atmosphere, is an important part of an evolutionary program aimed at developing a space borne atmospheric monitoring system.

Scientists believe that only a space borne platform can offer the necessary global coverage to effectively monitor the Earth's continually changing atmosphere. These changes, which are caused by interplay between the Sun, atmospheric gases and airborne particles, chemistry, and dynamic motions require continual observation for complete understanding.

Langley's system, the Differential Absorption Lidar (DIAL) is the most viable lidar -- light detection and ranging system -- technique for a space borne atmospheric monitoring system, which could be Shuttle- or satellite-based.

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May 27, 1983

According to Langley researcher, Dr. Ed Browell, "The DIAL technique is the most powerful method we have for measuring atmospheric gas profiles in the lower atmosphere from space. Another of DIAL's assets is that it is adaptable to new technology. As laser technology advances, new tuneable lasers can be incorporated into the framework of the DIAL technique."

The DIAL technique utilizes the basic strengths of a light detection and ranging system. The lidar system, a radar technique using lasers, operates by directing laser light into the Earth's atmosphere. The light is scattered by clouds, aerosols, droplets and even molecules in the atmosphere. This backscattered light is then collected in a receiving telescope at which time it is processed to provide scientists with information about gas and aerosol profiles present in the atmosphere.

The DIAL's unique adaptation of the lidar system utilizes two tuneable lasers which are directed sequentially into the atmosphere while the Electra is airborne. The pulsed laser radiation from one laser is tuned to be absorbed by the specific gas being studied, while the other laser is operated at a minimum absorption wavelength for the gas.

The backscattered light is collected by a receiving telescope and directed onto photomultiplier tubes, which in turn convert the returned light to a voltage. This signal is stored on magnetic tape to be processed later or displayed on a television monitor for the researcher's control of the experiment.

The absorbed - unabsorbed backscattered returns from the two laser pulses are compared to obtain the concentration of the specific gas being studied.

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DIAL, which can transmit high intensity pulses of light in the ultraviolet, visible and near infrared areas, can remotely measure either ozone, sulfur dioxide, nitrogen dioxide, water vapor, temperature or pressure. Particle backscattering measurements are taken simultaneously with the measurements for a specific gas.

The DIAL system currently flying is not fully automated. Since a Shuttle- or satellite-based lidar system would have to be fully automated, two French scientific research agencies, CNES and CNRS, are working with Lanlgey to develop an intermediate step between the present DIAL system and a Shuttle-based lidar system.

Their cooperative effort, which is unofficially referred to as ER-2 DIAL, will lighten DIAL insturmentation from its current 4,000 pounds to a lean 1,100 pounds. And most importantly, the new system will be fully automated. While this system is now in the engineering phase, once finished it will be flown on an ER-2 (advanced U-2) aircraft.

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RELEASE NO. 83-35

NASA WIND TUNNEL SUCCESSFULLY CHECKED OUT

A major milestone was recently marked in the construction of a new wind tunnel at NASA's Langley Research Center with the successful completion of a series of cryogenic (super-cold) operational tests.

The National Transonic Facility (NTF) is a unique aeronautical wind tunnel that uses cryogenic gaseous nitrogen to simulate the air flow conditions of flight in the transonic range (speeds just below and above the relative speed of sound—Mach 0.8 to Mach 1.2).

The series of tests introduced nitrogen into the wind tunnel in a gradual, step-by-step process of lowering the tunnel temperature, building up pressure and reaching for a planned speed of Mach 1.2.

Five series of tests—totalling 50 separate tests runs—began in early February with a slow cool-down of the tunnel. Over a period of 12 hours, the temperature was reduced to as low as minus 250 degrees F., before the tunnel was warmed again.

The second test series, in late February, consisted of more rapid cool-downs, each lasting about five hours, with temperatures again going down to minus 250 degrees F.

A third test series was conducted in March, in which the temperature dipped to minus 280 degrees F. and the speed reached Mach 1.17, extremely close to the design goal.

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June 8, 1983

Two more test series, during April and early May, completed the performance tests. During the entire series, tunnel pressure was incrementally raised from 30 psi (pounds-per-square-inch) to 60, then 90, and eventually to just under 130 psi.

The tunnel will be shut down until mid-August so that deferred modifications and minor repairs can be made. Very few problems occurred during the test series, and none was major or caused any damage.

A final test series will run from mid-August into mid-September, ending with an Operational Readiness Review, the final stamp of approval for NTF construction and checkout.

Once the tunnel is declared ready for research operations, its management will be transferred from Langley's Systems Engineering & Operations Directorate--responsible for design, construction and checkout--to the Aeronautics Directorate, which will manage research in the tunnel.

The first wind tunnel model designed for the NTF, a generic transport aircraft model named Pathfinder 1, is already built, and is scheduled to be installed in the tunnel late this year. Pathfinder 1 and other models will be used during aerodynamic calibration of the tunnel. That process of making certain that the tunnel meets design specifications will take about one year, and some research work will be conducted during that time.

Formal dedication of the National Transonic Facility is planned for this fall.

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RELEASE NO. 83-36

NASA-LANGLEY OFFERING STUDENT WORK PROGRAM

Hampton, Va.—NASA's Langley Research Center is offering 15 high school students an opportunity to work with NASA researchers for eight weeks this summer.

The Summer High School Apprenticeship Research Program, to be held June 20 through August 13, allow juniors and seniors with exceptional academic achievement and strong career objectives in science, mathematics or engineering the chance to work with an engineer or scientist in the student's career interest area.

The Langley program, funded by NASA Headquarters in Washington, D.C., is a career exploration program which provides a real work experience in a student's interest area, an opportunity to see the applications of many concepts studied in the classroom and opportunities to gather information about related career areas which might reinforce or broaden a student's career objectives.

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RELEASE NO. 83-37

NASA-LANGLEY TO HOST GOVERNOR'S SCHOOL FOR GIFTED

Hampton, Va.--The Langley Research Center is one of four locations in the state of Virginia selected to host the 1983 Governor's School for the Gifted.

The Governor's School was established in 1973 to provide intellectually challenging and enriching experiences for a limited number of rising junior and senior high school students who are academically gifted and/or artistically talented.

This is the second year Langley has participated in the program, which includes a curriculum specially in engineering, mathematics and computer science. There are approximately 425 students participating in the school this year with 25 being assigned to Langley. The other school locations are Longwood College, Farmville, Va.; Mary Washington College, Fredericksburg, Va.; and Randolph-Macon Woman's College, Lynchburg, Va.

For the six-week program, June 20 through July 29, students will be housed at Hampton Institute where two NASA employees will act as chaperones during the evenings and weekends. During the 40-hour work week, the students' curriculum will include classes, seminars, workshops and independent studies which relates to various NASA

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programs. Each student will be assigned to a NASA scientist or engineer who will act as a mentor. Students are required to present weekly talks to their peers on their experiences. At the close of the school, each student will receive a Certificate of Commendation.

The Governor's School participants were selected by the State Department of Education from over 600 students nominated by high school principals and teachers. Selections were made based on grade point average, extra curricular activities, teacher recommendations and a written paper.

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RELEASE NO. 83-39

BLANKENSHIP NAMED DIRECTOR FOR STRUCTURES AT NASA-LANGLEY

HAMPTON, VA.--Charles P. Blankenship, Chief of the Materials Division at NASA's Langley Research Center, has been selected as Director for Structures at the center. His appointment will become effective July 1.

He will replace Robert C. Goetz, who has been named Deputy Director of the Johnson Space Center in Houston, Tex.

Blankenship will manage all research work in materials, structural mechanics, aeroelasticity and acoustics and noise reduction. He will direct the work of approximately 260 people.

Langley's Director, Donald P. Hearth, said "Charlie Blankenship has done an excellent job in the Materials Division. He will make a fine program director. I am sorry Bob Goetz is leaving Langley, but the JSC job is a fine opportunity for him. We wish him the very best."

Blankenship began his NASA career at the Lewis Research Center in Cleveland, Ohio, in 1961. He was a U.S. Air Force officer, assigned to Lewis, until 1964. From then until 1968 he was a materials engineer conducting fabrication development projects for nuclear propulsion system components.

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June 15, 1983

He was appointed Head of the Materials Processing Section in 1968, Head of Materials Projects Section in 1972, Chief of the Materials Applications Branch in 1977 and Chief of the Materials Applications and Composites Branch in 1979. In these positions at Lewis, Blankenship was involved in management of material technology programs for various power and propulsion systems, including high-temperature super alloys for aircraft turbine engines, structural ceramics for automotive turbine engines and high-temperature iron alloys for automotive stirling engines, and for research in polymer and metal matrix composite materials.

In July 1980 Blankenship transferred to Langley as Chief of the Materials Division.

Blankenship was born in Bluefield, W. Va. He received a bachelor of science degree and a master of science degree in metallurgical engineering from Virginia Polytechnic Institute and State University in 1960 and 1962.

The author of over 20 technical papers on high-temperature materials and their applications, Blankenship is a member of the American Society for Metals.

He and his wife, Gayle, have two sons. They live in Poquoson, Va.

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NASA DEVELOPS PRACTICAL PROCESS TO MAKE HIGH-TEMP SILICON CARBIDE SEMICONDUCTOR

CLEVELAND, OH -- A team of NASA Lewis Research Center physicists has developed a practical manufacturing process for making high purity silicon carbide semiconductors that may herald the emergence of a new breed of heat-resistant electronics.

Semiconductors, the tiny electronic "chips" small enough to pass through the eye of a needle, are the heart of modern microelectronics. They are used in everything from computer toys to complex spacecraft guidance systems.

Until now, most semiconductors have been made of pure silicon, the main ingredient of beach sand. Unrivaled in purity, these silicon chips, however, are adversely affected by heat. Electronics using silicon semiconductors are destroyed by temperatures above 600° F.

Scientists agree that by using semiconductors made of silicon carbide, electronic packages should be capable of enduring temperatures as high as 1,600° F. (Lead melts at 620° F.)

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(Distributed February 8, 1983)

"High-temperature electronics based on silicon carbide semiconductors can be of great value to a wide variety of users," say Lewis physicists William Nieberding, Anthony Powell and Herbert Will, chiefly involved in the development of the new process.

"Such electronics at Lewis, for example, could give us the ability to place electronic packages and switches inside experimental turbine engines to both monitor and control the engine to a degree never before possible," Nieberding said.

"Silicon carbide semiconductors would also be valuable in improved instrumentation for nuclear-powered generators -- both in space and on the ground -- and enable NASA to build planetary probes able to withstand the searing heat encountered on the surface of planets like Venus or Mercury.

"Still another application area of high potential would be extremely high frequency communication electronics where silicon carbide may prove to be a key element in developing frequency bands measured in hundreds of Gigahertz or billions of cycles per second," he added.

Early Work

The search for a practical production process for silicon carbide semiconductors is not new. Researchers in the 1950's, realizing how sensitive silicon electronics were to heat, set out to find a semiconducting material capable of withstanding much higher temperatures. One of the materials considered was diamond, but natural diamonds are far too expensive to use as a semiconducting material and the man-made variety lack purity and other essential properties.

Military aviation was the driving force behind much of the early research into silicon carbide semiconductors in those early years. The rationale: without high-temperature electronics, supersonic jets need exotic

cooling systems to protect their avionics. These would include pumping highly flammable jet fuel around the aircraft's electronics to absorb damaging heat.

Early silicon carbide efforts were a failure because sufficiently pure crystals of silicon carbide were impossible to make and experimental production methods were not repeatable, according to Powell.

Research on finding a repeatable process continued in labs all over the world during the 1960's but was abandoned in the U.S. in 1973. It was resumed in America two years ago when the Navy and NASA began looking for ways of putting computers in direct, on-line control of jet engines.

Enter Dr. Nishino

"At the same time the program was revived, we received a request from a Japanese physicist to join us at Lewis on a research fellowship," Powell said. "He had been doing advanced research into silicon carbide with a unique idea."

Dr. Shigihiro Nishino was quickly granted the fellowship and spent the next 15 months at Lewis working with Nieberding, Powell and Will on adapting his novel idea of making the elusive silicon carbide semiconductor.

Nishino's theoretical process began by using standard silicon disks as a substrate for the construction of the silicon carbide semiconductor. This was similar to other, unsuccessful methods tried in the past, pure silicon being desirable as a base because it would impart its highly regular crystal structure to the silicon carbide that could later be deposited above it.

The main stumbling block in the old process, according to Nieberding, was that the spacing between atoms of the two materials was significantly different. This caused the upper layer of deposited silicon carbide to break into tiny unusable pieces. The resulting uneven surface destroyed the material's ability to act as a semiconductor.

"Nishino's contribution chiefly involved laying down a very thin buffer layer of irregular silicon carbide crystals over the silicon substrate," Nieberding explained. "This buffer layer of tiny crystals (about 10,000 times thinner than a human hair) acted as a bridge between the two slightly different crystal structures."

Lewis scientists worked several months constructing a small lab that would permit them to perfect a way of depositing the buffer layer and the subsequent layer of silicon carbide.

The repeatable process that finally evolved centers around heating a pure silicon wafer in a radio frequency heated oven and then injecting selected gases to form the silicon carbide crystal buffer layer. The result is a film surface upon which other gases introduced later into the oven can deposit a uniform layer of pure silicon carbide crystal -- thus forming the silicon carbide semiconductor. The involved and highly controlled process requires about six hours.

Nieberding, Will and Powell have used the silicon carbide thus far produced in their rig to build diodes and other devices for evaluation.

"Early indications show that our efforts have been a success," Powell said, adding that their work has really just begun. "Now we are looking at ways to make the process more efficient."

Like so many technical innovations, no one is quite sure at this point how valuable the silicon carbide chip will be. But even conservative estimates indicate that a door may have been opened to a new world of high-temperature electronics.

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83-9

NASA News

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Lewis Research Center
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For Release:

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83-12

Paul T. Bohn
(res: 216/333-9454)

LOW-THRUST CHEMICAL ROCKET ENGINE WOULD PROPEL FRAGILE SPACELOADS INTO HIGHER ORBIT

CLEVELAND, OH -- Low-thrust, chemically fueled rocket engines could provide the answer to moving large, fragile space payloads into higher orbits without damaging them.

NASA Lewis Research Center engineers here believe that their research and technology efforts could lead to development of such small, cost-effective, high-performance, long-life engines used in conjunction with the Shuttle Space Transportation System (STS).

The Shuttle operates in low earth orbits of about 150 miles above the surface of the earth. From there, fragile satellites or structures need to be propelled into higher orbits, some as far as 22,300 miles out from the equator. Present-day, high-thrust chemical rockets can do that job for small, strong space hardware. But some of the space hardware of the 21st century--and even contemplated for the 1990s--is going to be up to 500 feet in diameter and so fragile that it will be unable to withstand the force of high-thrust engines.

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(Distributed March 2, 1983)

In a typical scenario employing a low-thrust propulsion system, the STS would lift an unassembled structure into low earth orbit where the structure would be erected. Then, the low-thrust engine would ignite and gently propel the assembly into a higher earth orbit.

Last year Lewis successfully test fired for the first time a 200-lb. thrust chamber, a key component for the new engine technology. Goal of the program, begun in late 1978, is to have engines for operational testing by the mid to late 1980's. Technology for the low-thrust program has already brought about a new state-of-the-art in design and operation of miniaturized fuel pumps and combustion chambers.

The low-thrust propulsion system overall would be similar in size to the 40-foot-long by 10-foot-diameter Centaur upper stage which has, for years, been a workhorse for medium payload NASA space launches. However, each of the two RL-10 engines on Centaur is almost six feet long and produces a fixed 15,000 pounds of thrust. Though operating much the same as Centaur, the low-thrust engine would be only 25 inches long by 18 inches in diameter and provide a thrust of only 100 to 500 pounds.

Propellents for the low-thrust engine are liquid oxygen (LOX) and liquid hydrogen (LH_2). They are pressurized to super cold propellent temperatures of -306°F for the LOX and -420°F for the hydrogen in separate tanks. To start the engine, the propellents are released simultaneously into a combustion chamber where a sparkplug ignites them. They burn continously until the valves are closed and the two propellents cease flowing. The volume of the propellent flow into the combustion chamber regulates the amount of the engine thrust.

The ten-year-long "Low-thrust Chemical Propulsion Program" is managed by Lewis' Space Propulsion Division. Contracts for various phases of the work have been awarded to such specialist firms as Boeing, Seattle; Aerojet Liquid Rocket Company, Sacramento; Rocketdyne, Los Angeles; Martin Marietta, Denver; Pratt & Whitney Aircraft Group, West Palm Beach; and General Dynamics, San Diego.

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83-14

Mary Ann Peto
(res: 216/722-5447)

NASA LEWIS ISSUES REQUEST FOR PROPOSAL FOR
ADVANCED COMMUNICATIONS TECHNOLOGY SATELLITE

CLEVELAND, OH -- Lewis Research Center, NASA's lead center in satellite communications, has released a Request for Proposal (RFP) for the design, development, building and launch of the Advanced Communications Technology Satellite (ACTS).

The Request for Proposal is an invitation to communications satellite builders to bid on the ACTS system which will consist of a flight spacecraft, ground system and operations. It is anticipated that a contract will be awarded in December 1983.

The Advanced Communications Technology Satellite is scheduled for launch by the Space Shuttle in 1988 and would then be used for communications experiments for two years.

Technologies to be developed under the program include the following:

- A new multibeam antenna on the satellite capable of transmitting signals to and receiving signals from small areas on earth of approximately 150 miles diameter (spot beams). This service would

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(Distributed March 7, 1983)

allow the transmitting and receiving frequency bands to be reused, thereby increasing the capacity of the system many times. Satellites that are in orbit now typically transmit signals to and receive signals from areas covering the entire U.S.

- An on-board computer that receives signals transmitted from ground stations, then sorts, groups and stores them temporarily in its memory banks according to their destinations and schedules their transmission to the appropriate ground terminals at the proper time and on the appropriate spot beam.
- An on-board switch that will route high data rate message traffic over fixed spot beams to major communication centers.

According to the RFP, future commercial space communications systems to be introduced in the 1990's will require advances in the technology to permit a more efficient use of orbit position and radio frequency resources and to allow for new forms of communications and data transfer.

Development of the ACTS technologies will assist in maintaining the U.S. pre-eminence in satellite communications, now a multi-billion-dollar-a-year business. Both Europe and Japan have been spending increasing amounts for satellite communications R&D with the aim of capturing a larger share of the growing worldwide market.

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83-21

Mary Ann Peto
(res: 216/722-5447)

NASA LEWIS AWARDS FIRST OF 3 CONTRACTS FOR PROPULSION SYSTEM TECHNOLOGY FOR ORBITAL TRANSFER VEHICLE

CLEVELAND, OH -- NASA Lewis Research Center has awarded the first of three parallel contracts to provide the research and technology for an advanced propulsion system for an orbital transfer vehicle for use with the Space Transportation System.

Recipient of the first contract, for $3,475,000, is Aerojet Liquid Rocket Company, Sacramento, California.

The award calls for exploration of advanced engine concepts and associated propulsion system technologies for an orbital transfer vehicle that would be used to transfer loads -- both personnel and cargo -- between low earth orbit and geosynchronous orbit (22,300 miles) and beyond. The program stresses innovative concepts and technologies for a reusable engine for a vehicle which could be based and serviced in space.

The cost-plus-fixed-fee contract, effective immediately, covers five years. Work is to be performed at the contractor's plant in Sacramento. Subsequent awards are expected to be made shortly to two other aerospace suppliers for similar studies.

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Charles Mitchell
(res: 216/243-6228)

NASA LEWIS PROMOTES PHYSICIST

CAROLYN PURVIS TO SECTION HEAD

CLEVELAND, OH -- Medina resident Dr. Carolyn K. Purvis has been selected to head the Spacecraft Environment Section in NASA Lewis Research Center's Space Power Technology Division, effective immediately.

In her new position, she supervises a team of physicists and engineers who study interactions between space systems and the charged environment of space to help design future large high power space systems.

Dr. Purvis had worked as a physicist in the section for nine years, starting there in 1974 when scientists noticed that charged particles caused spacecraft to receive spurious commands from ground stations, interfering with communications.

She began her career in NASA's Goddard Space Flight Center, Greenbelt, Maryland in 1968.

From 1970 to 1974, the Goddard Center utilized Dr. Purvis in system engineering to study conceptual designs of earth-orbital spacecraft, determining how they might function in space and suggest changes in design if warranted.

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(Distributed April 27, 1983)

In 1974, Dr. Purvis left the Washington, D.C. area, where she had grown up, to take her first position with NASA Lewis.

She holds bachelor, master and doctorate degrees in physics from Cornell University, the University of Washington at Seattle and Case Western Reserve University respectively.

Author and co-author of some two dozen technical papers, she is a member of the American Physics Society, American Geophysical Union, American Institute of Aeronautics and Astronautics, and American Association for the Advancement of Science.

Awards and honors include a NASA agency group achievement award, a Lewis special achievement award, a Federal Women of Achievement Award and a Communications Technology Satellite Group Achievement Award.

Dr. Purvis and her husband, Robert, are parents of a four-year-old daughter, Kelly.

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83-24

Paul Bohn
(res: 216/333-9454)

3-D MOVIES AID LEWIS JET ENGINE RESEARCHERS

CLEVELAND, OH -- Scientists and technicians at NASA's Lewis Research Center here are using 3-D movies for "peeking" into the private lives of jet engine compressors and other vital propulsion system parts.

The underlying principal is holography: three dimensional imaging of test objects and processes.

By watching these images in motion that show shock occurrences between fan blades in operation, engine designers expect to learn how to improve engine performance.

Arthur J. Decker, an optical physicist at Lewis, has been studying and experimenting with holography for ten years. He has progressed from an early method permitting one image per minute to be recorded to the new motion picture system that records 20 double-pulse holograms per second in precise synchronization with blade motions.

About two years ago he gambled on a theory that a laser beam could be made to do high speed holograms. Now the holographic motion picture system developed by Decker and his associates is used for vibration analysis, a study of the shock structure between blades of a compressor in operation.

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(Distributed May 6, 1983)

Holograms are recorded by laser light on photographic emulsion, either on glass plates or film. When developed using a process similar to conventional film developing, the plate is illuminated by laser light so that its image can be seen. The recorded image appears almost magically behind the plate giving a viewer the impression of looking at the actual object through a frame the size of the plate.

"The holographic technique has been around for a while but holographic movies are done routinely only at Lewis," says Decker. "Holo means 'everything -- the whole thing', and holograms were invented in 1948 by Dennis Gabor who won a Nobel prize for his work."

The unique and valuable property of a hologram is its third dimensional effect.

If a holographic shot is made of a beverage can, for example, the viewer can read the label head on, then by moving the eyes to the extreme right and left sides of the viewing frame read parts of the label around the sides of the can that are not visible in the head-on view.

"Since the flow of air and shock waves around compressor blades of an engine is three-dimensional, there is a very important need to see the three-dimensional structure of the shock waves," said Decker.

Single shot holograms are used to study air flow and stress patterns around aircraft propellers of modern turboprop engines, he added.

Some 40 years ago scientists working in Lewis wind tunnels began using two-dimensional Schlieren photography to see shock waves of supersonic flow over engine components in developmental stages.

Asked about the future of holographic movies, Decker replied:

"We're trying to expand three-dimensional imaging of all properties of a fluid. We want to see temperature, velocity and pressure distribution. My hope is that we'll be able to form a 3-D false color image corresponding to

some property like temperature. We also would like to increase the normal speed of 20-to-30 shots per second to a really high speed of thousands of shots per second."

An old aerial camera with a shutter but no lens has been converted by Decker and his team into a 70-millimeter movie camera containing holographic film. It was used in conjunction with a repetitively pulsed laser to make the first experimental holographic movies.

Just as Felix the Cat rotating on a Victrola turntable served as a test subject for the first successful laboratory television transmissions in 1928, Lewis holographers used a Snoopy doll rotating on a turntable as their test subject. Results provided a futuristic 3-D view of the cartoon character bathed in laser light.

If sensitive film of high resolution could be produced, cost of the holography process could be dramatically reduced, Decker believes. "We could then use a $5,000 laser to make many of our holograms instead of a $50,000 laser," he said.

To make a hologram, technicians must first illuminate the object to be recorded with laser light. This is done by channeling the pencil-thin beam through a beam-splitter that reflects part of the beam and passes the remainder. Often the laser, object and film are all mounted on a large vibration isolation table.

The portion of the beam that is reflected off the beam-splitter travels directly to the film plane and is called the reference beam. The light passed through the beam-splitter impacts the object being recorded and is reflected off the object.

The film is positioned in front of the subject where both the reference beam and the reflected laser light converge.

With protective eyeglasses in place and the beam alignment checked, the laser is turned on by a technician to make the exposures. What the film then records is not an optical image of the object but the pattern of interference formed between the reference beam and the beam reflected from the object.

After processing, the negative bears no visible image on its surface. Only when laser light is projected on the film from the front is the object's light-wave signature recreated and the image reconstructed in midair before the eyes of the viewer.

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Paul T. Bohn
(res: 216/333-9454)

Mary Ann Peto
(res: 216/722-5447)

LEWIS COUNTING DOWN TO MILESTONE 100TH LAUNCH ON MAY 20

CLEVELAND, OH -- One of the world's most successful booster rockets will thunder off a launch pad at Cape Kennedy, Florida, on Friday, May 20, to mark an historic milestone in space exploration and utilization: the 100th launch by engineers of NASA Lewis Research Center here.

It was in 1962 that Dr. Abe Silverstein, second Lewis director, convinced NASA's Washington headquarters that his team could de-bug Centaur, the nation's first high-energy, liquid-hydrogen/liquid-oxygen rocket. The Centaur project had lagged during the initial series of tests.

Given a go-ahead, Lewis engineers perfected the workhorse booster, carrying out a complex research and development program to assure its reliability. From Centaur technology came the powerful upper stages of Saturn which took man to the Moon.

On the 100th mission by the Lewis launch team, an Atlas/Centaur is scheduled to put an International Telecommunications Satellite (INTELSAT V) into geosynchronous orbit. INTELSAT V is a sixth-generation satellite built

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(Distributed May 11, 1983)

by an international team headed by Ford Aerospace & Communications Corp. to meet ever growing demands for worldwide telecommunications services.

INTELSAT V has twice the capacity of earlier communication satellites, providing 12,000 two-way voice circuits, two color television channels and analog and digital data communications capability. It represents a global communications system with more than a billion people in 105 member nations benefited by services it provides.

Looking Back

According to Steve Szabo, chief of the Lewis launch team, the 99 Lewis-managed launches to date include: 21 Atlas/Agena's, 11 Thor's, seven Titan/Centaur's, one Atlas/F and 59 Atlas/Centaur's.

The first operational flight by the Atlas/Centaur combination was in May 1966, when Surveyor I was lofted into space to become the first U.S. spacecraft to soft-land on the moon's surface. Since that maiden liftoff, both the Atlas booster and the Centaur second stage have been modified and improved by Lewis.

Lewis' Frank Manning was a launch vehicle engineer when the team was beginning to roll up its impressive flight score. Today he's deeply involved in integrating Centaur with the Space Shuttle.

"We are modifying the Centaur structurally, giving it a larger diameter and, thus, more fuel-carrying capability, to accommodate its use aboard Shuttle as a high-energy upper stage. Shuttle/Centaur will be capable of putting up to 15,000 pounds into high-earth orbit because of this additional fuel capacity," said Manning.

Long before NASA was created, Lewis had conducted pioneering work on high-energy liquid propellants for rockets. This included, in the late 1940's, accumulating valuable test data that became the technical base for the space

age. Successful tests produced ramjet and rocket technology that were later to carry men and machines at incredible speeds through the atmosphere and beyond.

It was Lewis expertise in cryogenic fuels for high-energy chemical rockets that gave birth to Centaur. The Centaur is powered by two 15,000-pound-thrust liquid-hydrogen/liquid-oxygen engines manufactured by Pratt & Whitney Co. Other principal contractors are General Dynamics Convair Division, which makes both Atlas and Centaur rockets; Rockwell International's Rocketdyne Division, which produces the Atlas engines; Teledyne Systems Co., which makes the Centaur computer; and Honeywell, Inc., which builds the guidance package.

Much of the technology developed by Lewis for Centaur was instrumental in the development of the high-energy second and third stages for the Saturn V booster which lifted Americans to the Moon in the Apollo program.

To make certain of Centaur's success, the Lewis team also perfected and improved the Atlas booster which carries it off the pad. Special facilities were set up many years ago for ground testing both rockets at the Lewis Plum Brook station near Sandusky.

Manning recalls how in the early 1970's an improved Centaur was fired in the B-2 facility at Plum Brook to simulate long coast periods, testing the hot and cold limits that various systems and engines could withstand over continuous periods.

Managing the Launch

A typical Lewis launch begins with a "tiger team" of specialists moving to Cape Kennedy four days before a Centaur flight. Numbering some 30 experts -- they also form the launch team itself -- they do a "walk-down" inspection of the mated rockets on the pad.

"They start at the top, come down the gantry and do a complete 'kick the tires' kind of inspection, using a checklist of what to look for in addition to normal procedures," said Manning.

The "tiger team" subsequently runs through a demonstration countdown, does a simulated mission to check all software and tests the engines to within one second of liftoff. Then they put the rocket back into start condition for the flight.

"At the point of launch itself we monitor everything. Kennedy Space Center personnel or contractors who have built the equipment actually sit at the control consoles and push the buttons," Manning said, "but we make the decisions."

One of the most memorable missions of a Lewis launch was Titan/Centaur-6, a flight to send the second of two Voyager spacecraft to Jupiter and Saturn on Sept. 5, 1977. Manning tells the story:

"The Titan was a little low on performance. It wasn't putting out enough thrust. However, the Centaur was able to add enough makeup energy to save the mission. Any other vehicle wouldn't have been able to do that and the launch would have been a failure. Automatic sensing controls had been meticulously developed to adjust Centaur's power as needed and direct its guidance system. This experience convinced us that Centaur was a very smart machine, a good design and a real workhorse.

"One of the earliest thrills in the Center's 20 years of rocket firings," Manning said, "was watching television pictures coming back from Mars. The spacecraft traveled more than a year to get there, being launched in 1975 and arriving in 1976. There was a 20-minute delay each way in transmitting signals due to the distance.

"It was strange to have the buttons pushed at the Jet Propulsion Laboratory ordering the television pictures, then wait 40 minutes to get results," Manning said. "The tension and suspense built up to a peak. But everything worked and everyone cheered as they looked out on the first alien landscape other than the Moon!"

All-Purpose Centaur

The first launch under a Lewis team's responsibility was Atlas/Centaur 2 on Nov. 27, 1963. On Jan. 25, 1964, the team launched a Thor/Agena carrying Echo 2 as a payload for earth orbit. For nearly a year, the public watched Echo's regular passes across night skies. News media published its flight schedule. It glowed as a bright star on a weaving, erratic course.

Richard Geye, one of the first Lewis "rocketeers", recalls the trials of launching an Orbiting Astronomical Observatory (OAO) aboard a unique Atlas/Agena booster system in April 1966.

"On the first attempt we scrubbed the mission because of instrumentation problems. Then it was hot fired. The third time a tornado in the area blew out our power supply. Another hot firing followed. We finally made it on the fifth try," Geye explained.

Other highlights of the Geye log:

"There were seven Titan/Centaur flights: one to prove the system, two with Vikings bound for Mars, two Voyagers to Jupiter and Saturn, and two Helios around the sun.

'Among the 59 Atlas/Centaur missions, the seven Surveyor landings on the Moon were especially important. They provided the vital information for Apollo and the successful landings of U.S. astronauts on the Moon. The Centaur was made to assure those soft-landing spacecraft missions; and it was very successful."

"We have launched 21 commercial communication satellites with Atlas/Centaur boosters to greatly improve communications throughout the world.

"Atlas/Centaurs have lifted a number of application satellites to perform meteorological and scientific experiments as well as astronomical satellites to observe and study celestial objects.

"The entire U.S. planetary exploration program has rested on the shoulders of Atlas/Centaur and its sister launch vehicle, the Titan/Centaur. Over the years Atlas/Centaur has put into orbit four Mariner spacecraft to study Mercury and Venus, and two Pioneer spacecraft to examine Venus . . . while Titan/Centaur combinations were used to boost two Vikings to Mars and two Voyagers to Jupiter, Saturn and their moons."

What of the future for Atlas/Centaur?

"We'll be busy through 1987 with Atlas/Centaur missions now on the books, a total of seven," says Szabo. "In addition Centaur alone, in a modified version, will be used aboard Shuttle for the Galileo mission to further explore Jupiter, launch date May 1986 . . . and for the International Solar Polar Mission, also scheduled for May 1986 launch. Shuttle/Centaur will continue as the nation's high-energy upper stage for missions after 1986."

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RELEASE: 88-14

SECOND SPACE SHUTTLE SHORT-STACK SOLID ROCKET MOTOR TO BE TESTED

NASA will test fire the second in a series of transient pressure test articles (TPTA) on Feb. 10 at 11 a.m., EST, at Marshall Space Flight Center's East Test Area in Huntsville, Ala. The test motor will be fired for six-tenths of a second, achieving an expected maximum pressure of 950 PSIA.

"We won't vent the test article immediately after ignition. The pressurized gas will be held inside the article for 120 seconds to provide full opportunity for the gas to reach the outer primary/secondary O-ring system," said Chuck Vibbart, TPTA project manager. "This will allow us to determine the effects of the hot gas on the critical outer O-rings."

Two field joints have intentional leak paths in the J-seal insulation and the capture feature O-ring to permit pressure to reach the primary joint O-ring. The case-to-nozzle joint also has an intentional leak path in its insulation and a flaw in the wiper O-ring to permit pressure to reach its primary O-ring.

Upon engine ignition, dynamic loads will be applied to the motor from a separate load tower. These loads will simulate the flight loads induced by the Shuttle's external tank near the rear of the motor. Also, a million pound weight will be placed on top of the forward motor segment to simulate the load of the remainder of the Shuttle elements on the launch pad.

The TPTA is a short-stack solid rocket motor consisting of three motor segments, combined to form two redesigned field joints, redesigned factory joints and a redesigned case-to-nozzle joint. The test is designed to evaluate the effects of ignition transients on the redesigned Space Shuttle solid rocket motor joints and seals.

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The TPTA is 52 feet long and 12 feet in diameter. The TPTA tests will provide 1500 channels of instrumentation data to verify the sealing capability of the redesigned SRM field and case-to-nozzle joints.

The TPTA test program is currently planned to consist of 10 tests, four of which will be conducted prior to the Shuttle's next flight. One of these four was conducted on Nov. 19 of last year.

Wyle Laboratories will conduct the test for Marshall, which manages the solid rocket motor program for NASA. Morton Thiokol, NASA's prime contractor for the motor, provides the test articles.

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Kennedy Space Center, Florida 32899
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KENNEDY SPACE CENTER 25 25th ANNIVERSARY 1987

For Release:

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

February 18, 1988

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

RELEASE: 88-23

SHUTTLE SOLID ROCKET MOTOR NOZZLE JOINT TEST SCHEDULED

The fourth in a series of six Space Shuttle solid rocket motor nozzle joint environment simulator test firings is scheduled for 2 p.m. EST, Feb. 24, at Morton Thiokol's Wasatch facility in Utah.

The overall test objective is to evaluate performance of the redesigned solid rocket motor case-to-nozzle joint with an insulation adhesive defect and a damaged O-ring.

A 0.25 by 0.05 inch defect through the bonded insulation, plus an intentionally flawed wiper O-ring, will assure a hot gas path in the joint as far as the primary seal. The two flaws are directly aligned. The test will evaluate the fail-safe performance of the redesigned joint.

The nozzle joint test article uses full-scale forward and aft motor domes plus a special piston assembly which replaces the normal motor nozzle. The redesigned case-to-nozzle joint includes 100 added radial bolts, adhesively bonded insulation surfaces and an added "wiper" O-ring designed to keep the adhesive on the insulation surfaces during assembly.

Hot gas for the test will be produced by a standard solid rocket motor igniter plus about 96 pounds of propellant (total 233 pounds), giving a faster pressure rise rate than in previous nozzle joint tests. Hot gas and pressure will vent from the test article at ignition and will be almost completely vented within about 7 seconds.

The test is part of the Shuttle motor redesign program. Morton Thiokol is NASA's prime contractor for the motors. The Marshall Space Flight Center, Huntsville, Ala., manages the motor program for NASA.

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SATELLITE BUSINESS SYSTEMS, PUBLIC AFFAIRS DEPARTMENT,
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News

For Immediate Release
Friday, May 6, 1983
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SBS ANNOUNCES $75 MILLION TRANSPONDER CONTRACT FOR SATELLITE-TO-HOME TELEVISION SERVICE

McLEAN, VA., May 6, 1983 -- Satellite Business Systems (SBS) and Inter-American Satellite Television, Inc., (IAST) announced today an agreement that will permit satellite-to-home television services primarily for subscribers in rural or thinly populated areas in the United States.

Under the terms of the agreement, SBS will provide five satellite transponders and five transmit earth stations (uplinks) for IAST service beginning later this year. The uplinks, standard SBS 5.5-meter earth stations, are for operation at an IAST television distribution center in Los Angeles.

IAST, a California-based company, will use the five transponders to provide television services to subscribers with installed dish antennas. IAST has established a joint venture with News Satellite Television Ltd. (NSTL), a British company affiliated with Rupert Murdoch's News America Publishing Incorporated. NSTL is the lessee of the transponders under the agreement with SBS.

The agreement with NSTL provides an initial lease term of six years and includes options for extension of the lease for a seventh year and for purchase of the transponders. Lease payments could aggregate more than $75 million over the term of the lease.

(more)

The President of IAST, William J. Kommers of Los Angeles, said his company will offer television distribution to subscribers primarily in thinly populated areas of the 48 States where many television services are not available and not likely to be available in the near future.

"Satellite television distribution is an exciting new opportunity for delivering high-quality programming to non-cabled U.S. households," Mr. Kommers said. "IAST intends to be an early and successful operator in this industry. We are pleased to have concluded arrangements with SBS for transponders. We have also been working with dish manufacturers and potential programming sources for many months to obtain low-cost, reliable dish antennas and quality programming. I believe we are now ready to move forward so that later this year we can begin marketing television services to potential subscribers throughout the country."

Mr. Kommers said the five-channel service will include at least one movie channel and a menu of news, entertainment, and cultural programming such as is commonly available to cable subscribers. Transmission will be scrambled and will be available only to subscribers who purchase or lease dish antennas and decoding equipment.

Financing for the IAST venture will be provided primarily by Rupert Murdoch, the Australian publisher and entrepreneur. Mr. Murdoch's communications interests include the New York Post, the Boston Herald, The San Antonio Express-News, The Times of London, and television stations in Australia.

Donald D. Kummerfeld, President of News America Publishing Incorporated, said, "We are excited by this

new venture's prospects for success and profitability. IAST represents a logical extension of our communications experience into a promising new marketplace."

The IAST television service will be the first to use U.S. Ku-band satellites (12 and 14 GHz bands). For several weeks, IAST and SBS have been conducting test transmissions of video programming through the SBS-3 satellite to a 1.2-meter antenna. IAST proposes antennas for use by its customers in the range of 1.2 to 1.8 meters in size.

"The tests have confirmed that technically superior video can be delivered by SBS transponders, in all typical weather conditions, through small receiving antennas," according to Andrew Daskalakis, SBS Senior Vice President, Engineering & Operations.

The transponders are 20-watt channels on SBS's third and newest satellite, SBS-3, which was launched last November 11 by the Space Shuttle Columbia. The satellite is in operation on its orbital station.

Mr. Daskalakis said, "This lease is a significant development for our industry. SBS has spent a great deal of time demonstrating advantages of the Ku-band for television distribution. These efforts are beginning to come to fruition, and the benefits will be widespread."

Implementation of the agreement is subject to Federal Communications Commission approval of SBS's application for authority to sell or lease transponders. Such authorization has already been granted to several other domestic satellite firms.

# # # # #

For further information:
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William J. Kommers, IAST (213) 989-4535.
Donald D. Kummerfeld, News America Publishing Incorporated (212) 732-0792.

IF.5 #20

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Lisa Malone
305 867-2468
KSC RELEASE NO: 1-83

Immediate

ROCKLEDGE FIRM TO PREPARE SITE FOR TRAILER COMPLEX

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Butler Construction Company of Rockledge, Fla. a contract for a 26-trailer complex.

The fixed-price contract, valued at $161,000, began Dec. 21, 1982 and is due to be complete by March 21, 1983.

Butler will prepare the complex site to be located south of the Operations and Checkout building in the KSC Industrial area. Another contractor will then deliver the trailers, and Butler will install walls, electrical wiring, safety alarms and sidewalks for housing personnel.

Three-fourths of the trailer complex will be occupied by IBM employees who are currently located in the Operations and Checkout Building. The employees to be housed in the remaining trailer area have not yet been designated.

Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission no earlier than Jan. 27.

# # # #

January 3, 1983

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

IF.5 #20

For Release:

Lisa Malone
305 867-2468
KSC RELEASE NO: 3-83

Immediate

HONEYWELL INC. WINS CONTRACT TO MAINTAIN EQUIPMENT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Honeywell Inc. of Severna Park, Maryland, a contract for the maintenance of all NASA/KSC-owned Honeywell test division equipment.

The firm-fixed-priced contract, valued at $53,520, began Oct. 1, 1982 and is due to be complete by Sept. 30, 1983.

This contract includes maintenance for Honeywell equipment located at KSC, Cape Canaveral Air Force Station and Patrick Air Force Base.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its sixth flight and second operational mission no earlier than Jan. 27.

# # #

January 5, 1983

NASA News

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National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867 2468

For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468
KSC Release No: 8-8(2)3

UNITED SPACE BOOSTERS AWARDED EXTENSION OF CONTRACT

KENNEDY SPACE CENTER, Fla.- The John F. Kennedy Space Center has awarded United Space Boosters, Inc., a $13,860,875 extension of its current contract to perform processing operations for the solid rocket boosters used on the Space Shuttle.

United Space Boosters is headquartered in Huntsville, Ala., and conducts its Florida operations from KSC. The company also has offices at Slidell, Louisiana, and Vandenberg Air Force Base, California.

Under terms of the contract, the company, an operating unit of United Technology Corporation, will perform receiving inspections, assembly and checkout of all the booster segments and associated hardware through pre-launch, launch, post-launch, recovery and disassembly operations. The cost-plus-Incentive-fee/award fee covers the period from January 1 through September 30, 1983.

Kennedy Space Center is NASA's primary launch and landing site for the reusable Space Shuttle vehicle, which provides routine and economic access to space for governmental, industrial and commerical use. The sixth mission of the Shuttle is presently scheduled for launch no earlier than late February.

# # #

January 18, 1983

NASA News

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National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Lisa Malone
305 867-2468
KSC RELEASE NO: 9-83

Immediate

SHARPES FIRM AWARDED CONTRACT FOR CLEANING CLEAN-ROOM GARMENTS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Precision Fabricating and Cleaning, Inc. of Sharpes, Fla. a contract that will provide laundry services in support of Space Shuttle launches.

The firm-fixed-price contract, with a dollar value estimate of $409,587, was effective Jan. 12, 1983, and will extend to Jan. 12, 1984. This type of contract requires an estimated dollar figure because the number of garments to be cleaned, during the one-year contract, is unpredictable.

Technical representatives arrive at the estimated figure based on the anticipated number of garments to be used and the number of shifts requiring the garments.

These garments are used in and around the shuttle and payloads. The garments have to be lint free so they do not contaminate space hardware.

Precision is responsible for the laundry service of government-owned cleanroom, non-cleanroom, nomex (non-flame retardant) and flame retardant garments.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission at the end of February.

# # # #

Jan. 18, 1983

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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IF-5 #20 JAN 28 1983

For Release:

IMMEDIATE

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

RELEASE NO: 11-83

SECOND TEST FIRING OF CHALLENGER ENGINES SET FOR JANUARY 25

KENNEDY SPACE CENTER, Fla. -- A second on-the-pad test firing of the Space Shuttle Orbiter Challenger's main engines is scheduled for no earlier than 11 a.m. EST on Jan. 25 .

A 56-hour countdown to main engine ignition will begin with a Call to Stations for the Space Shuttle launch team at 9 a.m. Saturday, Jan. 22.

The decision to conduct another Flight Readiness Firing was made after a thorough analysis of data from the initial test firing of Challenger's main propulsion system conducted at KSC on Dec. 18, 1982.

The data analysis revealed the occurrence of a high level of gaseous hydrogen in the new spaceship's aft engine compartment.

Following the initial Flight Readiness Firing, a series of leak checks were performed to search for the source of the hydrogen. Tests to look for both internal and external leaks were conducted in parallel with data analysis investigating possible mechanisms for ingestion of hydrogen from an external source.

January 20, 1983

-more-

No significant leaks were found internally and only one was located externally. The external leak was from a split cooling tube in the nozzle of the number three main engine. This was repaired.

A thorough review of available data resulted in a decision by senior NASA management on January 7 to conduct a second Flight Readiness Firing.

Two major objectives for conducting the second test firing were identified.

The first is to determine whether the hydrogen gas detected during the initial FRF resulted from an internal or external source. The second is to determine as closely as possible the location of the leakage if it is internal to the orbiter's aft engine compartment.

To accomplish these primary objectives, special instrumentation has been installed in and around Challenger's aft fuselage.

The instrumentation includes additional hydrogen leak detectors, pressure sensors, and gas sampling devices.

To either confirm or rule out an external source of hydrogen, several measures have been taken to block avenues of intrusion into the engine compartment.

Challenger's aft heat shield has received additional sealing and the internal pressure of the engine compartment will be increased by a factor of five over the first FRF.

In addition, streamers will be attached to the exterior of the base heat shield and around the main engines.

Special cameras located near the tail service masts will photograph the area to provide visual documentation of flow characteristics.

The FRF test, and subsequent data analysis, will involve personnel and operations from various NASA Centers and support organizations including Kennedy Space Center, the Johnson Space Center in Houston, and the Marshall Space Flight Center in Huntsville, Ala.

The 56-hour countdown leading to main engine ignition is virtually identical to that which preceded the Dec. 18 FRF. The events which take place during an FRF countdown closely parallel those which precede an actual launch.

The final nine minutes of the countdown will be controlled by the automated ground launch sequencer which performs the final series of events in a specific sequence. It also monitors various measurements for out of tolerance conditions and detects system malfunctions for which it will automatically stop the countdown.

Engine Ignition Sequence

The Flight Readiness Firing operation is limited to approximately 20 seconds of main stage operation with the start identical to that planned for the STS-6 launch. The engines will be tested at 100 percent of rated power level.

The three engines are not ignited simultaneously but start commands are staggered at intervals of about 120 milliseconds.

The start command for engine 3 is issued at T-6.6 seconds, that for engine 2 at T-6.48, followed by the start command for engine 1 at T-6.36 seconds.

To provide hydraulic power to cycle engine valves and move the engines during the main engine gimbal profile checks, the orbiter's three auxiliary power units will be "hot fired," or started, at T-5 minutes. This will provide power to the hydraulic system.

Successful completion of the second FRF and resolution of the major questions surrounding the hydrogen problem will clear the way for preparations to resume for launch of Challenger on its first flight in late February.

A firm launch date for the STS-6 mission will not be set until after results of the FRF have been evaluated.

-end-

COUNTDOWN SEQUENCE

Count Time	Function
T-56 Hours	FRF call to stations.
T-40 Hours	Fill liquid hydrogen and liquid oxygen Power Reactant Storage and Distribution System storage tanks.
T-34 Hours	**Six-hour built-in-hold begins.**
T-34 Hours	Start liquid oxygen and liquid hydrogen loading preparations.
T-29 Hours	Start Shuttle Main Engine final preparations and SSME controller load.
T-25 Hours	Power up orbiter flight control system.
T-24 Hours	Configure cockpit switches for remote fuel cell and hydralic operation.
T-17 Hours 30 Min	Activate Inertial Measurement Units (IMU) and start warm up period.
T-17 Hours	Activate orbiter communication systems.
T-11 Hours	**Begin 10 hour and 40 minute built-in-hold.**
T-11 Hours	Retract rotating service structure.
T-8 Hours	Clear personnel to the blast danger area. Inertial Measurement Units transition to operate/attitude determination.
T-6 Hours 30 Min	Start fuel cell activation.
T-6 Hours	Start chilldown of the LO2 facility and transfer lines and LH2 shuttle/main propulsion system.
T-5 Hours 50 Min	Start slowfill of hydrogen to 2 percent.

T-5 Hours 45 Min	Start orbiter/main propulsion system chilldown.
T-5 Hours 30 Min	Start slow fill of oxygen to 2 percent.
T-5 Hours 20 Min	Start the fast fill of hydrogen to 98 percent.
T-5 Hours 15 Min	Start fast fill of oxygen to the 98 percent.
T-3 Hours 45 Min	Fast fill of hydrogen is complete. Start LH2 topping and stabilization to 100 percent.
T-3 Hours 25 Min	Fast fill of oxygen is complete. Start LOX topping and stabiliation to 100 percent.
T-3 Hours 15 Min	LH2 topping to 100 percent is complete. Start LH2 replenish.
T-3 Hours 5 Min	LOX topping to 100 percent is complete. Start LOX replenish.
T-3 Hours	LOX and LH2 fill is verified to be in a stable replenish mode.

T-3 Hours	**Countdown enters planned 1 hour hold.** **Start ice/frost inspection.**

T-1 Hour 1 Min	Begin final IMU pre-flight alignment.

T-20 Min	**Countdown enters a built in 10 minute hold.** **Inertial Measurement Unit pre-flight alignment is completed. Prepare to transition the onboard computers to terminal countdown configuration.**

T-20 Min	Onboard computers transition to terminal countdown configuration. Dump primary computer and compare to verify proper onboard computer configuration.
T-16 Min	Open main propulsion system helium tank isolation valves.

T-11 Min	Ground launch sequencer takes a "snapshot" of all the parameters it monitors to ensure all systems are "go" for the final T-9 terminal countdown.

T-9 Min	**Countdown enters its final planned 10 minute hold. Final configuration of the ground launch sequencer is completed.**

GLS Milestones Inside 9 Minutes

T-7 Minutes 00 seconds
T-5 Minutes 00 seconds
T-4 Minutes 00 seconds
T-2 Minutes 55 Seconds
T-1 Minute 57 Seconds
T-0 Minutes 31 Seconds

T-9 Min	Start ground launch sequencer and terminal countdown.
T-8 Min 55 Sec	Terminate ET liquid oxygen replenish and power up SRB development flight instrumentation.
T-7 Min 30 Sec	Start orbiter access arm retraction.
T-6 Min	Pre-start Auxiliary Power Units.
T-5 Min 5 Sec	Turn on Orbiter operational instrumentation recorders.
T-5 Min	Activate APU's to provide pressure to the three orbiter hydraulic systems.
T-4 Min 30 Sec	Turn off main fuel valve heaters.
T-4 Min	Start SSME final helium purge sequence.
T-3 Min 55 Sec	Perform orbiter aerosurface profile check.
T-3 Min 30 Sec	Turn off orbiter ground support equipment bus. Orbiter is now on internal power.
T-3 Min 25 Sec	Start main engine gimbal profile check.
T-2 Min 50 Sec	Start gaseous oxygen vent arm retract.
T-2 Min 55 Sec	Start external tank liquid oxgyen pre-pressurization.

T-2 Min 35 Sec	Terminate fuel cell ground supplies. Fuel cells begin using onboard reactants.
T-1 Min 57 Sec	Terminate LH2 replenish and start pre-pressurization.
T-1 Min	Arm sound suppression water system.
T-31 Sec	Go for redundant set launch sequence start.
T-16 Sec	Open pre-liftoff sound suppression water system vent valve.
T-10 Sec	Go for main engine start.
T-9.3 Sec	Open main propulsion system pre-valves.
T-8 Sec	Fire hydrogen burn ignitors.
T-6.6 Sec	Engine ignition.
T-0 Sec	Shuttle main engines at 100 percent thrust.
T+15.4 Sec	SSME No. 1 shutdown.
T+17.2 Sec.	SSMEs No. 2 and 3 shutdown.

M. Konjevich
SI
SI-SRV-1

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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JAN 28 1983

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Immediate

Lisa Malone
305 867-2468
KSC RELEASE NO: 12-83

JOBEAR, INC. WINS CONTRACT TO MODIFY COMPLEX 39 WASTEWATER PLANT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Jobear, Inc. of Indiatlantic, Fla., a contract to modify the existing wastewater treatment plant that processes the sewage for the Launch Complex 39 area.

The fixed-price contract has a dollar value of $240,685. It was effective Jan. 20 and will extend to Oct. 16, 1983. The award is one set aside for award to a to small business firm.

The wastewater plant treats the sewage from the Vehicle Assembly Building, the Orbiter Processing Facility and the Launch Control Center. The highly-treated water is released into the Banana River.

Since the treatment plant was established in the early 1960's, the number of employees has increased, creating a need for a larger wastewater treatment plant, under Environmental Protection Agency guidelines.

Jobear will install a clarifier, which is a container with pumps, a new oxidation pond and a sludge pump station. All new apparatus will be integrated with the existing facilities to form an efficient wastewater treatment for the LC 39 area.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, tentatively scheduled for launch on its sixth flight and second operational mission in late February.

# # #

Jan. 21, 1983

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NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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JAN 28 1983

For Release:
Immediate

Weida G. Tucker
Area Code 305/867-2468
KSC Release No: 13-83

NOTE TO EDITORS/NEWS DIRECTORS

BUDGET BRIEFING SCHEDULED FOR MONDAY, JANUARY 31

KENNEDY SPACE CENTER, Fla. - A news briefing on NASA's proposed budget for Fiscal Year 1984 will be held at NASA Headquarters in Washington, D. C. on Monday, January 31, at 3:00 p.m. EST.

Press representatives who wish to monitor the briefing can do so from the Press Site Auditorium. The briefing will be carried by two-way audio from NASA Headquarters in Washington D. C., to the John F. Kennedy Space Center, the Johnson Space Center in Houston, Texas, and the Marshall Space Flight Center in Huntsville, Ala. There will be a question and answer capability.

Those unable to participate in the briefing personally may monitor it by calling the KSC Operator at 867-7110 and requesting to be connected with the V-2 Circuit.

# # #

January 25, 1983

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

IF.5 #20

For Release:

Immediate

Dick Young
Area Code 305/867-2468

KSC RELEASE NO.16-83

EXPLORER 1 LAUNCH ELEVATED NATION'S MORALE 25 YEARS AGO

KENNEDY SPACE CENTER, Fla. - It was a quarter of a century ago on Jan. 31, 1958, that the successful launch of a 31-pound satellite named Explorer 1 brought the nation into the Space Age.

And, as Explorer 1 launch director, Dr. Kurt H. Debus, the retired former director of NASA's Kennedy Space Center, recalls, it was the possibility of unfavorable winds - not technical inadequacies - which threatened to delay the American launch.

On October 4, 1957, the Soviet Union had surprised the world with the launch of a 23-inch-diameter, 184-pound ball designated Sputnik 1, the world's first artificial satellite.

The Soviets then successfully launched the 1,121-pound Sputnik-2 carrying space mutt "Laika" on the third day of the following month. Both satellites were put into orbit by the huge, new Soviet ICBM, the SS-6 (Sapwood) with a thrust in excess of a million pounds (far more powerful than anything then being flown by the United States), a direct ancestor of the rocket used today to launch Soyuz spacecraft.

NASA did not exist until October 1958 and the Jupiter-C that hurled that first American satellite into orbit was launched by the Missile Firing Laboratory of the Army's Ballistic Missile Agency (ABMA). Many members of the launch team were incorporated into the Marshall Space Flight Center in Huntsville, Ala., and the Kennedy Space Center in Florida when those NASA centers were created.

As early as 1954, the Army had proposed the use of the Redstone to launch an earth-orbiting satellite. The proposal - literally - did not fly.

- more -

And when, in 1955, the United States committed itself to the launch of a small satellite as its contribution to the International Geophysical Year to be observed during 1957-58, it was the Navy's proposed Vanguard - not the Army's proven Redstone or a variation thereof - which received the seal of approval as the launch vehicle.

The capabilities of the Redstone continued to be expanded in a new version known as the Jupiter-C. This Redstone variant, launched for the first time in September 1956, had extended propellant tankage and upper stages. It was used to ram reentry vehicles designed for Atlas and Thor ballistic missiles back into the atmosphere to test their survivability.

In a 1973 paper entitled "From A-4 to Explorer 1" written for presentation at the 24th International Astronautical Congress at Baku in the Soviet Union, Dr. Debus traced the evolution and flight successes of the Jupiter-C.

He wrote: "The same configuration, with the addition of a fourth stage, had a satellite capability. But with the successful 1957 test, the remaining Jupiter-C vehicles were placed in storage." That final Jupiter-C test firing was conducted in August, only two months before the Soviets launched Sputnik 1.

The warehoused Jupiters would remain in storage until the Sputnik crises appeared.

The pencil-thin Vanguard passed several tests successfully and would have its first attempt to orbit a 3-pound satellite on Dec. 6, 1957, on a Cape Canaveral launch pad. It reached an apogee of 2 feet and settled back down on the pad, exploding in a ball of fire.

The two Sputnik launches had dissolved opposition to using a military rocket for satellite launches and - on November 8 - ABMA chief Maj. Gen. J. B. Medaris had been given the go-ahead to use the left-over Jupiter C rockets to supplement the Vanguard effort. When the Vanguard failure occurred, the Jupiter-C launch team was already busy conducting preparations at the Redstone Arsenal, the Jet Propulsion Laboratory in Pasadena, California, and at Cape Canaveral for a March lift-off attempt. The launch date was later pushed up to Jan. 30.

The ABMA, heavily laden with developing American talent and technical expertise and leadership from rocketry pioneers such as Wernher von Braun, Debus and the other members of the German Peenemunde team who had cut their teeth on the A-4 rocket (known on the Allied side as the V-2) was to have its chance at hitting the history books.

As Debus recalled, security precautions surrounding launch preparations were tight.

The booster was flown in from Huntsville on Dec. 20, 1957, and kept under guard in a Patrick Air Force Base hangar during inspection and checkout. The JPL-provided upper stages had been spin tested and awaited mating with the booster.

The heavily-shrouded booster was bootlegged by truck to the Cape's Hangar D for further inspection and checkout on January 13. It was erected in darkness - without searchlights - on its pad at Complex 26 on Jan. 24.

The gantry was moved into position, the spin cluster housing upper stages and the Explorer 1 satellite were installed and then canvas shrouds were draped from the service tower to conceal most of the space vehicle. Only the lower tail section - the familiar Redstone - could be seen.

The press was advised on a confidential basis of the impending launch but under an agreement under which the story would not be told until there was "fire in the tail".

As the launch date approached, the Jupiter was fueled with unsymmetrical dimethyl hydrazine, a toxic, corrosive propellant still used in space flight systems. The oxidizer - supercold liquid oxygen - would not be added until the final hours of the countdown.

But on Jan. 29, the high velocity jet stream which flows west to east across the United States unexpectedly swept south over Florida.

The 70-foot-tall space vehicle was susceptible to wind shears - the effect of high velocity winds striking it from different directions as it soared through the upper atmosphere. This could cause the launch vehicle to break up or tumble out of control and scheduled launch attempts on Jan. 29 and 30 were scrubbed. Wind velocities in the jet stream were running from 165 to 175 knots.

"The configuration was very sensitive to wind shear," recalled Dr. Debus, interviewed in his Cocoa Beach home as the 25th anniversary of the Explorer 1 mission neared. "And surveillance of the higher atmosphere showed we were exceeding the possible wind limits."

The launch "window" for Jan. 31 opened at 10:30 p.m. and would close at 2:30 a.m. the following morning. And weather forecasts continued pessimistic although the jet stream had shifted to the north and wind velocities had dropped appreciably. The countdown was picked up despite less than encouraging weather data.

Recalled Debus, "we had a continuous question on our hands. Was there or was there not too much wind shear?" And the shear gradient was predicted to increase.

But a young Air Force meteorologist, Lt. John L. Meisenheimer, was more optimistic, recalled the former KSC Director. "He took me aside in the blockhouse and said: 'Dr. Debus, I'm a nobody but I tell you this wind shear will subside for long enough for you to launch. It will subside and then it will increase again.' I alerted the blockhouse people that we might go."

After consultation with other project officials, a decision was made to go.

At T-20 minutes, the squat, concrete blockhouse about 100 yards from the pad at Complex 26, filled to capacity with 54 operational personnel including General Medaris, was sealed. Medaris, Debus and other key personnel took positions at the small rectangular windows looking out on the pad.

Within seconds of ignition, the test conductor - Robert Moser - called out "We have a jet vane (steering device) deflection. Shall I hold?"

"I had looked at the vane in question and did not see any motion," recalled Debus. This had to be, therefore, an indication only. I waved my hand to continue."

The winds? "Lieutenant Meisenheimer was right," recalled Debus. "We squeezed Explorer out in a dip of the windshear and afterward the wind increased again. But we got it out alright."

The Jupiter roared to life at 10:48 p.m. EST and soared off into the darkness. The rocket systems of that day were less sophisticated than those now in use and the solid-fueled upper stages on the spinning "tub" bearing Explorer 1 were fired manually through a radio relay by project officials in Hangar D three miles from the launch site.

The space vehicle passed beyond the horizon of downrange tracking stations. All launch events had gone right on schedule but it would be a long, agonizing wait of more than 90 minutes before the satellite would be picked up by a tracking station on the west coast of the United States to confirm its orbit.

When tracking stations had later refined Explorer's path, it was found to be in an orbit with a high point of 1,584 miles and a low point of 224 miles. Its elliptical orbit was inclined 33.3 degrees to the equator and carried it around the earth once every 115 minutes.

By today's standards, Explorer 1 was a toy. It was a pencil-like tube 80 inches long and six inches in diameter. Of its weight, 12.67 pounds were in the casing of the final stage rocketmotor. The balance was the real payload - 18.13 pounds of scientific instruments.

The satellite would transmit data back to earth until May 23, 1958, when its batteries failed, and remain in orbit until March 31, 1970, when it plunged to destruction as it reentered the atmosphere.

But that tiny package of instruments discovered the Van Allen radiation belt and determined that micrometeorites were no undue hazard to spacecraft.

The nation celebrated its long-awaited space triumph and a typical headline the day after launch was the one in the Elmira (New York) Star Gazette which proudly proclaimed in banner type: "OUR SATELLITE CIRCLING EARTH".

Debus and the ABMA launch team would be transferred to NASA's Marshall Center in Alabama and the soft-spoken, almost professorial launch expert would become head of Marshall's Launch Operations Directorate at Cape Canaveral. He would later become director of what is now the Kennedy Space Center after it was spun off as a separate entity in 1962.

A new goal - the moon

The giant rockets and sophisticated spacecraft required to conquer the moon were taking shape on drawing boards at Huntsville and other NASA centers and in industrial complexes throughout the nation as Project Apollo picked up impetus.

It was under Debus' direction that a spaceport was carved out of 84,000 acres of sprawling savannah and marshes on Merritt Island, Florida, to the northwest of Cape Canaveral to receive, check out and launch the marvelous new machines which would extend human reach to the moon.

The lunar goal was attained well ahead of schedule - within the decade of the 1960s - and six Apollo crews carried the human presence, scientific instruments and the American flag down to the surface of the Moon. Debus remained director of the Spaceport through the Skylab orbiting laboratory program and the breaking of ground for the first of the new facilities required for the Space Shuttle program.

He retired in 1975 and now lives in Cocoa Beach with his wife, Gay, in a home overlooking the tranquil, bird-rich Thousand Islands sprinkling the broad Banana River west of the city.

A small corner of the water front home is filled with trophies and tributes from a grateful nation and from scientific and civic leaders from throughout the world. These acclaim a rich, productive and fulfilling career.

He is - literally - one of the few people who shot for the Moon and made it.

Could the United States have beaten the Soviet Union into space had the ABMA launch team been given the go ahead?

His answer is an unequivocal and emphatic "yes".

When did he first conceive that it might be possible to send an artificial satellite - a man-made moon - into orbit around the earth? At Peenemunde? At White Sands? Huntsville? Cape Canaveral?

"At Peenemunde, I suppose," replied Debus. "We were involved in flying ballistic trajectories. And when you shoot ballistically, you shoot in a parabola. And a parabola is bent downward to the surface of the Earth. When extended, it falls beyond the horizon, on and on, so it stays in orbit. It's kind of a natural thing. It's not an invention; it's part of the everyday considerations for people who deal in ballistics.

Debus' career spanned from the beginning of the space age to preparations for the Space Shuttle, which recently reached operational status on its fifth mission flown last November.

Where do we go from here?

"I predict," said Debus, "that we are following a track very precisely in which the next thing will be something very big in orbit such as a space station.

"It has to coincide with what we need, nationally. If there is a need - and I think there is a need for a space station - it will be fulfilled when the time comes. First with a smaller one, then with a larger one. But the path we have started on will be continued.

"It is perfectly clear where we are going. We are going up into orbit and we will make use of the absence of gravity, maybe with manufacturing things that can not be done under gravity. Some of these things are showing their merits and they will be followed up when the time comes. And the time comes when it becomes economically feasible to do them."

Whatever the form of future directions in space, Debus will have an excellent perch from which to be an eyewitness - his home is just about 20 miles from the Kennedy Space Center's launch pads.

As for Complex 26 from which the Explorer 1 launch was accomplished to loft the nation's spirits a quarter of a century ago, it is now a mere waystop on a tour of the Space Museum on Cape Canaveral Air Force Station. Preserved as a monument, its concrete blockhouse and red-painted gantry soak up the Florida sun, surrounded by relics of other space systems such as the Atlas, early Polaris, Jupiters and the Mercury/Redstone complex from which the first American astronauts were hurled for brief, sub-orbital flights in space.

In terms of today's technology, Complex 26 is as relevent as Stonehenge. But it was the milestone from which began the giant steps and leaps which have carried Americans to the Moon and extended human vision and intelligence to the planets.

# # # # #

NASA News

National Aeronautics and
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John F. Kennedy Space Center
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AC 305 867-2468

IF.5 #20

For Release

Immediate

Lisa Malone
305 867-2468

KSC RELEASE NO: 17-83

MODULAR CONCEPTS, INC., TO INSTALL TRAILERS

KENNEDY SPACE CENTER, Fla. -- Trailer cities are on the rise around NASA's John F. Kennedy Space Center. Modular Concepts, Inc., of Auburn, Georgia, has been awarded a contract for the installation of 26 trailer units.

Modular Concepts has already delivered and installed about 196 trailer units to the Kennedy Space Center which brings the total number of units to 222.

The contract has a dollar value of approximately $300,000 and was awarded on Jan. 19. The trailers are due to be delivered and installed on or before Feb. 22, 1983.

IBM personnel will be housed in three quarters of these units, to be located southwest of the Operations and Checkout Building in the KSC Industrial Area.

The trailers will be ready for use by the second week in April.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, to be launched on its sixth flight and second operational mission later this year.

# # #

Jan. 27, 1983

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NASA News

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Kennedy Space Center, Florida 32899
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KSC RELEASE NO: 14-83

BURNS AND ROE, INC., AWARDED ADDITIONAL CONTRACT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Burns and Roe, Inc., of Jacksonville, Fla., an addition to its existing contract for the design of Space Shuttle facilities.

The fixed-price contract has a dollar value of $114,000, which brings the total contract value to $680,398. The original contract was initiated in March 1982. The contract addition was effective Jan. 14, and will extend to March 23, 1983.

Burns and Roe is responsible for designing shuttle-related facilities at the Kennedy Space Center. The contract addition calls for the design of a Solid Rocket Booster paint facility to be located at Cape Canaveral Air Force Station.

The reusable boosters will be repainted, when needed, in this facility, and will then be transported to the Vehicle Assembly Building for refurbishment.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission later this year.

# # #

Jan. 28, 1983

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release

IMMEDIATE

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KSC RELEASE NO: 18-83

INQUIRY TEAM REPORTS ON SPACE SUIT FAILURES

KENNEDY SPACE CENTER, Fla. -- A NASA team investigating failures in two space suits during the fifth Space Shuttle mission has issued a report detailing the failures and making recommendations.

The report was prepared by an eight-man anomaly review team headed by Richard A. Colonna, Johnson Space Center, Houston.

During day five of the STS-5 Shuttle flight aboard Columbia, Mission Specialists William B. Lenoir and Joseph P. Allen experienced separate and unrelated failures in their space suits (Extra-vehicular Mobility Units). Both occurred during preparations for a three and one-half hour space walk.

The first failure was detected as Allen was donning his suit. The fan motor would start, run slowly, surge, struggle to continue operating and shut down by itself. Troubleshooting isolated the problem to the fan motor and eventually to one of two sensors in the motor electronics.

February 2, 1983

-more-

In the second failure, an oxygen regulator in Lenoir's suit did not furnish the required pressure because two plastic locking devices, each the size of a grain of rice, had been left out during assembly. With the locking devices gone, a threaded ring which holds a spring in place had backed off its original factory adjustment.

Findings by the STS-5 Anomaly Review Team followed an exhaustive assessment of the design and hardware histories, operations and investigative testing of the space suit hardware. The report reads: "Improvements could be made to make a system better, and a number of changes to incorporate improvements were begun prior to the STS-5 anomalies. However, even with no improvements, if the regulator were fabricated properly, and with proper contamination control and sealing of the motor Hall effect sensors, the Prime Life Support System (PLSS) would function properly."

The review team report lists ways to improve and simplify contractor test and inspection procedures. Also, regulators and motors will now undergo more extensive tests onboard the Shuttle orbiter just before being stored and the space suits will be fully tested the day before a scheduled space walk.

Prime contractor for the Shuttle space suits is Hamilton Standard, Windsor Locks, Conn. Vendors to Hamilton Standard are Carleton Controls Corp., East Aurora, N.Y., for the oxygen regulator and F.W. Bell, Inc., Orlando, Fla. for the fan motor sensors.

NOTE TO EDITORS: Copies of the STS-5 Anomaly Review Team report are on file in newsrooms at NASA Headquarters, Washington, D.C.; Johnson Space Center; Kennedy Space Center, Fla.; Marshall Space Flight Center, Huntsville, Ala.; and the Dryden Flight Research Facility, Edwards, Calif.

-end-

M. Konjevich
SI
SI-SRV-1

NASA News

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KSC RELEASE NO: 20-83

MANHATTAN BEACH FIRM WINS CONTRACT FOR SUPPORT OF SPACE SHUTTLE

KENNEDY SPACE CENTER, Fla. -- Fairchild Control Systems Company of Manhattan Beach, Calif., was awarded a contract by NASA's John F. Kennedy Space Center. The contract is for the procurement of disconnect assemblies, caps and checkout plates that are required in support of the Space Shuttle.

The fixed-priced contract has a dollar value of $271,450, and work is to be completed by June 1, 1983.

The equipment will be used as part of a new service system designed to supply liquid hydrogen fuel to the Centaur upper stages which will be flown aboard the Space Shuttle to provide the high energy required for the Galileo mission to Jupiter and Solar-Polar mission to the Sun to be flown in 1986.

The new system will include a new hydrogen service arm on a pad structure and an additional umbilical plate on Space Shuttle orbiters to meet Centaur fuel servicing requirements. The reliable Centaur has been used to provide the final burst of energy needed for the Viking missions to Mars and the Voyager flights to the outer planets as well as to place heavy communications satellites into stationary orbits above the earth's equator.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission later this year.

# # #

February 8, 1983

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NASA News

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Immediate

Weida G. Tucker
Area Code 305/867-2468
KSC Release No: 21-83

SPACEPORT AWARDS COMPUTER SCIENCES CORPORATION CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Computer Science Corporation's Applied Technology Division, Falls Church, Va., a $33,955,235 extension on its communication and instrumentation support services contract.

The contract calls for CSC to provide communications and instrumentation services in support of the Space Shuttle program, including development, flight test and operational phases. It also provides for support in data acquisition and data processing for expendable launch programs utilizing Delta and Atlas Centaur rockets, and instrumentation of the Launch Control Center firing rooms.

Computer Sciences Corporation and its subcontractor, the RCA Services Company, Cherry Hill, N. J., will provide support in the areas of communications, measurements, telemetrics, data storage, retrieval, program planning, and reliability and quality assurance programs. The cost-plus-award-fee covers the period from February 1 to September 30, 1983 with options for six additional one-month periods through March 31, 1984.

Kennedy Space Center is the primary launch and landing site for the reusable Space Shuttle, which provides routine and economical flights to space for government, industrial and commercial use. The sixth mission of the shuttle and the first mission for the Orbiter Challenger is presently scheduled for launch sometime in March.

# # #

February 9, 1983

NASA News

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John F. Kennedy Space Center
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KSC RELEASE NO: 22-83

CHEMKO WINS SHUTTLE SUPPORT CONTRACT

KENNEDY SPACE CENTER, Fla. -- Chemko of Titusville has been awarded a contract from NASA's John F. Kennedy Space Center for the procurement of one gaseous nitrogen regulator panel, one pipe and support assembly regulator panel and supporting documentation to be used in vehicle purging and pressurizing at Vandenberg Air Force Base, Calif.

The contract was initiated Feb. 2, 1983, and will extend to April 16, 1984. The firm-fixed-price contract has a dollar value of $137,778.

The equipment will be used to provide low pressure gaseous nitrogen service in support of the Space Shuttle while it is on the launch pad. The first launch of the Space Shuttle from Vandenberg is scheduled for the mid 1980's.

During launch preparations, the orbiter is purged with conditioned air to remove contaminants or toxic gases as well as to maintain proper temperature and humidity levels.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission in March.

# # #

February 9, 1983

NASA News

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KSC RELEASE NO: 23-83

HOLLOWAY AWARDED CONTRACT FOR RANGE SAFETY CHECKOUT SYSTEM

KENNEDY SPACE CENTER, Fla. -- The Holloway Corporation of Titusville, Fla., has been awarded a contract by NASA's John F. Kennedy Space Center for the procurement of two range safety checkout systems.

The systems will be used at the Kennedy Space Center and Vandenberg Air Force Base to checkout Space Shuttle onboard range safety systems during vehicle assembly and launch countdown.

The firm-fixed-price contract was initiated Feb. 8, 1983 and will extend to Jan. 9, 1984. The contract has a dollar value of $149,270. Holloway will fabricate, assemble and deliver one checkout system to KSC and one system to VAFB.

At KSC, the system will be installed in Mobile Launcher Platform 3, and at VAFB the system will be installed in the Shuttle Assembly Building at Space Launch Complex 6.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its sixth flight and second operational mission in March.

# # #

February 10, 1983

NASA News

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25th Anniversary
1958-1983

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KSC Release No: 28-83

BEST WRECKING CO. AWARDED CONTRACT FOR MOBILE LAUNCHER

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $574,601 contract to Best Wrecking Company of Detroit, Mich., for disassembling the last remaining Saturn V/Apollo launch umbilical tower.

The 400-foot-tall tower sits atop a Saturn V/Apollo Mobile Launcher which is to be modified to serve as a Mobile Launcher Platform for the Space Shuttle program.

Under terms of the fixed-price contract, which covers the period from Feb. 24 through Dec.1, 1983, Best Wrecking is to develop two options.

One is to disassemble the tower and preserve sections in a storage site at the Kennedy Space Center. The other is for disassembly with the steel used for scrap.

The contractor is to provide NASA with the contract options within 21 days and a decision on the options may be made within 60 days of contract award.

The three mobile launchers used in the Apollo Program were constructed during the mid-1960s. Two of them have already been modified for the Shuttle program. Changes have included removal of the umbilical towers and modification of the launch platform to provide separate exhaust holes for the shuttle's twin solid rocket boosters and battery of three main engines.

Kennedy Space Center is the primary launch and landing site for the reusable Space Shuttle, which provides routine and economical flights to space for government, industrial and commercial use. The sixth mission of the shuttle and the first mission for the Orbiter Challenger is presently targeted for launch March 19 or 20.

# # #

February 25, 1983

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NASA News

25th Anniversary
1958-1983

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KSC Release No: 31-83

WILTECH OF FLORIDA CORPORATION AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $3 million-plus contract extension to Wiltech of Florida Corporation, a small business firm, of Kennedy Space Center, Fla. Wiltech is responsible for component refurbishment and chemical analysis services at KSC.

The cost-plus-award-fee contract extension is for $3,395,828, bringing the total value of Wiltech's contract to $6,475,781. The contract covers the period from March 1, 1983 through February 28, 1984.

Wiltech provides inspection, cleaning, and refurbishment or replacement of valves and pumps which are part of the ground systems used to service the Space Shuttle with its propellants. The company is also responsible for performing chemical analysis of Shuttle fuels such as hydrazine, used in the shuttle orbiters onboard propulsion systems, to determine that they are free of impurities.

The Kennedy Space Center is NASA's primary launch and recovery site for the revolutionary Space Shuttle, which provides routine and economical flights to space for government, industrial and commercial use. The Challenger is now positioned on Launch Pad 39A and is being prepared for its maiden flight.

# # #

March 1, 1983

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For Release:

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KSC RELEASE NO: 30-83

LAKELAND FIRM AWARDED MILLION DOLLAR CONTRACT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Specialty Maintenance and Construction, Inc., of Lakeland, Fla., a contract valued at $1,268,836, for the procurement of a second payload canister for Space Shuttle operations.

The fixed-priced contract covers the period from March 3 1983 through Feb. 18, 1984. The contract is one set aside for award to a small business firm.

The payload canister serves as a portable clean room providing environmental conditioning for Space Shuttle payloads during transfer between selected payload processing facilities and the orbiter. The second canister is needed to accommodate more frequent launches as the Space Transportation System moves into its operational era.

The canister is 66 feet long, 18 feet wide, and 23 feet tall.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle.

# # #

March 3, 1983

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NASA News

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KSC Release No: 33-83

KSC VISITOR ATTENDANCE IN FEBRUARY A RECORD MONTH

KENNEDY SPACE CENTER, Fla. - February was a record-smashing month at NASA's John F. Kennedy Visitors Center, bringing in the highest figures for attendance ever recorded for that month since tours began in 1966.

Some 146,950 persons toured the space center last month, an increase of 2.3 percent over the figures recorded during the same period last year. Through February, a total of 252,368 persons had visited the center since the first of the year, surpassing the previous high of 239,274 in 1981, which was the biggest year ever for attendance at the Visitors Center.

"We had a record year in 1981, and despite the fact that business dropped off in 1982 because of a flagging economy, those were our two best years," said Arnold Richman, chief of the Visitors Services Branch. "Already we're ahead of figures for both those years, so we could be headed for our biggest year yet.

"Tourism is up all over the State of Florida, and we expect to get our fair share of it," he said. Richman said the revolutionary Space Shuttle, the fantastic flying machine which is the kingpin of the nation's new Space Transportation System, is presently capturing the interest of people all over the world. "They come here hoping to catch a glimpse of the Shuttle, and they have the opportunity to view the orbiter on the pad during non-hazardous testing periods. Our operation is unique because there's no other place in the U. S. where you can see this," he explained. Kennedy Space Center is the primary launch and landing site for the Space Shuttle, which provides routine and economical flights to space for industrial, commerical and educational use.

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Richman is projecting an even greater jump in attendance during the Easter holidays. "Easter is one of our peak visitor seasons, along with Christmas, the summer months, and launch periods,"he said. Although the Visitors Center is closed on launch days, attendance usually swells during the days leading up to and just after launches.

To accommodate the record crowds that the Center is now drawing, the Visitors Center has embarked on an $8.5 million expansion program. The construction will approximately double the capacity of existing facilities. It is being financed by TWA Services, Inc., concessionaire for the Visitors Center, but once completed, the facilities will become government property.

"We're building a lot of new and exciting things," Richman said. When completed, the complex will house a new ticket pavillion, a centrally located sales and operations building, a new full service restaurant, a souvenir sales store, and a large theater complex. The theater complex, the last of the facilities scheduled for completion, will be completed by early 1984. It will feature a 450-seat Imax theater with a five-story screen. The complex will also house a 500-seat demonstration theater to be used for audio visual programs and additional exhibit space.

# # #

March 4, 1983

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NASA News

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For Release:
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KSC RELEASE NO: 34-83

ROCKWELL INTERNATIONAL AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Rockwell International Corporation of Kennedy Space Center, Fla. a contract for Space Shuttle support at Vandenberg Air Force Base.

The cost-plus-award-fee contract has a dollar value of $31,389,000. The contract was initiated Feb. 28, 1983 and will extend through Sept. 1984.

Rockwell is continuing activities that were previously provided to Vandenberg under a U.S. Air Force contract. The contract calls for the design, development and activation of VAFB Launch and Landing Site Ground Support System equipment and facilities, for Air Force Space Shuttle launch operations.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, a revolutionary space vehicle that has successfully completed four test missions and is now beginning its operational era.

# # #

March 4, 1983

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For Release:
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Mark Hess
Kennedy Space Center, FL
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KSC Release No: 32-83

COLUMBIA BEING MODIFIED AT KSC TO CARRY SPACELAB 1

KENNEDY SPACE CENTER, Fla.--America's first reusable spaceship, the Orbiter Columbia, has been grounded...but not permanently. It will return to space this fall, and its mission will be to carry Spacelab, a unique modular laboratory, into orbit.

To accomplish that job, Columbia is being modified at Kennedy Space Center in Bay No. 2 of the Orbiter Processing Facility. In general terms, the modifications will enable Columbia to carry the versatile Spacelab, accomodate the six-man crew that will fly the spacecraft and conduct the experiments, and upgrade several systems for added reliability and extended lifetime.

Spacelab 1, the first mission of the European Space Agency-built Spacelab facility, will be launched on STS-9 from KSC into a 155 statute mile (248 km) circular orbit. The six-man crew, consisting of two NASA astronaut pilots, two NASA astronaut mission specialists, and two non-astronauts payload specialists - one American and one European - will work in the Spacelab workshop around the clock during its nine-day mission.

The Spacelab 1 configuration will consist of a two-section pressurized laboratory module, which provides a shirt-sleeve environment for the crew to conduct experiments, and a single U-shaped experiment pallet that will be laden down with instruments that require direct exposure to the zero-gravity environment.

Modifications will be made to augment Columbia's structural and on-board capabilities to handle requirements of the in-orbit laboratory in which experiments will be conducted 24 hours a day.

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Significant modifications necessary to link orbiter systems to the Spacelab include installation of an airlock and tunnel adapter so that astronauts and payload scientists can go back and forth between the Columbia and the Spacelab. Several longeron stabilizer links will be installed in the cargo bay due to the Spacelab's load requirements. Oxygen lines will be routed from Columbia to the workshop where it will be mixed with the Spacelab's own nitrogen system to provide a breathable atmosphere for crew members conducting experiments.

Columbia's last flight, STS-5 made November 11-16, carried the first four-man crew. Columbia's ejection seats, which will not be removed during this period, limit the amount of room up on the flight deck. On STS-5, three crewmen sat on the flight deck, and one astronaut rode downstairs on the mid-deck.

To accommodate the payload specialists on the Spacelab 1 mission, two more seats will be installed down on the mid-deck. They will be the same type of airliner-type chairs used on the STS-5 mission, and are standard equipment on Columbia's sister ship - Challenger.

Because there are more people on board, a large number of the modifications are to provide the crew with the comforts of home. A galley will be installed on the mid-deck to serve as an eating and food storage area. A large rack of Development Flight Instrumentation was removed to make room for the modern space kitchen. A personal hygiene station will be added to the mid-deck area as well.

Since the crew members will work and sleep in 12-hour shifts, three bunk bed sleeping stations will be installed on the mid-deck with sleeping bag restraints. Three hammock-type sleeping bags will also be installed in the mid-deck area.

More people means more equipment, so additional permanent stowage lockers and compartments will be added, many of them under the mid-deck floor. Changes will be made to cabin flow restrictors to provide adequate breathing air for the larger crew and portable oxygen systems will be installed for the added crewmen.

To handle the additional power requirements imposed by the Spacelab and to provide an abundant supply of liquid reactants which can be converted into breathing air for the crew, several major changes will be made to the Power Reactant Storage and Distribution (PRSD) System.

The three standard two sub-stack fuel cells, which provide electrical power to the spacecraft and Spacelab, will be replaced with fuel cells that have three sub-stacks, thus increasing the available voltage margin. The number of cryogenic storage tanks, which hold and supply the super cold reactants to the fuel cells for generating power and to the environmental control system for breathing air and cabin pressurization, is being increased from three sets to five sets. All five of the O2 tanks will be new ones, designed for added durability and reliability over the 100 mission lifetime of Columbia.

A sampling of other Columbia modifications includes: a new set of stronger main landing gear wheels, plus a modified set of brakes. Between 400 to 600 payload bay insulation blankets will be replaced with blankets made of a stronger, more heat resistent material and the heat-rejecting radiators located on the inside the cargo doors will be replaced with new diffuse coated radiators designed by NASA's Langley Research Center for reduced glare and better heat rejecting capability.

Other hardware items that will be replaced or recycled include some 100 "black boxes," the Reinforced Carbon Carbon panels on the leading edge of the two wings and several antennas. The RCC panels are going back to the manufacturer, Vought, for a coating enhancement that will increase the panels' resistance to oxidation and increase their mission life.

Many of the "black box" changeouts are to upgrade Columbia's instrumentation systems and because of the deletion of the Development Flight Instrumentation. The large DFI pallet has been taken out of the cargo bay, making room for Spacelab 1. Substantial rewiring will be accomplished during the modification period to add about 100 former DFI measurements to the orbiter's Operational Instrumentation System.

A text and graphics unit will be added to the complement of displays available for use by the flight crew. The unit adds a capability of sending black and white facsimile data to the orbiter from the ground. The unit will also receive digital data from the Ku-band signal processor and supply the crew with a hard copy of the processed data.

Three of Columbia's Tactical Air Navigation (TACAN) units, which are used as an external navigation aid in the orbiter during the entry phase, will be replaced with upgraded units, and the four quadrant S-Band antennas will be replaced with new

antennas that will enable Columbia to communicate with the Tracking and Data Relay Satellite. The S-Band system, which has a larger beam width compared to the narrow pencil beam of the Ku-band system, will be used to lock onto the TDR satellite. Once the S-band signal is acquired, the Ku-band signal can be turned on.

A new antenna, one that operates in the Ku-band, will be installed on Columbia. Because of its ability to handle significant amounts of data, it will be used specifically for transmitting Spacelab information down to the ground. The information will be relayed to ground stations from Columbia's Ku-band system via the two Tracking and Data Relay satellites that will be orbiting the Earth by the time of Spacelab 1's launch.

Columbia's engine subsystems will get a thorough going-over during the down time. The twin Orbital Maneuvering System pods and Forward Reaction Control System have been removed and are being processed at KSC's Hypergolic Maintenance Facility. The two OMS engines will be returned to the Aerojet facility and outfitted with new valves qualified for additional flights.

Columbia's three Space Shuttle Main Engines will be overhauled for use as the flight engines for the fourth Shuttle Orbiter Atlantis. These engines, which operated at 100 percent of rated thrust on Columbia, will be modified and retested to certify them for operation at 109 percent aboard Atlantis.

Columbia will get a brand new set of main engines prior to its Spacelab 1 mission. Several modifications will be made to the Main Propulsion System including installation of additional leak detection measurements in the engine compartment. And because of the lower operating pressure of the Lightweight External Tank and increased flow capacity of the higher thrusting Shuttle Main Engines, the gaseous hydrogen flow control valves will be enlarged and three liquid hydrogen ullage pressure level signal conditioners will be replaced.

While in the OPF, technicians will remove and densify more of the thermal protection tiles that have not previously undergone the strengthening process. Approximately 2,400 tiles, located entirely on the belly of the spacecraft, will be removed and densified. Another TPS effort will be the replacement of the remaining ablative panels on the elevons with reusable tiles. Some of the ablative panels were replaced with tiles prior to the STS-5 flight.

KSC Release No. 32-83

The modification work on Columbia is scheduled to be completed by June, at which time power-on retests will begin of major vehicle subsystems. The Spacelab will be installed in early August and a combined Shuttle/Spacelab interface test will be conducted to verify proper operation of the integrated vehicle. Columbia is scheduled for a late August to early September move to the VAB for mating with the other Shuttle elements.

Spacelab 1 is scheduled for launch aboard STS-9, tentatively scheduled for September. The first Spacelab mission is a joint venture of NASA and the European Space Agency. Scientists from 11 European nations, Canada, Japan and the United States are providing instruments and experimental procedures for over 70 different investigations in five research areas or disciplines: astronomy and solar physics, space plasma physics, atmospheric physics and Earth observations, life sciences and materials science.

# # #

March 7, 1983

NASA News

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25 25th Anniversary 1958-1983

National Aeronautics and Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Weida G. Tucker
Area Code 305/867-2468

Immediate

KSC Release No: 36-83

MARTIN MARIETTA AWARDED CONTRACT EXTENSION IN SUPPORT OF SHUTTLE

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $7,037,785 contract extension to the Martin Marietta Corporation, Michoud Operations, at New Orleans, La., in support of the Space Shuttle.

The contract calls for Martin Marietta to provide engineering services for the processing of the external tank and its related ground systems equipment at Vandenberg Air Force Base, Calif. The company will also develop plans for the entire Cryogenic Storage Transfer System used in the Shuttle and for site activation of the ground systems facilities.

The cost-plus-award-fee contract covers the period from March 1, 1983 through September 30, 1984, and brings the total value of Martin's Marietta's contract with NASA to $71,149,883.

Vandenberg Air Force Base, which will become the second launch and landing facility for the Shuttle when it becomes operational in the mid-1980's, will be used to launch polar orbit payloads. Kennedy Space Center is the primary launch and landing site for the Space Shuttle. The nation's newest and most revolutionary space transportation system, this spacecraft provides routine and economical access to space for industrial, commercial and scientific use. The Orbiter Challenger, is presently being prepared for flight at Pad 39 A at KSC. Its maiden flight is currently targeted for liftoff sometime later this month.

# # #

March 14, 1983

NASA News

IF.5 #20

25 25th Anniversary 1958-1983

National Aeronautics and Space Administration

John F. Kennedy Space Center

Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release

Dick Young
Area Code 305/867-2468

March 18, 1983

KSC Release No. 42-83

NOTICE TO EDITORS/NEWS DIRECTORS

STS-6 BRIEFING SCHEDULED FOR MARCH 22

KENNEDY SPACE CENTER, Fla. - A briefing on launch preparations for the sixth Space Shuttle mission will be held in the Complex 39 Press Site auditorium at 12 ~~noon~~ on Tuesday, March 22.

The five-day, 19-minute STS-6 mission is scheduled for launch from Complex 39's Pad A no earlier than Monday, April 4, during an 18-minute window opening at 1:30 p.m. EST.

Participants in the Tuesday news conference will include Alfred D. O'Hara, KSC's Director of Launch and Landing Operations, and Edwin C. Johnson Jr., his technical assistant.

O'Hara will discuss STS-6 status and schedules and Johnson will direct his remarks to contamination of the Tracking and Data Relay Satellite by an intense storm at the launch pad on February 28 and steps being taken to prevent future problems of that nature.

The conference will be carried by two-way audio/video to NASA Headquarters in Washington, D. C., the Johnson Space Center in Houston, Texas, and the Marshall Space Flight Center in Huntsville, Ala.

News media representatives unable to attend the briefing in person may monitor it by calling the KSC Operator at Area Code 305/867-7110 and requesting that they connected with the V-2 Circuit.

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David Garrett
Headquarters, Washington, D.C.
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Hugh W. Harris
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

For Release
IMMEDIATE

KSC RELEASE NO: 43-83

LAUNCH DATE SET FOR STS-6

KENNEDY SPACE CENTER, Fla. -- The Flight Readiness Review of NASA, DOD, and contractor preparedness for the sixth flight of the Space Shuttle concluded with a go for launch on Monday, April 4th at 1:30 p.m. EST.

The group of managers which included the NASA Administrator James Beggs heard that all elements of the mission, including Challenger's main engines and the Tracking and Data Relay Satellite, are considered ready to go.

Ed Smylie, Associate Administrator for Space Tracking, indicated that "Inspection of the TDRS satellite during the past week has revealed a lower level of contamination than originally thought on the critical parts of the solar array hinges. The hinges, the solar panels, and other accessible areas of the spacecraft have been cleaned. In addition, the Shuttle cargo bay has been cleaned. With these actions, the spacecraft is judged flightworthy and will be placed back in the cargo bay on Saturday."

Repairs to the main engines on the Challenger have been completed. They have been reinstalled and final leak checks are underway.

Lt. General James Abrahamson, Associate Administrator for Space Flight, emphasized that the planned launch date of April 4th is "tight, with little contingency time. However, the schedule does allow time off for the launch team on Easter Sunday, which we think is important." Abrahamson also pointed out that because of the tightness of the schedule that everything must go smoothly or the launch date could be one or two days later.

-end-

March 18, 1983

IF.5 #20

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AC 305 867-2468

For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 50-83

HARRIS CORPORATION AWARDED CONTRACT FOR STS CARGO SUPPORT

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded the Harris Corporation, Government Systems Division, Melbourne, Fla., a $1,245,107 contract extension in support of Space Shuttle cargo operations.

Under terms of the fixed-price contract, Harris is to manufacture and deliver three separate pieces of equipment in support of the Orbiter Functional Simulator at Vandenberg Air Force Base, Calif. The Orbiter Functional Simulator is the U. S. Air Force's version of KSC's Cargo Integration Test Equipment, which is used to verify the compatibility of payloads with the Shuttle Orbiter. The equipment is to be delivered to Vandenberg by August 1, 1984.

Vandenberg Air Force Base will become the second launch and landing facility for the Shuttle when it becomes fully operational in the mid-1980's. All polar orbit payloads will be launched from that site. Kennedy Space Center is the primary launch and landing site for the Space Shuttle. The nation's newest and most revolutionary space transportation system, the Shuttle provides routine and economical access to space for industrial, commercial and scientific use.

The Orbiter Challenger is presently being prepared for flight at Pad 39 A at KSC. Its maiden flight is currently targeted for liftoff no earlier than April 4, 1983.

# # #

March 24, 1983

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NASA News

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Kennedy Space Center, Florida 32899
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For Release:
Immediate

Lisa Malone
305 867-2468

KSC RELEASE NO: 55-83

WATERWAY BRIDGE OPENINGS TO BE CONTROLLED ON STS-6 LAUNCH DAY

KENNEDY SPACE CENTER, Fla. -- The opening and closing of bridges over waterways surrounding the Kennedy Space Center will be strictly controlled during the hours immediately after the launch of the Space Shuttle Challenger on its first mission.

That launch is now scheduled for 1:30 p.m. on Monday, April 4, but the restrictions will apply on subsequent launch dates should a delay be encountered on Monday.

The U.S. Coast Guard's Seventh District in Miami has given KSC authority to restrict the operation of the bridges from one hour before launch, if needed, until three hours after liftoff to facilitate the flow of vehicular traffic in and out of the space center.

The same schedule used for STS-5 will be implemented for STS-6. That schedule requires that the bridges be opened for five minutes, at thirty-minute intervals, beginning 30 minutes after launch, until the traffic subsides.

Bridges to be affected by these regulations include:

* - The Canaveral Harbor/Barge Canal Bridges at State Road 3 on Merrit Island, and State Road 401 at Port Canaveral.

* - The Intracostal Waterway bridges over the Indian River at Addison Point (NASA Causeway), Titusville State Road 406, and the bridge over Haulover Canal, which links the Indian River with Mosquito Lagoon.

* - The Banana River Bridge between KSC and Cape Canaveral Air Force Station.

# # #

March 29, 1983

NASA News

1F.5 #20

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For Release

Weida G. Tucker
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Immediate

KSC Release No: 73-83

NOTICE TO EDITORS/NEWS DIRECTORS

BRIEFING ON KSC POLYGENERATION PLANT STUDY SCHEDULED FOR APRIL 14

KENNEDY SPACE CENTER, Fla. - A press briefing on the feasibility of constructing a polygeneration plant at the Kennedy Space Center will be held at the Press Site Auditorium at Launch Complex 39 at 11:00 a.m. on Thursday, April 14. Peter A. Minderman, Director, Engineering Development Directorate, and Gary P. Gutkowski, Project Manager, will be on hand to give an overview of the project.

NASA recently awarded Scientific Design Company, A Division of the Halcon SD Group, Inc. of the Texas Eastern Corporation, New York, N. Y., a $250,000 fixed-price contract for a feasibility study for a polygeneration plant at KSC. A KSC project team from the Engineering Development Directorate spent more than a year in a preliminary study of the technology and economics involved in establishing such a plant before the contract was awarded for the study.

Polygeneration is an innovative concept for reducing operational costs for the Space Shuttle through the use of an integrated coal gasification combined cycle process. Liquid hydrogen, which is used as fuel for the Shuttle, gaseous nitrogen, thermal energy and electricity for use at KSC could be produced at the plant.

Media representatives who plan to attend the press briefing should be at the Press Site no later than 10:30 a.m. on April 14. Those who do not have permanent press credentials should call Area Code 305/867-2468 for badging arrangements.

Those unable to attend the briefing may monitor it by calling the KSC Operator at Area Code 305/ 867-7110 and asking to be connected with the V-2 Circuit.

# # #

April 11, 1983

NASA News

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For Release:

Roland Raab
AC 305 867-2468

Immediate

KSC RELEASE NO. 74-83

NOTE TO EDITORS/NEWS DIRECTORS

TWO SPACECRAFT SHOWINGS SET FOR WEEK OF APRIL 17

KENNEDY SPACE CENTER, Fla. -- Two spacecraft set for launch in the near future will be available for viewing to reporters next week.

On Tuesday, April 19, reporters and photographers will be escorted to view the INTELSAT V satellite set for launch aboard an Atlas Centaur rocket in early May. Representatives of the INTELSAT communications consortium and Ford Aerospace will be present to discuss the uses and manufacture of the spacecraft. The showing will be at 11 am, and reporters should be present at the Complex 39 Press Site (Dome) by no later than 10:30 am for transportation.

On Friday, April 22 there will be a similar showing of the West German spacecraft called SPAS-01. The showing will be at 1 pm, and reporters should be at the Press Site Dome by 12:30 pm for transportation. Spacecraft representatives will be present to explain the satellite and answer questions.

SPAS-01 will be carried aboard the Space Shuttle Challenger as one of the major cargo elements on the STS-7 mission set for early June. The free-flying spacecraft is a precursor of future satellites, and carries a number of materials processing and scientific modules. The spacecraft will be the first to be deployed from the orbiter's cargo bay by the remote manipulator arm. It will be released to fly alone for a number of hours. Challenger will then maneuver so that the satellite can be grappled with the arm and restowed in the cargo bay for return to earth.

April 12, 1983

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NASA News

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For Release:

Lisa Malone
305 867-2468

Immediate

KSC RELEASE NO: 77-83

COCOA BEACH JOINT VENTURE WINS CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded the joint venture of Planning Research Corporation, with Briel, Rhame, Poynter and Houser, of Cocoa Beach, Fla., an extension to a previous contract. The award is for architectural and engineering services that will develop and maintain an overall project integration plan for KSC facility modifications in support of the Shuttle/Centaur upper stage vehicle.

The fixed-priced contract has a dollar value of $123,983, which brings the total contract value to $6,023,983. It was initiated March 8, 1983, and will extend to September 8, 1983.

KSC facility Centaur modifications include Pads A and B at Launch Complex 39, all three Mobile Launcher Platforms, checkout facilities at the Orbiter Processing Facility and minor modifications to other facilities.

Pad B is to be made operational for the Shuttle/Centaur program by 1986.

The Shuttle/Centaur upper stage is specifically designed for the Galileo and International Solar Polar payloads scheduled to fly within approximately seven days of each other in 1986. Launch Pads A and B, and two mobile launcher platforms, as well as two Space Shuttle vehicles will be required for this activity. The Galileo spacecraft will investigate the environment of Jupiter, and the International Solar Polar spacecraft will explore the Sun from a heliocentric polar orbit.

The Shuttle/Centaur is an upper stage propelled by liquid hydrogen and liquid oxygen, and will be used to hurl payloads into interplanetary trajectories. The Shuttle/Centaur, currently being developed by General Dynamics in San Diego, is a version of the Centaur stage of the Atlas Centaur rocket now being used to send a variety of satellites into geostationary orbits.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its seventh flight and third operational mission in June.

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For Release

Weida G. Tucker
305/867-2468

Immediate
4-14

KSC Release No: 78-83

NASA AWARDS CONTRACT FOR POLYGENERATION PLANT STUDY

KENNEDY SPACE CENTER, Fla. - A major step in NASA's efforts to increase the cost effectiveness of the Space Shuttle system has been taken with the award of a contract to Scientific Design Company of New York City. The company will study the technical and economic feasibility of constructing a polygeneration plant at the Kennedy Space Center to produce low cost liquid hydrogen.

The Space Shuttle uses approximately half a million gallons of liquid hydrogen for each launch, mostly as fuel for the orbiter's main engines.

Presently, KSC buys liquid hydrogen produced from natural gas at a plant in Lousisiana. Shipped in specially designed rail cars and over-the-road trailers, the delivered price is approximately $1.47 per pound. (Liquid hydrogen is extremely light - there are 1.7 gallons to the pound.)

The fixed price $250,000 contract with Scientific Design calls for the company to look at the three major drivers of the cost of liquid hydrogen-- the feedstock, electricity and transportation.The study will be completed in October of this year.

The proposed polygeneration plant at KSC would use coal rather than natural gas as the feedstock. The coal would be put through a gasification process producing a medium energy gas composed primarily of carbon monoxide and hydrogen. Part of the gas would then be burned to produce electricity for separating the hydrogen from the rest of the gas. Heat produced by the gasification process would also be converted to electricity. The gasification process also requires large amounts of oxygen which would be produced by an adjacent air separation plant which would produce pure gaseous nitrogen as a by-product. Gaseous nitrogen is used as a purge gas in many operations at KSC.

-more-

The study by Scientific Design will look at producing varying amounts of electricity in the plant. The amount would range from just enough to operate the plant to supplying the electrical needs of the entire center and possibly even selling surplus power to local utilities.

It is hoped that operation of a polygeneration plant at KSC will result in savings of three quarters of a million to a million dollars a launch.

Part of the cost savings would come from the use of coal which currently sells for about half the cost of natural gas on a BTU or energy content basis. The long term outlook for coal is for reasonably stable cost growth at or near the rate of inflation. Transportation costs and electricity presently account for about half the cost of the liquid hydrogen and substantial savings are expected in these areas as well.

Scientific Design will also compare the economics of government versus private ownership of the project. In developing the overall design concept of the installation, the company will compare commercial gasifiers, and select the type of coal to be used in the context of the high reliability required by the Space Shuttle schedule and stringent local environmental standards.

Scientific Design serves as a technical support contractor to the U.S. Department of Energy in both coal liquifaction and gasification, in addition to providing design and technical services to private industry. General Electric is providing process engineering support for the power generation section under a subcontract to Scientific Design.

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April 14, 1983

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release
IMMEDIATE

KSC Release No. 79-83

Jim Ball
(Phone: 202/867-2468)

CHALLENGER'S RETURN ACCELERATES STS-7 PROCESSING

KENNEDY SPACE CENTER, Fla. -- With the return of America's newest shuttle orbiter to the launch site, ground processing crews will begin a round-the-clock effort to ready Challenger for the seventh Space Shuttle mission in June.

Following its ferry flight from California, Challenger will be offloaded from the Shuttle Carrier Aircraft and towed to Bay 1 of the Orbiter Processing Facility.

Challenger's next landing on KSC's Shuttle Landing Facility is expected to be on its own wheels at the conclusion of the six-day STS-7 mission, the first scheduled orbiter landing on the three-mile-long concrete runway here.

The turnaround schedule calls for Challenger to arrive at the OPF door within hours of its arrival. Once inside the hangar, shuttle processing crews will immediately begin work on deservicing the orbiter and preparing it for its next flight.

Challenger's first few days back in the "nest" will be jam packed with activity. Workers will remove the tailcone that was installed over Challenger's main engines for the cross-country ferry flight and prepare the orbiter for powerup.

- more -

April 14, 1983

Technicians will remove the Continuous Flow Electrophoresis Experiment from the orbiter mid-deck, open the payload bay doors, and remove the three "getaway special" canisters. The airborne support equipment used to deploy the Tracking and Data Relay Satellite/IUS from Challenger on STS-6 will also be removed.

Routine post-flight servicing will begin with the initiation of external and internal inspections of the Challenger's main engines and orbiter systems checkouts.

Trouble shooting work on STS-6 in-flight anomalies will also begin over the weekend as the processing team assesses required post-flight repairs. This activity will include items such as replacement of a general purpose computer which malfunctioned the night before Challenger's landing, repair of thermal protection material on the OMS pods, and changeout of a faulty thruster.

The Orbital Maneuvering System and Reaction Control System pods will remain installed aboard Challenger through the STS-7 processing flow.

In addition to routine servicing and post-flight trouble shooting, there will be some modifications to Challenger during the OPF turnaround.

These will include installation of a K-band antenna, addition of an uplink Text, Graphics, and Black and White Facsimile System, replacement of some ablator material with thermal protection tiles, and installation of velcro strips in the crew cabin.

A Remote Manipulator Arm will be installed in Challenger's payload bay for use with the West German Shuttle Pallet Satellite being flown on the mission.

Challenger is presently slated to spend about 30 days in its processing hangar before being moved to the Vehicle Assembly Building for mating with the already stacked External Tank and Solid Rocket Boosters.

Primary objective of the STS-7 flight will be deployment of two Hughes-built communications satellites, one for the government of Indonesia and one for Telesat Canada.

The deployable Shuttle Pallet Satellite (SPAS-01) will be carried aloft on the flight along with a NASA applications payload and several "getaway special" canisters. The Continuous Flow Electrophoresis Experiment and Multidisperse Latex Reactor are also slated to be reflown.

Astronaut Robert L. Crippen, pilot on the first flight of the Space Shuttle in April 1981, will be the Commander for the STS-7 mission. His crew will include Frederick H. Hauk, Pilot, and mission specialists John M. Fabian, Dr. Sally K. Ride, and Dr. Norman Thagard.

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For Release:

Lisa Malone
305 867-2468

Immediate

KSC RELEASE NO: 80-83

HOLLOWAY CORPORATION AWARDED MILLION DOLLAR CONTRACT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Holloway Corporation of Titusville, Fla., a $1,390,600 contract for providing labor equipment and materials to modify Solid Rocket Booster Refurbishment Subassembly Facilities located in the Vehicle Assembly Building and Hangar N at Cape Canaveral Air Force Station.

The fixed-price contract will be initiated in mid-April and will extend to mid-November. This award is one set aside for award to small business firms.

Work in the VAB will be in the low bay where the boosters are currently processed. The work area in two bays will be expanded toward the transfer aisle to make room for more equipment. New controlled temperature cure booths, which solidify and dry the insulation sprayed on booster nose cones, forward skirts, forward frustums and aft skirts, will be installed in Cell 3 of the VAB. The floor surface will be reconditioned to facilitate movement of air-bearing pallets used in these cells. A building will be provided just southwest of the VAB for storing processing materials.

New clean booths and tube bending/cleaning facilities will be installed in Hangar N for processing booster aft skirts. Other booster segments are received by rail and are already processed.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its seventh flight and third operational mission in June.

# # # #

April 14, 1983

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

IF.5 # 20

For Release

Jim Ball
(Phone 305/867-2468)

IMMEDIATE

KSC RELEASE NO. 81-83

NOTICE TO EDITORS/NEWS DIRECTORS

STS-6 POST FLIGHT NEWS CONFERENCE SET FOR APRIL 22

KENNEDY SPACE CENTER, Fla. -- The post-flight news conference for the STS-6 flight crew will be conducted April 22 at NASA's Johnson Space Center in Houston, Texas with two-way audio and video coverage available at the Kennedy Space Center.

The conference will begin at 2 p.m. EST.

Astronauts Paul J. Weitz, Karol J. Bobko, F. Story Musgrave and Donald H. Peterson will show a brief film clip and review mission highlights.

Badged media representatives may proceed directly to the Complex 39 Press Site to cover the conference from the KSC Press Site Auditorium. Other media representatives wishing to cover the news conference from KSC should contact the news center to arrange accreditation.

April 15, 1983

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NASA News

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Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Lisa Malone
305 867-2468

April 26, 1983

KSC RELEASE NO: 84-83

MERRITT ISLAND FIRM AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Reynolds, Smith and Hills, Merritt Island, Fla., a contract extension for architectural and engineering services connected with a review of the disassembly drawings and surveillance of stripping and the disassembly of an Apollo Mobile Launcher to be modified for use in the Space Shuttle program.

The fixed-price contract has a dollar value of $269,000 which brings the total contract value to $1,588,642. It was initiated March 10, 1983 and will extend to December 10, 1983.

The Mobile Launcher Platform was previously used as a mobile launcher for Apollo missions. The MLP is to be modified for use in the shuttle program and be operational by October of 1986. There are currently two platforms supporting Space Shuttle assembly, checkout and launch.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its seventh flight and third operational mission in June. This will be the second flight into space for Challenger, the newest operational Space Shuttle Orbiter.

# # # #

NASA News

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For Release:

Lisa Malone
305 867-2468

April 26, 1983

KSC RELEASE NO: 85-83

ZERO CORPORATION AWARDED CONTRACT FOR LAUNCH PROCESSING EQUIPMENT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Zero Corporation of Monson, Massachussets, a contract for aluminum racks that support electronic equipment used in Launch Processing Systems for the Space Shuttle.

The contract was initiated April 7, 1983 and the racks are due to be delivered by September 7, 1983.

There are three main integrated electronic subsystems that are used for checkout and support of Space Shuttle launches in Firing Rooms of the Launch Control Center at the Kennedy Space Center.

Two of the four firing rooms at KSC are now operational. The two remaining firing rooms are currently being modified to accommodate Space Shuttle launches.

Zero Corporation has supplied racks to KSC for almost 20 years to support electronic equipment used during launch checkout and launch activity.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its seventh flight and third operational mission in June. This will be the second flight into space for Challenger, the newest operational Space Shuttle Orbiter.

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NASA News

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25 25th Anniversary 1958 1983

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release

Roland Raab
Tel. (305) 867-2468

April 30, 1983

KSC Release No. 86-83

NOTICE TO EDITORS:

SPACE SHUTTLE CARGO OPEN FOR VIEWING

KENNEDY SPACE CENTER, Fla. -- Reporters will be able to view the fourth major cargo element for the next Space Shuttle mission here next week.

The OSTA-2 payload will be on display on Tuesday, May 3 at 10:00 a.m. Reporters and photographers will be escorted to view the payload, and should be present at the Complex 39 Press Site no later than 9:30 a.m.

OSTA-2 is the second payload for the NASA Office of Space and Terrestrial Applications, set for launch aboard Challenger in June. OSTA-2 is a cooperative development of NASA and the Federal Republic of Germany. It is composed of a specially designed trusswork supporting a box-like Materials Experiment Assembly (MEA) and three cylindrical canisters containing materials processing experiments.

The MEA box contains six bays, two of which hold self-contained power, temperature control, data and other subsystems. The four remaining bays are available for materials processing experiment packages. On this mission three of the four bays will be used. The bays will contain an Isothermal-General Purpose Rocket Furnace, a Gradient-General Purpose Rocket Furnace, and a Single-Axis Acoustic Levitator, which will process three materials processing experiments regarding crystals, liquids and glass.

The three cylindrical canisters attached to OSTA-2 are similar to the well-known Getaway Special Canisters, and contain Materialwissenschaftliche Autonome Experimente unter Schwerelosigkeit (MAUS) experiments sponsored by Germany. The translation of MAUS is: Automated Materials Processing Experiments under Weightlessness. The experiments include studies about metallic dispersions, convection behavior and solidification properties in very low gravities.

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For Release

Immediate

Dick Young
305/867-2468

KSC Release No. 91-83

NOTICE TO EDITORS/NEWS DIRECTORS

TRACKING SATELLITE NEWS CONFERENCE SCHEDULED FOR MAY 6

KENNEDY SPACE CENTER, Fla. - A news conference on the recovery program for the Tracking and Data Relay Satellite carried into orbit by the Space Shuttle on its sixth mission will be held at NASA Headquarters on Friday, May 6, at 2 p.m. EDT.

Robert O. Aller, Director of the Tracking and Data Relay Satellite System Division, NASA Headquarters, will discuss the program to be undertaken to raise the satellite to its operational altitude in stationary orbit.

The news conference will be conducted by two-way audio and may be covered at the auditorium at the Complex 39 Press Site. Those unable to participate in person may monitor the conference by calling the KSC Operator at 305/867-7110 and asking to be connected with the V-2 Circuit.

Media representatives with permanent credentials may drive directly to the Press Site. Those without should contact the News Center at 305/867-2468 to make arrangements for access.

# # # # #

May 3, 1983

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release

Lisa Malone
305 867-2468

May 5, 1983

KSC RELEASE NO: 93-83

GODFREY MFG., INC. AWARDED CONTRACT FOR SHUTTLE RUNWAY LIGHTS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Godfrey Manufacturing, Inc., of Oldsmar, Fla., a contract to manufacture and deliver strobe lights for Shuttle Landing Facilities at Kennedy Space Center,Fla., Dryden Flight Research Facility, Calif., and White Sands Missile Range, N.M.

The firm-fixed-price contract was initiated on April 22, 1983 and the lights are due to be delivered by June 1983. The contract has a dollar value of $27,100. The award is one set aside for award to a small business firm.

Lights will be necessary to illuminate the runway strip for a night landing of Space Shuttle orbiters. The first night landing will be on STS-8, Edwards Air Force Base, Calif. STS-8 will also be the first night launch which is tentatively set for August. The KSC Shuttle Landing Strip and the landing strip at White Sands Missile Range are contingency landing sites, and also have to be illuminated.

Under the terms of the contract, Godfrey is to deliver 16 strobe lights to the Kennedy Space Center for use at all landing sites mentioned above.

Four strobe lights will be used at KSC. Two will be located 7,500 feet from each end of the runway threshold. That point is adjacent to the Precision Approach Path Indicator lights that guide the astronauts on landing. The pulsing strobe lights will illuminate the location of the PAPI lights during a night landing.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its seventh flight and third operational mission no earlier than mid-June. This will be the second flight into space for Challenger, the newest Space Shuttle Orbiter.

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NASA News

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For Release:

Lisa Malone
305 867-2468

May 6, 1983

KSC RELEASE NO: 94-83

KSC SMALL BUSINESS CONTRACTORS RECOGNIZED IN AWARD CEREMONY

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has singled out three Central Florida firms for special recognition during its observance of Small Business Week from May 9-13.

The awards will inaugurate an annual Small Business Week recognition ceremony and will be presented by Center Director Richard G. Smith on May 10 to Greer Electrical Contractors, Rockledge; New World Services Inc., Orlando, and BAMSI, Titusville.

The companies were initially selected by the procurement office and a board made the final decisions. Members of the board include a representative from the procurement office, the design engineering office, the quality surveillance office, and the industry assistance office.

"We felt that this would be a way to recognize small business support operations at the Kennedy Space Center," said Norman Perry, KSC Industry Assistance Officier.

The awards are made to companies that have demonstrated an outstanding level of professionalism and dedication in fulfilling contractual agreements with KSC.

During the 1982 fiscal year, KSC awarded $70 million to small business firms. Over half of that money was awarded to firms within the state of Florida.

Greer Electrical Contractors was recognized as the "Small Business Prime Contractor of the Year." Greer is an electrical contractor for the space center.

-more-

KSC Release No. 94-83

New World Services Inc. was recognized as the "Woman Owned Business Contractor of the Year." New World provides the library and information services to KSC.

BAMSI was recognized as the "Minority Business Contractor of the Year." BAMSI's contract provides high technology support services in computer facility operations and maintenance; data preparation; programming support; drafting and illustrations; and engineering documentation to KSC.

Next year, KSC plans to nominate the KSC recognized businesses for the National Small Business Administration award.

# # #

M. Konjevich
SI
SI-SRV-1

NASA News

IF.5 #20

25
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National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 92-83

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $39,427 contract to Vic Lane Construction, Inc., Merritt Island, Fla. The contract is one set-aside for award to a small business firm.

Under terms of the fixed-price contract, Vic Lane will construct modifications to the hazardous waste treatment facility at the fire training area at KSC. Work to be performed will include relining of the waste treatment tank to facilitate safe disposal of hypergolic fluids used in training exercises at the site.

Kennedy Space Center is the primary launch and landing site for the reusable Space Shuttle, which provides routine and economical flights into space for government, industrial and and educational use. The seventh mission of the shuttle and the second flight for the Orbiter Challenger is presently scheduled for launch in mid-June.

# # #

May 9, 1983

NASA News

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1958 1983

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Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release

Immediate

Dave Garrett
NASA Washington, D.C.
(Phone: 202/755-3090)

Dick Young
(305) 867-2468

KSC Release No. 97-83

LAUNCH DATE SET FOR STS-7

The seventh flight of the Space Shuttle and the second flight of the orbiter Challenger is scheduled for launch from the Kennedy Space Center, Fla., on June 18, 1983 at 7:33 a.m. EDT.

This date allows proper phasing, orbital tracking and control between NASA's Delta launch of a Hughes' GALAXY A spacecraft and the STS-7 payloads.

The six day flight of the Space Shuttle will be highlighted by the first landing at Kennedy Space Center at approximately 6:53 a.m. EDT on June 24, 1983.

Challenger's crew will consist of commander Robert Crippen, the first two-time Shuttle astronaut, pilot Frederick H. Hauck and three mission specialists: Dr. Sally K. Ride, John Fabian and Dr. Norman E. Thagard.

During the mission, Challenger will deploy the Indonesian PALAPA B and Canadian ANIK C communications satellites, perform the first deployment and retrieval with the Remote Manipulator Arm of a platform for space experiments called the Shuttle Pallet Satellite (SPAS), and serve as a spaceborne laboratory for OSTA-2, a scientific payload. Getaway Special canisters and materials processing experiments will fill out the complement of payloads on the STS-7 mission.

-end-

May 10, 1983

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NASA News

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Kennedy Space Center, Florida 32899
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1958-1983

For Release:

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Dick Young
305/867-2468

KSC RELEASE NO. 98-83

NOTICE TO EDITORS/NEWS DIRECTORS

INTELSAT NEWS CONFERENCE SCHEDULED FOR MAY 18

KENNEDY SPACE CENTER, Fla. - A pre-launch news conference on the Intelsat V(F6) mission will be held in the conference room of the E&O Building at Cape Canaveral Air Force Station on Wednesday, May 18, at 11 a.m. EDT.

Project officials will discuss the spacecraft and its mission as well as launch operations.

Launch of the latest spacecraft in the high-capacity Intelsat communications satellite series is scheduled for Thursday, May 19, aboard an Atlas-Centaur rocket from Complex 36 at Cape Canaveral Air Force Station.

Three launch opportunities are available on that date: from 6:26 - 6:44 p.m. EDT; 7:21 - 7:40 p.m. EDT, and from 8:15 to 8:31 p.m. EDT.

Media representatives who plan on attending the May 18 news conference should be at the KSC News Center at the Complex 39 Press Site no later than 10:30 a.m. Transportation to and from the E&O Building will be provided. Those without permanent credentials should call the News Center at 305/867-2468 to make arrangements for access.

On launch day, media representatives with permanent badges may drive directly to Press Site 1 at Cape Canaveral Air Force Station. Those without will be badged by the Air Force at Gate 1 on Florida 401 off the Florida 528 Causeway from 5 to 5:30 p.m.

Those unable to attend the news conference or launch in person monitor those activities by calling the KSC Operator at 305/867-7110 and asking to be connected with the V-2 Circuit.

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May 13, 1983

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For Release:

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Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 99-83

JOINT CONTRACT AWARDED FOR SHUTTLE LAUNCH PAD MODIFICATION

KENNEDY SPACE CENTER, Fla. - A $1,599,738 joint venture contract has been awarded to PRC Systems Service Company and Briel, Rhame, Poynter & Houser, located in Cocoa Beach, Florida.

The contract provides for architectural and engineering services needed for integrated systems documentation in support of modifications being made to Launch Pad 39 B. Pad B will be used to launch NASA's Space Shuttle beginning in the mid 1980's.

The documentation will include schematic diagrams of the layout of electrical and mechanical systems, and cabling and equipment interfaces which will aid in the maintenance and operation of the pad. The fixed-price contract covers the period from May 17 through June 30, 1984.

Kennedy Space Center is the primary launch and landing site for the reusable Space Shuttle, which provides routine and economical flights to space for government, industrial and educational use. The seventh mission of the shuttle and the second flight of the Orbiter Challenger is presently scheduled for launch on June 18.

# # #

May 18, 1983

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:
Immediate

Mark Hess
Kennedy Space Center, Fla.
(Phone: AC 305/867-2468)

RELEASE NO: 100-83

Notice To Editors/News Directors

CHALLENGER SCHEDULED FOR MOVE TO ASSEMBLY BUILDING MAY 20

KENNEDY SPACE CENTER, Fla.--Ready to embark on its second operational flight, the spaceship Challenger is scheduled to be moved from the Orbiter Processing Facility to the Vehicle Assembly Building on May 20. The move is scheduled to begin at 12:01 a.m. Friday and should take about 30 minutes.

In High Bay 3 of the VAB, Challenger will be mated with its external propellant tank and twin solid rocket boosters, completing the assembly of the Space Shuttle vehicle scheduled to make the seventh flight of the nation's Space Transportation System on June 18, 1983.

All press activities for coverage of the transfer will be staged from the Complex 39 Press Site. Permanently badged media may drive directly to the Press Site via Gate 2 located on Florida Route 3, or via Gate 3 located on State Road 405. Press without permanent credentials should make arrangements to be badged during regular working hours Thursday, which are from 8:00 a.m. until 4:30 p.m.

News media who wish to cover the transfer and mate operations should be at the Press Site no later than 11:00 p.m. on Thursday. Transportation to the viewing area will be provided.

The KSC News Center will be open from 8 a.m. Thursday until the transfer has been completed. Up to date information on the transfer can also be obtained by calling the News Center at Area Code 305/867-2468 or the automatic telephone system at Area Code 305/867-2525.

Because the schedule could change, news media are urged to keep in touch with the KSC News Center for the latest information.

# # #

May 18, 1983

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:
IMMEDIATE

Jim Ball
Telephone (305) 867-2468

KSC Release No. 102-83

CHALLENGER'S CROSS-FLORIDA GLIDE WILL TAKE ABOUT FIVE MINUTES

KENNEDY SPACE CENTER, Fla. -- During its glide back to earth from orbit, the spaceship Challenger will follow a weaving flight path that will cut across the entire width of Central Florida in less than five minutes.

On the way to its first end-of-mission landing at Kennedy Space Center, the Space Shuttle will enter Florida airspace shortly after sunrise at a point between Yankeetown and Crystal River on the state's Gulf Coast.

As the Challenger makes landfall on Florida's coastline, it will be approximately 150 statute miles from the KSC runway and descending at a velocity of nearly five times the speed of sound (about 3,500 mph) from an altitude of more than 112,000 feet (21 miles).

Gliding along a somewhat northeasterly heading as it crosses the Florida coast, Challenger will follow a gently curving path that will reach as far north as 29 degrees north latitude, just south of Ocala, before the orbiter banks around to the southeast for its approach to the space center.

The Shuttle's flight path will carry it well north of Orlando for a final runway approach that can be either from the north or the south.

At about 70 statute miles range from the runway, more than midway in its unpowered cross-state glide, Challenger will have dropped to an altitude of about 83,400 feet (15.8 miles) over Lake County to the south of Ocala National Forest.

Its velocity will be only about half what it was as it crossed the coastline and the time to touchdown will be less than seven minutes. At this point it will be about two minutes from the state's eastern coastline.

- more -

May 19, 1983

KSC Release No. 102-83

If the Shuttle's final approach will be from the north, the spaceship will soar directly over Sanford and above a stretch of State Road 46 across the St. Johns River marshlands. It will cross over the Indian River just north of Mims at an altitude of 50,000 feet with about 30 miles still to travel before touchdown.

At this point Challenger's velocity has dropped below supersonic speed and the orbiter has begun a sweeping bank to the north that will curve out over the Atlantic shoreline of Canaveral National Seashore. Touchdown is approximately five minutes away.

The orbiter will soar across the brackish marsh and pine woods of Merritt Island, skirt the southern tip of Mosquito Lagoon, and fly out over the ocean as it circles around to a precise alignment for a touchdown on KSC's runway 15.

If the Challenger is to make its final approach from the south, it will follow a path across Seminole County south of Sanford and directly over Titusville. It will cross over the Kennedy Space Center above the facilities where it was prepared for flight.

A southern approach would require Challenger to circle out over the Atlantic along the Cape Canaveral Air Force Station and then cut back across the Cape for a final approach to touchdown on KSC's runway 33.

The decision on the direction of final approach to KSC will be made largely on the basis of local weather conditions, particularly wind direction.

# # #

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release
May 19, 1983

Mark Hess
Kennedy Space Center, Fla.
(Phone: AC 305/876-2468)

RELEASE NO: 104-83

NOTICE TO EDITORS/NEWS DIRECTORS

SPACE SHUTTLE ROLLOUT TO LAUNCH PAD SET FOR MAY 25

KENNEDY SPACE CENTER, Fla.—The Space Shuttle vehicle that will make the seventh flight of the nation's Space Transportation System is scheduled to be moved to the launch pad on Wednesday, May 25.

Also scheduled that day is a status update by Launch and Landing Director Director Al O'Hara on preparations for the second flight of Shuttle Orbiter Challenger.

Start of the 5.6-kilometer (3.5-mile) trip from the Vehicle Assembly Building to Complex 39's Pad A is tentatively set for 5:30 a.m. It will take an estimated eight hours to complete the move to the launch pad.

The status briefing will be held at 10 a.m. EDT in the auditorium at the Complex 39 Press Site.

News media with permanent NASA press credentials may proceed directly to the Complex 39 Press Site on Wednesday beginning two hours before the scheduled rollout time.

News media personnel who do not hold permanent NASA press credentials should contact the KSC News Center at Area Code 305/867-2468 to make the necessary badging arrangements. Temporary passes will be issued to media at the Gate 2 Pass and Identification Building located on Florida Route 3 on Merritt Island. The Pass and I.D. building will be open Wednesday, May 25 beginning two hours before the scheduled rollout time.

The Complex 39 Press Site will open Wednesday two hours before rollout. All press coverage will be staged from the Complex 39 Press Site and media representatives who plan to cover the event should be there at least one hour before the start of the move. Transportation to and from the viewing area will be provided.

Rollout status will be maintained on the KSC News Center automatic telephone system, which can be reached by calling Area Code 305/867-2525.

Those news media unable to attend the news conference in person may monitor the briefing over the V-2 circuit. To obtain that circuit, call the KSC operator at 305/867-7110 and ask to be patched into the V-2 circuit.

# # #

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For Release

Immediate

Mark Hess
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

RELEASE NO: 107-83

Notice to Editors/News Directors

NEWS MEDIA MAY COVER ASTRONAUT PARTICIPATION IN LAUNCH REHEARSAL

KENNEDY SPACE CENTER, Fla.--There will be several photo opportunities of the STS-7 flight crew during the two-day Terminal Countdown Demonstration Test, currently scheduled for June 2 and 3.

On Friday, June 3, news media will have an opportunity to photograph the flight crew leaving the Operations and Checkout Building or arriving at the launch pad as they participate in the launch day rehearsal. Press representatives who wish to cover either the O & C departure or the pad arrival should be at the press site no later than 7 a.m.

At the conclusion of the countdown demonstration test, the astronauts will meet briefly with news media representatives at a camera mound on the perimeter of the launch pad for a short question/answer and photographic session. News media planning to attend that session should be at the press site no later than 11:30 a.m. Friday.

News media with permanent credentials may drive directly to the press site from where coverage of the various activities will be staged. Those without credentials must call the News Center at Area Code 305/867-2468 to make the necessary badging arrangements.

# # #

May 25, 1983

M. Konjevich
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Kennedy Space Center, Florida 32899
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For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468
KSC Release No: 110-83

VISITOR ATTENDANCE AT SPACEPORT SURGES DURING MONTH OF MAY

KENNEDY SPACE CENTER, Fla. - The Space Shuttle Program with its restoration of space flights with human crews continues to draw record crowds to the nation's spaceport. Some 98,918 persons took bus tours at NASA's John F. Kennedy Space Center during May, a four percent increase over the number of persons who toured the Center during the same period last year. This was the second highest number of bus patrons for May since tours were initiated in 1966. The largest number--114,987--was recorded in May 1981.

Cumulative figures for bus patrons during the first five months of 1983 are slightly under the numbers recorded during the same period last year. So far 670,991 persons have toured the Center this year, compared with 672,996 from January through May of 1982.

Approximately 80 percent of KSC's visitors take the guided bus tours and it is estimated that total visitation this year exceeds 800,000. The various exhibits, movies and live demonstrations at the Visitors Centers are open to the public without charge and the tours are available at a nominal fee.

Arnold Richman, chief of the Visitors Services Branch, said he expects tourism at the Center to surge during the summer months. Summer is one of the peak seasons at the Visitors Center, along with the Christmas season and the Easter holidays. Richman said total attendance during 1983 will probably exceed the figures recorded in 1982.

The Visitors Center tours and up-to-date exhibits of the space program are among the main attractions to visitors of the Space Center. Space Shuttle buffs can view a large scale model of the Shuttle and see a videotape of a Space Shuttle launch. Mercury, Gemini and Apollo spacecraft flown in space and recovered from the ocean are on exhibit at the Center, in addition to many other historical and educational exhibits that are open to the public.

-more-

The Visitors Center has embarked on an $8.5 million expansion program. The construction will approximately double the capacity of existing facilities.

A new souvenir sales store and a new entranceway have been constructed. By the end of 1983, facilities will encompass a specialty restaurant, a covered plaza ticket pavillion, and renovated exhibit areas.

By next spring, the new theatre complex, which will house two large theaters and additional exhibits, will be completed. One of the theatres, which will seat 450 persons, will feature an IMAX projection system with a five-story screen. The second theatre will be a 500-seat auditorium which will be used for space audio visual programs and additional exhibit space.

The construction is being financed by TWA Services, Inc., concessionaire for the Visitors Center. Once completed, the new facilities will become government property.

"We're building a lot of new and exciting things, " Richman said. "Not only will our visitors have a more attractive place to come to, but they can see things taking place here that they can't see anywhere else. When they see such events as test activities for the Shuttle coming over NASA television at the Visitors Center, they are seeing history in the making. This is the kind of excitement that keeps people coming to the nation's spaceport."

# # #

June 3, 1983

June 17, 1980

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For Release:

IMMEDIATE

Cecilia Mitchell
Kennedy Space Center, FL
(Phone: 305/867-2468)

KSC Release No.112-83

KSC TO BE CLOSED TO TOUR VISITORS DURING SHUTTLE LANDING

KENNEDY SPACE CENTER, Fla. -- Because of safety and operational requirements for an end-of-mission Space Shuttle landing at KSC, normal tour activities at the space center will be interrupted until approximately four hours after the orbiter's touchdown.

The Visitors Center will close and space center bus tours will cease at the normal close of business on June 23. Challenger is scheduled to land on KSC's Shuttle runway the following morning at 6:53 a.m. EDT.

A special postlanding ceremony at the Visitors Center with an appearance by the STS-7 crew will be attended by space center workers, invited guests, and news media representatives. The ceremony is planned for about three hours after the landing.

KSC's Visitors Center will reopen to the public about four hours after the landing, or about 11 a.m. Bus tours of the space center will resume soon after the reopening.

Visitors wishing to see the approach of the orbiter Challenger will find the best mainland viewing sites along the Indian River shoreline in Titusville and on the Titusville Causeway (State Road 406).

Visitors who plan to tour KSC on the day of the scheduled landing should telephone (800) 432-2153 to verify that the center will be open for normal tours.

# # #

June 9, 1983

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

IMMEDIATE

Cecilia Mitchell
Area Code 305/ 867-2468

KSC Release No. 113-83

PLAYALINDA BEACH TO CLOSE FOR SHUTTLE LAUNCH AND LANDING

KENNEDY SPACE CENTER, Fla. --The Cape Canaveral National Seashore's Playalinda Beach, located on NASA property just north of Launch Complex 39, will be closed to the public starting Wednesday June 15, at 6:30 p.m. for the STS-7 launch and landing.

Safety considerations require closing the beach during the Space Shuttle launch countdown, liftoff, and landing. The second flight of the orbiter Challenger is scheduled for launch no earlier than 7:33 a.m. Saturday June 18.

The beach will remain closed until 6:30 a.m. Sunday, June 19. If the liftoff is postponed, the beach will remain closed until 6:30 a.m. the day after the launch.

Badged space center employees will be allowed to enter KSC via Gates 4TT (State Roads 402 and 406) until 6:00 a.m. the day of the launch. Gate 6TT, located on State Road 3 south of the Haulover Canal, will close to all traffic, including badged space center personnel, at 4 p.m. on Friday June 17.

The Space Shuttle's end-of-mission landing is scheduled for 6:53 a.m. on Friday, June 24.

Playalinda Beach will close for the landing beginning at the normal close of business on June 23. The beach will reopen about one hour after the orbiter touchdown. Gate 4TT and 6TT will be activated at the close of business on June 23 for badged personnel only.

Anyone planning an excursion to Playalinda Beach around the time of a scheduled Shuttle launch or landing should check on whether the beach is open by calling the Canaveral National Seashore at 867-4675. Certain pre-launch operations, such as tank fueling tests, can also require that the beach be closed.

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June 9, 1983

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For Release:

Immediate

Cecilia Mitchell
Area Code 305/867-2468

KSC RELEASE NO: 114-83

WATERWAY BRIDGE OPENINGS TO BE CONTROLLED ON STS-7 LAUNCH DAY

KENNEDY SPACE CENTER, Fla.-- The opening and closing of bridges over waterways surrounding the Kennedy Space Center will be strictly controlled during the hours immediately after the launch of the Space Shuttle Challenger on its second mission.

The launch is now scheduled for 7:33 a.m. on Saturday, June 18, but the restrictions will apply on subsequent launch dates should a delay be encountered on Saturday.

The U.S. Coast Guard's Seventh District in Miami has given KSC authority to restrict the operation of the bridges from one hour before launch, if needed, until three hours after liftoff to facilitate the flow of vehicular traffic in and out of the space center.

The same schedule used for STS-6 will be implemented for STS-7. That schedule requires that the bridges be opened for five minutes, at thirty-minute intervals, beginning 30 minutes after launch, until the traffic subsides.

No KSC controls on waterway bridge openings and closings are planned for the day Challenger is scheduled to make its first landing here.

Bridges to be affected by these regulations include:

* - The Canaveral Habor/Barge Canal Bridges at State Road 3 on Merritt Island, and State Road 401 at Port Canaveral.

* - The Intracostal Waterway bridges over the Indian River at Addison Point (NASA Causeway), Titusville (State Road 406), and the bridge over Haulover Canal, which links the Indian River with Mosquito Lagoon.

* - The Banana River Bridge between KSC and Cape Canaveral Air Force Station.

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June 9, 1983

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Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

IMMEDIATE

Jim Ball
(305) 867-2468

KSC Release No. 115-83

NOTICE TO EDITORS

PASS AND ID GATE 2 TO OPEN JUNE 13 FOR STS-7 BADGING

KENNEDY SPACE CENTER, Fla. -- The Pass and Identification Building on State Road 3, Merritt Island, will open for STS-7 badging at 8 a.m. on Monday, June 13.

News media representatives who have received accreditation letters may pick up their STS-7 credentials between 8 a.m. and 5 p.m. on Monday and Tuesday, June 13 and 14; between 8 a.m. and 8 p.m. on Wednesday and Thursday, June 15 and June 16; or any time between 7 a.m. Friday and one hour before the STS-7 liftoff.

The STS-7 Press Kit, a News Media Handbook, and other notices to the press will be available at the badging station.

The News Center will be staffed on a 24-hour basis beginning at 12:01 a.m. on Thursday, June 16 -- three hours before the scheduled start of the 40-hour STS-7 countdown. The News Center will then remain open around the clock through the end of the mission.

# # #

June 9, 1983

NASA News

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For Release:
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KSC Release No. 116-83

APOLLO LAUNCH TOWER REMOVAL AND STORAGE EXPECTED TO BEGIN SOON

KENNEDY SPACE CENTER, Fla. -- Work to disassemble the last of the Apollo era launch umbilical towers has begun, with removal and storage of major tower segments slated to begin in early July.

The 400-foot-tall launch umbilical tower, which was erected atop Mobile Launcher Platform No. 1, was built for use during the Saturn/Apollo manned lunar program.

It saw duty as the service tower for the Apollo 11 launch vehicle which propelled a crew of three Americans toward the first manned lunar landing in 1969. Later, the Mobile Launcher Platform and launch umbilical tower were used in the Skylab and Apollo-Soyuz Test Project programs.

For the Space Shuttle era, the tower is being removed and the mobile launcher will be modified to accommodate the Space Shuttle vehicle.

A special crane is currently being assembled for use in removing the tower in 40-foot square by 20-foot high sections. The sections will be stored at a site in the KSC Industrial Area. Disassembly of the tower will be done in such a way that the structure can be re-erected at a future date as an exhibit.

A contract to remove the tower from the mobile launcher was awarded in March to the Best Wrecking Company of Detroit, Michigan. Initially, the contract called only for the tower to be removed. NASA had planned to allow the tower to be sold for scrap to reduce the cost of modifying the mobile launcher.

After numerous members of Congress expressed the opinion that the tower should be preserved for its historic association with the Apollo program, NASA changed its plan.

The contract with Best Wrecking was amended May 6, 1983 to allow a preservation option. NASA's decision to exercise this option will make future reassembly of the tower possible.

- more -

June 9, 1983

Removal of equipment and cabling inside the mobile launcher began in March 1983 and is presently about 70 percent complete. Crews began removing pipes and cables from the launch umbilical tower in late May.

The first major portions of the tower structure to be removed will be several of the swing arms, including the one which provided crew access to the Apollo spacecraft. The spacecraft access arm will be modified and used at Complex 39's Pad B for access to the Shuttle orbiters.

Removal of the swing arm structures is expected to begin around the first week of July, following assembly and checkout of the crane.

Then the 40-foot square tower sections will be removed and transported to the Industrial Area site, one at a time. Each section weighs about 200,000 pounds.

Removal of the tower is scheduled for completion in December. A contract to have the Mobile Launcher Platform modified for operational Shuttle duty is expected to be awarded in January, with the remodelled MLP scheduled to be ready for use in the fall of 1986.

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For Release:

IMMEDIATE

Cecilia Mitchell
Area Code 305/ 867-2468

KSC Release No. 117-83

GENERAL AVIATION PILOTS DISCOURAGED FROM KSC AIR SPACE

KENNEDY SPACE CENTER, Fla.--With the launch of the Orbiter Challenger on its next scheduled flight and subsequent landing at KSC, the skies in the vicinity of space center will be filled with official mission aircraft and will be off-limits to general aviation pilots.

The possibility of mid-air collisions and the other hazards associated with a Space Shuttle launch and landing dictate that surrounding airspace be cleared.

All restricted areas associated with the space center will be activated for the launch and landing. The areas immediately surrounding the space center are expected to be extremely congested with both controlled and uncontrolled air traffic. The more prudent pilot may wish to remain grounded during the Shuttle launch and landing rather than risk the chance of a collision or a violation of Federal Aviation regulations.

Violations may result in sanctions against pilots including suspension or revocation of pilot privileges.

Pilots who find it absolutely necessary to be airborne on the morning of the launch or landing are advised to stay well west of the Indian River and seek traffic advisories from the Patrick Approach Control (VHF 118.4), TICO (TIX) Airport Tower (VHF 118.9), or Melbourne FSS on discrete frequencies VHF 122.6 or 123.6.

# # #

June 9, 1983

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John F. Kennedy Space Center
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AC 305 867-2468

For Release:

Jim Ball
(305) 867-2468
KSC Release No. 120-83

IMMEDIATE

BOAT TRAFFIC NEAR KSC WILL BE RESTRICTED DURING STS-7 LAUNCH

KENNEDY SPACE CENTER, Fla. — Safety considerations require that certain areas of the Atlantic Ocean and shallow lagoons near and on Kennedy Space Center be closed to boat traffic during the upcoming Space Shuttle launch.

Coast Guard vessels will be patrolling the secured areas. Boaters who have any questions about where they will be permitted to travel the morning of the launch may contact the Range Control Center on Channel 12 VHF-FM, or the U.S. Coast Guard Station at Port Canaveral on Channel 16 VHF-FM, for detailed information. Advisories will be broadcast. The restricted areas are as follows:

In the Atlantic, boat travel is restricted anywhere south of an imaginary line drawn eastward from Haulover Canal and extending 180 miles out to sea. No boat travel is permitted north of the Port Canaveral buoy lines. The boundary also extends 180 miles out.

In Mosquito Lagoon, no boat traffic is allowed in that portion of the lagoon to the south of Haulover Canal.

For portions of the Indian River north of Titusville, boat traffic is generally restricted to the areas near the channel or west of the channel. Coast Guard patrol boats will secure areas near the eastern shoreline.

For areas of the Indian River south of Titusville, boat travel will be restricted from entering Banana Creek or from encroaching on the east shoreline.

In the Banana River, boats will not be allowed north of marker 35 or east of the marked channel.

The restrictions on boat travel are in effect when a Shuttle is on the launch pad and will be removed four hours after liftoff.

# # #

June 15, 1983

NASA News

IR-5 #20 K

25th Anniversary
1958-1983

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867 2468

For Release:

Immediate

Dave Garrett
NASA Headquarters
202/755-3090

Dick Young
Kennedy Space Center, Fla.
305/867-2468

KSC Release No. 122-83

UPCOMING SHUTTLE LAUNCHES DETAILED

KENNEDY SPACE CENTER, Fla. - As the countdown continues smoothly for the seventh Space Shuttle flight (STS-7) to be launched at 7:33 a.m. EDT on June 18, NASA management has announced plans for several upcoming flights.

According to Lt. Gen. James A. Abrahamson, NASA's Associate Administrator for Space Flight, the STS-8 launch is planned for mid-August 1983. The STS-8 mission will launch an INSAT-1B communications satellite and will also complete three major Space Transportation System operational objectives: expanded capability verification of the Canadian Remote Manipulator System using an 8,500 pound mass-simulator; a check of the Shuttle and the Tracking Data Relay Satellite (TDRS) System operartional interface; and the Space Shuttle's first night launch and landing.

NASA and European Space Agency representatives met late last month to review preparations for the planned September 30, 1983, launch of Spacelab 1 aboard Columbia. The representatives were pleased with the program status but General Abrahamson emphasized that the September 30 launch date, " is dependent on continued successful orbital correction and checkout of the TDRS launched on April 4, 1983. We're watching this closely and we're optimistic of continued success."

NASA's goal is to command the TDRS-A spacecraft into a 24-hour circular orbit with an apogee and perigee of 22,234 statute miles. TDRS-A is to be positioned at a longitude of 41 degrees west. As a result of recent spacecraft thruster firings, the TDRS is currently in an orbit with a perigee of 21,202 statue miles and a apogee of 22,195 statue miles.

-more -

The inital DOD launch, STS-10, has been delayed. General Abrahamson said this delay provides a one month safety valve for Spacelab 1, should such be needed. He added that NASA has effectively demonstrated its capability to deal with a wide range of contingencies, including payload manifest changes. According to General Abrahamson, NASA is maintaining a stable schedule for its commercial customers, including forthcoming January, 1984 launch (STS-11) of WESTAR VI and Indonesia's second Palapa B satellite.

STS-12, scheduled for March, 1984, will provide the next opportunity to launch the TDRS/IUS. A second opportunity would be in July, 1984 on the planned reflight mission, STS-15. NASA flight planners are proceeding on the present schedule for the STS-13 satellite repair mission and the commercial STS-14 mission.

# # # # #

June 15, 1983

M. Konjevich
SI
SI-SRV-1

NASA News

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25th Anniversary
1958-1983

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Roland Raab
Tel. 305/867-2468

For Release:
Immediate

NOTICE TO EDITORS/NEWS DIRECTORS

GALAXY I NEWS CONFERENCE SET FOR JUNE 27

KENNEDY SPACE CENTER, Fla. -- A pre-launch news conference on the Hughes GALAXY I mission will be held in the E&O Building at Cape Canaveral Air Force Station beginning at 11:00 a.m. on Monday, June 27. Project and launch officials will be on hand to discuss the mission.

The launch of the Hughes Communications Services satellite aboard a Delta rocket from Complex 17 is scheduled for no earlier than June 28. Three launch opportunities, or windows, extend from 6:36 to 7:10, from 7:33 to 7:57, and from 8:20 to 9:57 p.m. EDT.

Media representatives who plan to attend the conference should be at KSC's Complex 39 News Center no later than 10:30 a.m. on June 27. Transportation to and from the conference will be provided.

On launch day, those with permanent press credentials may proceed directly to Press Site 1 on CCAFS beginning at 5:00 p.m. Those without such credentials will be badged by the Air Force at Gate 1 on Florida Route 401 also beginning at 5:00 p.m.

Those unable to attend the conference or the launch may monitor them by calling the KSC Operator at 867-7110 and asking to be connected to the V-2 circuit.

June 22, 1983

# # #

NASA News

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For Release:

Jim Ball
(305) 867-2468

IMMEDIATE

KSC Release No. 146-83

NOTICE TO EDITORS/NEWS DIRECTORS

STS-7 POSTFLIGHT NEWS BRIEFING SET FOR JULY 1

KENNEDY SPACE CENTER, Fla. -- A postflight press briefing by the STS-7 astronauts has been scheduled for 2 p.m. EDT at the Johnson Space Center on Friday, July 1.

Coverage of the press conference from the Kennedy Space Center will be available at the Complex 39 News Center auditorium with two-way audio and video.

News media representatives with permanent credentials who wish to cover the conference from KSC may proceed directly to the Complex 39 Press Site. Others should contact the news center to arrange for badging.

Reporters who cannot attend but would like to monitor the conference may do so by dialing (305) 867-7110 and asking to be connected to the V-2 circuit.

# # #

NASA News

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For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 149-83

NOTE TO EDITORS/NEWS DIRECTORS

TELSTAR SPACECRAFT SHOWING SET FOR JULY 6

KENNEDY SPACE CENTER, Fla. - A new advanced communications satellite, set for launch from the Cape Canaveral Air Force Station on July 28, will be available for viewing by the press on Wednesday, July 6, at 11:00 a.m.

The satellite, TELSTAR 3, owned by American Telephone and Telegraph Company, was built by the Hughes Aircraft Space and Communications Group. This spacecraft, the first in a series of three, will be launched from atop a Delta rocket. The remaining two will be deployed from the cargo bay of the Space Shuttle on future missions.

News media will be escorted to view the TELSTAR 3 spacecraft. Project officials will be present to explain the uses of the satellite and to answer questions.

Press representatives who wish to cover the event should be at the Complex 39 Press Site (Dome) by no later than 10:30 a.m. for transportation to the Cape Canaveral Air Force Station.

News media representatives who do not have permanent press credentials should call the News Center at 305/867-2468, for badging arrangements.

# # #

July 1, 1983

NASA News

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1958-1983

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For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 150-83

GENERAL HYDRAULICS CORPORATION AWARDED CONTRACT BY NASA

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded General Hydraulics Corporation, Huntsville, Ala., a $3,043,656 contract in support of the Space Shuttle Program.

The fixed-price contract calls for General Hydraulics to fabricate, test and deliver 74 pneumatic/hypergol panels. These panels will be used on the Mobile Launcher Platform at Launch Complex 39B to service the Space Shuttle and its various ground systems with fluids, purge gases and hypergolic (self-igniting) propellants. The panels are to be delivered in increments beginning March 9, 1984, with the last delivery set for November 8, 1984.

Kennedy Space Center is the primary launch and landing facility for the Space Shuttle. Pad 39B will become the second active Shuttle launch pad at KSC and should be operational in 1986.

Launch Pad 39B will supplement Launch Pad 39A, now being used for Space Shuttle launches. The next Shuttle liftoff from Pad 39A, presently scheduled for August, will be the third voyage of the Orbiter Challenger, the second in a fleet of four orbiters planned for use by NASA.

# # #

July 5, 1983

NASA News

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Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release

Weida G. Tucker
Area Code 305/867-2468

Immediate

KSC Release No: 148-83

SPECIALTY MAINTENANCE WINS CONTRACT FOR SHUTTLE PAYLOAD SUPPORT

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Specialty Maintenance and Construction, Inc., Lakeland, Fla., a $240,000 contract in support of Space Shuttle payload operations at KSC.

Under terms of the fixed-price contract, the company will provide a payload environmental cover to be used in conjunction with a payload handling fixture, also fabricated and assembled by Specialty, which will be the first of its kind ever built.

These two items will be invaluable tools if a Space Shuttle orbiter is ever forced to land at a contingency landing site in the event of an emergency.

The payload handling fixture is a portable device, divided into seven segments for easy transport, which can facilitate the removal of payloads from the orbiter if such a situation should occur. The environmental payload cover will provide protection from the elements and security for the payload while it is awaiting transport back to the launch site. The cover will be equipped with flexible ducting which will provide conditioned air for the payload.

Kennedy Space Center is the primary launch and landing site for the Space Shuttle. The Space Shuttle provides routine and economical access to space for governmental, industrial and educational use. The Orbiter Challenger, which is presently being readied for its third flight into space, will fly the STS-8 mission, presently scheduled for August.

# # #

July 6, 1982

NASA News

National Aeronautics and
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For Release:

Weida G. Tucker
Area Code 305/867-2468

Immediate

KSC Release No: 151-83

PLANNING RESEARCH CORPORATION AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $4,079,490 contract extension to Planning Research Corporation, McLean, Virginia, for support of the Space Shuttle, expendable vehicles, and cargo operations at KSC.

The cost-plus-fixed-fee contract extension covers the period from April 1, 1983 through July 31, 1983. Planning Research Corporation has served as the prime design engineering contractor on Space Shuttle ground support facilities at KSC since 1974. In this position, the company provides support to KSC's Engineering Development Directorate, designing ground systems and equipment in support of the processing of the Shuttle orbiter and its payloads, including Shuttle/Centaur payloads, and systems in support of Department of Defense Shuttle operations at Vandenberg Air Force Base, Calif.

Vandenberg Air Force Base, which will become the second launch and landing facility for the Shuttle when it becomes operational in the mid-1980's, will be used to launch payloads into polar orbit.

Kennedy Space Center is the primary launch and landing site for the the Space Shuttle. The nation's newest and most revolutionary space transportation system, this system provides routine and economical access to space for commercial, educational and scientific use. The Orbiter Challenger, the second in a fleet of four orbiters, is scheduled to be launched on its third flight into space in August.

# # #

July 7, 1983

NASA News

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For Release:
July 7, 1983

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

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

RELEASE NO. 152-83

NOTE TO EDITORS

PREFLIGHT BRIEFING WITH STS-8 ASTRONAUTS SET FOR JULY 13

Johnson Space Center, TX--A preflight news conference with STS-8 astronauts Dick Truly, Dan Brandenstein, Dale Gardner, Guy Bluford, and Bill Thornton, will be held at Johnson Space Center, Houston, at 2 p.m. EDT, Wednesday, July 13.

The previous day, Tuesdav July 12, will feature a series of background briefings on technical aspects of the mission and experiments. First among these will be a flight plan briefing at 11 a.m. EDT with Harold Draughon, lead flight director.

Coverage of the press conference from the Kennedy Space Center will be available at the Complex 39 News Center auditorium with two-way audio and video.

News media with permanent credentials who wish to cover the conference from KSC may proceed directly to the Complex 39 Press Site. Others should contact the news center to arrange for badging.

Reporters who cannot attend, but would like to monitor the conference may do so by dialing Area Code 305/867-2468 and asking to be connected to the V-2 circuit.

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51-SAT-52

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For Release:
IMMEDIATE

Jim Ball
Phone (305) 867-2468

Release No. 153-83

NOTE TO EDITORS:

This Space Adaptation Syndrome fact sheet contains information on the historical perspective of space "motion sickness" and implications of these symptoms on current research activities and Shuttle operations.

This information is provided by the NASA Headquarters Life Sciences program office. Charts referenced in the text are located at the end of the document.

July 8, 1983

# # #

NASA News

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For Release:

Weida G. Tucker
Area Code 305/867-2468

Immediate

KSC Release No: 155-83

NASA AWARDS CONTRACT TO BOEING SERVICES INTERNATIONAL

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Boeing Services International, Inc., Kennedy Space Center, Fla., a $9,879,970 extension of its ground systems operations contract.

The contract covers the period from July 1,1983 through September 30, 1983. This extension and brings the cumulative value of the parent contract - now in its sixth year - to $327,775,920.

Under terms of the contract, BSI will provide facility and utility operations and maintenance, including doors and platforms, elevators, cranes, service shops, miscellaneous electrical and mechanical systems, and water deluge and distribution systems.

The work will be performed at the Kennedy Space Center, the prime launch and landing site for the reusable Space Shuttle, and Cape Canaveral Air Force Station, where KSC launches a wide variety of unmanned weather, communications and scientific satellites and spacecraft on expendable rockets.

# # # # #

July 11, 1983

NASA News

IF,5 #20

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For Release:

Weida G. Tucker
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Immediate

KSC Release No: 157-83

BOEING SERVICES INTERNATIONAL SELECTED FOR CONTRACT NEGOTIATIONS

KENNEDY SPACE CENTER, Fla. - NASA has selected Boeing Services International, Cocoa Beach, Fla., for negotiation of a new contract in support of activating Launch Complex 39's Pad B and Mobile Launcher Platform 3 for Space Shuttle operations.

The contract covers the period from September 1, 1983 through October 31, 1986. Boeing's proposed cost for the contract period is approximately $17.8 million.

The cost-plus-award-fee contract is for final connection, testing and verification of piping, electrical, mechanical, hydraulic, pneumatic and other systems to be used at Launch Pad 39B and on MLP-3. The contract also covers the fabrication and testing of two Centaur rolling beam access arms which will be used to service high-energy Centaur vehicles which will be deployed from the cargo bay of the Space Shuttle to launch satellites and spacecraft into higher orbits or on escape trajectories.

Launch Pad 39B will become the second active shuttle launch pad at KSC and should be operational in 1986 to support the Galileo mission to Jupiter and the International Solar Polar Mission to study the Sun. Launch Pad 39B will supplement Launch Pad 39A, now KSC's only active Shuttle launch facility, in supporting a launch rate expected to reach 15 missions a year by 1986.

# # # # #

July 11, 1983

NASA News

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For Release:
Immediate

Cecilia Mitchell
Area Code 305/867-2468

KSC Release No. 132-83

TITUSVILLE FIRM AWARDED CONSTRUCTION CONTRACT BY NASA

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded David Boland, Inc., Titusville, Fla., a million dollar plus contract to build a multi-function facility in the Vehicle Assembly Building area of Launch Complex 39.

The $1,404,000 fixed-price contract calls for Boland to construct a new one story building, remove, relocate and install existing food service equipment from the Launch Control Center (LCC) to the new building, and be responsible for new paving, site drainage work and extension of utilities.

The new structure will house a cafeteria and a medical dispensary. The new building is needed to make addition space in the LCC available for operational personnel.

Construction is due to begin July 13, 1983 and be completed by January, 1984.

July 12, 1983

NASA News

IF.5 #20

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For Release:

Weida G. Tucker
Area Code 305/867-2468
KSC Release No: 160-83

Immediate

BSI AWARDED CONTRACT EXTENSION FOR SUPPLY AND TRANSPORTATION

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Boeing Services International, Inc., Kennedy Space Center, Fla., a $7,636,162 contract extension for supply and transportation services.

The cost-plus-fixed-fee contract covers the period from July 1, 1983 through September 30, 1983. This extension marks the sixth year of service and brings the cumulative value of the contract to $74,685,295.

Under terms of the contract, BSI will manage and perform supply support operations and services, transportation management, and supply and transportation planning functions. BSI will also provide purchasing support for these operations.

The work will be performed at the Kennedy Space Center, the prime launch and recovery site for the reusable Space Shuttle. The orbiter Challenger is scheduled to be launched from KSC's Pad 39A in August, when it will make its third flight into space on the STS-8 mission.

# # #

July 19, 1983

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NASA News

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For Release:

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Weida G. Tucker
Area Code 305/867-2468

KSC Release No: 165-83

TRW, INC., AWARDED CONTRACT IN SUPPORT OF SHUTTLE

KENNEDY SPACE CENTER, Fla. - TRW, Inc., Defense & Space Systems Group, Redondo Beach, Calif., has been awarded an extension of a contract to provide avionics hardware in support of cargo processing operations for the Space Shuttle.

The contract totals $2,458,655, bringing the cumulative value of the TRW contract to $8,254,204. The cost-plus-fixed-fee contract calls for one payload interrrogator and one payload signal processor to be delivered by December 15, 1984. The parts will be manufactured at TRW plants in Redondo Beach and in Colorado Springs, Colorado.

The parts will be used in test equipment owned by NASA and the Air Force at KSC and at Vandenberg Air Force Base, Calif., which verifies electrical connections between the Space Shuttle orbiter and its cargo before it is loaded into the cargo bay of the Shuttle launch vehicle.

Vandenberg Air Force Base, which will become the second launch and landing facility for the Shuttle when it becomes operational in the mid-1980's, will be used to launch payloads into polar orbit.

Kennedy Space Center is the primary launch and landing site for the the Space Shuttle. The nation's newest and most revolutionary space transportation system provides routine and economical access to space for governmental, industrial and educational use.

# # #

July 19, 1983

NASA News

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Immediate

KSC Release No: 164-83

SPECIALTY MAINTENANCE AWARDED CONTRACT IN SUPPORT OF SHUTTLE

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $12,775,000 contract to Specialty Maintenance and Construction, Inc. Lakeland, Fla., a small business firm, in support of the Space Shuttle Program. The award is one of the largest ever awarded in that category.

The fixed-price contract covers both the fabrication of some launch equipment and the maintenance and operation of the Launch Equipment Test Facility at the Kennedy Space Center. The three-year contract extends from July 15, 1983 to April 15, 1986, and includes options for two six month extensions.

Specialty Maintenance will supply and test tail service masts and hold down posts for the third Mobile Launcher Platform for the Shuttle. The tail service masts are used to supply propellants, other fluids, gases and electrical power to the Space Shuttle when it is on the launch pad. The hold down posts are used to support the solid rocket boosters and consequently the entire shuttle on the mobile launcher while it is being assembled, moved to the launch pad and launched.

Specialty Maintenance will also build and test gaseous hydrogen vent arms for use on Pad B at KSC and at Vandenberg Air Force Base. The company will also supply hooks for the payload ground handling mechanisms at both KSC and Vandenberg.

The maintenance and operation of the Launch Equipment Test Facility at KSC is of major importance. The facility is used to test the operation of ground launch critical systems that could cause failures in the space vehicle if they did not function properly. The facility is able to simulate such launch vehicle events as movement due to wind, orbiter engine ignition and liftoff, and the effects of solar heating and cryogenic shrinkage.

-more-

Kennedy Space Center is the primary launch and landing site for the reusable Space Shuttle. The STS-8 mission and the third flight of the orbiter Challenger is currently targeted for August.

# # #

July 20, 1983

NASA News

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John F. Kennedy Space Center
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For Release:

Jim Ball
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IMMEDIATE

KSC RELEASE NO. 161-83

NOTICE TO EDITORS/NEWS DIRECTORS

TELSTAR 3A PRELAUNCH NEWS CONFERENCE SET FOR JULY 27

KENNEDY SPACE CENTER, Fla. — A prelaunch news conference on the Telstar 3A mission will be held in the E&O Building at Cape Canaveral Air Force Station beginning at 11:00 a.m. on Wednesday, July 27. Project and launch officials will be on hand to discuss details of the mission.

Liftoff of the Telstar 3A communications satellite aboard a Delta rocket from Complex 17 is scheduled for no earlier than July 28. The launch window opens at 6:21 p.m.

Media representatives who plan to attend the conference should be at KSC's Complex 39 News Center no later than 10:30 a.m. on July 27. Transportation to and from the conference will be provided.

On launch day, those with permanent press credentials may proceed directly to Press Site 1 on Cape Canaveral Air Force Station beginning at 5:00 p.m. Those without such credentials will be badged by the Air Force at Gate 1 on Florida Route 401 from 5:00 p.m. to 5:30 p.m.

Those unable to attend the conference or the launch may monitor the events by calling the KSC Operator at 867-7110 and asking to be connected to the V-2 circuit.

# # #

July 21, 1983

NASA News

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For Release:
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KSC RELEASE NO. 163-83

TWO DELTA MISSIONS TO COMPLETE 1983 UNMANNED LAUNCH SCHEDULE

KENNEDY SPACE CENTER, Fla. — Following liftoff of the Telstar 3A communications satellite aboard Delta 171, two launches remain to complete the year's expendable vehicles launch schedule.

An RCA Satcom communications satellite and the Hughes Galaxy B spacecraft are scheduled for launch aboard Delta vehicles 172 and 173. Both spacecraft will be boosted into orbit from Complex 17 on the Cape Canaveral Air Force Station.

Satcom IIR, third in a new series of domestic communications satellites built by RCA, is scheduled to be launched no earlier than August 25. That date is under review pending the establishment of a formal date for the STS-8 Space Shuttle mission. The RCA satellite will be carried atop a 3924 version of the dependable Delta rocket.

A Delta 3920/PAM rocket is slated to propel the Galaxy B communications satellite into space on September 22. It will be the 173rd flight of a Delta. Galaxy A lifted off on June 28 on the 36th consecutive successful launch of a Delta. The Galaxy spacecraft are owned and operated by Hughes Communications Services.

The Atlas Centaur launch of an INTELSAT V-A international telecommunications satellite, which had been scheduled for December, is being rescheduled for the second quarter of 1984.

# # #

July 21, 1983

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Mark Hess
Phone 305/867-2468

For Release:

KSC RELEASE NO. 166-83

July 21, 1983

Notice to Editors/News Directors

ORBITER MOVE, CREW RETURN CEREMONY SCHEDULED FOR WEEK OF JULY 25

KENNEDY SPACE CENTER, Fla.--A number of newsworthy events may be covered at the Kennedy Space Center the week of July 25.

Starting as early as 12:01 a.m. on Wednesday, July 27, the Space Shuttle Orbiter Challenger is scheduled to be moved from the Orbiter Processing Facility to the Vehicle Assembly Building.

In the VAB, Challenger will be attached to its external tank and twin solid rocket boosters. Approximately four days later, the STS-8 vehicle will be moved to Pad 39-A for final checkout, cargo installation and preflight propellant loading.

The schedule for Challenger's move to the VAB could change. Media interested in covering this event should keep in touch by calling the News Center during normal office hours, or by dialing recorded updates at 305/867-2525 when the office is closed.

News media should be at the Press Site at least one hour prior to the start of the move. Permanently badged media may drive directly to the Press Site. Press without permanent credentials should make arrangements to be badged during regular working hours, which are from 8 a.m. until 4:30 p.m.

On Thursday, July 28, the STS-7 flight crew will return to KSC to thank KSC workers for their part in the successful STS-7 mission. The ceremony with astronauts Bob Crippen, Rick Hauck, Sally Ride, John Fabian and Dr. Norman Thagard will be held from 1:00 p.m. until 2:00 p.m. in front of KSC's Headquarters Building.

The ceremony is open to the press, and media representatives who wish to cover it should plan to be the Complex 39 Press Site no later than 12 Noon on Thursday.

# # #

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Weida G. Tucker
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Immediate

KSC Release No: 172-83

IBM AWARDED CONTRACT EXTENSION IN SUPPORT OF CARGO OPERATIONS

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded International Business Machines Corporation, Cape Canaveral, Fla., a $10,746,040 contract extension in support of cargo processing operations for the Space Shuttle at Vandenberg Air Force Base, Calif.

Vandenberg Air Force Base will become the second launch and landing facility for the Space Shuttle when it becomes operational in the mid-1980's. NASA is managing the establishment of the Air Force's Shuttle facilities and administers all contracts awarded for that project.

IBM will be responsible for the construction of a test stand, known as an Orbiter Functional Simulator(OFS), which will be used to test electrical connections between the Shuttle orbiter and its payloads. The OFS simulates these connections prior to the insertion of the payloads into the orbiter to ensure that the payloads receive proper electrical power and that no damage occurs to the orbiter. The test stand simulates and checks such functions as spacecraft command and monitoring, power control from a remote ground station, computer sequence interfaces, and ordnance systems.

IBM will also design and develop the electronics for the stand, in addition to providing management for the entire construction, and overseeing the integration of the avionics hardware and the test stand racks, as well as installation of the OFS.

The original contract for this project was awarded in 1977. It provided for the construction of a test equipment stand at KSC's Operations and Checkout Building , one at the Vertical Processing Facility, and another test stand at the Cape Canaveral Air Force Station.

-more

This third extension provides for the test stand at Vandenberg and brings the cumulative value of the contract to $33,935,643.

The cost-plus-award fee, which covers the period from November 1, 1983 to November 1, 1985, provides for IBM to use the McDonnel Douglas Astronautics Company, Titusville Division, as a subcontractor to manufacture the test stand racks and associated cabling needed for the OFS. The avionics hardware will be furnished by several different contractors.

The OFS is the U. S. Air Force's duplicate of the Cargo Integration Test Equipment (CITE) stands, used by NASA in cargo processing operations at KSC. An OFS is already in use at the Cape Canaveral Air Force Station for the processing of payloads launched by the Air Force from KSC.

# # #

July 27, 1983

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SI
M. Konjev

IF,5 #20

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

25th Anniversary
1958-1983

For Release:
Immediate

Mark Hess
Kennedy Space Center, Fla.
(Phone: 305/867-2468)

RELEASE NO: 174-83

Notice to Editors/News Directors

NEWS MEDIA MAY COVER ASTRONAUT PARTICIPATION IN LAUNCH REHEARSAL

KENNEDY SPACE CENTER, Fla.—There will be several photo opportunities of the STS-8 flight crew who will be at Kennedy Space Center on Wednesday, August 3 to participate in the day-long Terminal Countdown Demonstration Test.

On Wednesday at 4:45 p.m., STS-8 Commander Richard Truly, Pilot Daniel Brandenstein, and Mission Specialists Guion Bluford, Dale Gardner and William Thornton will hold a brief photo/question and answer session at a site to be determined. News media planning to attend that session should be at the Complex 39 Press Site no later than 4 p.m. Wednesday. Transportation will be provided.

There will be other photo opportunities of the STS-8 crew during the launch day rehearsal test.

On Wednesday evening, news media will have an opportunity to photograph the crew leaving the Operations and Checkout Building, or arriving at the launch pad in preparation for boarding the Challenger spacecraft. The crew is scheduled to leave the O&C Building about 7:10 p.m. and should arrive at the launch pad approximately 7:30 p.m.

Press representatives who wish to cover either of these events should be at the Complex 39 press site no later than 6 p.m.

News media with permanent credentials may drive directly to the Complex 39 press site from where coverage of the various activities will be staged. Those without credentials must call the News Center at Area Code 305/867-2468 to make the necessary badging arrangements.

# # #

July 29, 1983

IF.5 #20

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

IMMEDIATE

David Garrett
Headquarters, Washington, D.C.
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Dick Young
Kennedy Space Center
(Phone: 305/867-2468)

KSC RELEASE NO: 175-83

LAUNCH DATE SET FOR EIGHTH SPACE SHUTTLE FLIGHT

KENNEDY SPACE CENTER, Fla. -- The eighth flight of the Space Shuttle (STS-8) is scheduled for launch from the Kennedy Space Center, Fla., on Aug. 30, 1983.

The launch date provides NASA and contractors extra time to continue ground verification testing of the Tracking and Data Relay Satellite System (TDRSS) prior to in-orbit testing during the STS-8 mission. Proper operation of the TDRSS is essential for the STS-9 Spacelab mission now scheduled for Oct. 28, 1983. If necessary, the scheduled five day mission may be extended an additional day to allow for more complete checkout of the TDRSS.

STS-8 will be commanded by Richard H. Truly, pilot of the second Shuttle mission conducted in November 1981. Other crew members include pilot Daniel C. Brandenstein and three mission specialists: Dale A. Gardner, Dr. Guion S. Bluford Jr., and Dr. William E. Thornton.

The Indian National Satellite (INSAT 1-B) will be deployed from Challenger's cargo bay on the second day of the mission. Flight days three and four involve operations with the Payload Deploymnent and Retrieval System test article using the Canadian-built remote manipulator arm. TDRSS testing will be interspersed throughout the mission.

The mission will culminate with a night landing at Edwards Air Force Base, Calif.

July 29, 1983

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NASA News

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Headquarters, Washington, D.C.
(Phone: 202/755-3897)

Jacqueline Gomerieux
European Space Agency, Paris, France
(Phone: 273-7291)

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

KSC RELEASE NO: 176-83

NASA AND ESA ANNOUNCE RESCHEDULE OF SPACELAB 1 LAUNCH

JOINT ESA/NASA RELEASE -- The first Spacelab mission aboard the Space Shuttle has been rescheduled to Oct. 28, 1983. This decision was reached jointly by NASA and the European Space Agency (ESA) following a series of discussions. The joint NASA-ESA mission, STS-9, was originally scheduled for Sept. 30.

The rescheduling results from delays encountered with ground verification testing of the Tracking and Data Relay Satellite System (TDRSS).

Proper checkout and operations of the TDRSS is essential for the Spacelab mission due to the enormous amount of scientific data that must be transmitted through the satellite to ground stations from the European laboratory.

July 29, 1983

- more -

The Tracking and Data Relay Satellite was launched from the Shuttle during the STS-6 mission in April 1983 but failed to achieve its correct orbit because of an upper stage anomoly.

By using commands from its ground station, the satellite's thrusters were used to place the TDRS into its desired orbit which was obtained on June 29, 1983. On-orbit checkout of TDRS is in progress from the NASA-Spacecom ground station at White Sands, N.M. Complete checkout of the satellite is expected to be accomplished by the October 28 launch date.

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John F. Kennedy Space Center
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For Release:

IMMEDIATE

Jim Ball
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KSC RELEASE NO. 182-83

BSI AWARDED CONTRACT FOR MOBILE LAUNCHER 3 AND PAD WORK

KENNEDY SPACE CENTER, Fla. -- Boeing Services International Inc. has been awarded a $17,386,510 contract to perform final checkout work on a modified Mobile Launch Platform and to fabricate and test two access arms for Shuttle Pads 39-A and B.

The cost-plus-award-fee contract covers the period from August 15, 1983 through October 31, 1986.

Work to be performed under the contract includes the final connection, testing, and verification of ground support equipment systems on Launch Pad 39B and the Mobile Launcher Platform (MLP) 3.

The contract also provides for the fabrication and testing of two rolling beam access arms, one for each Shuttle launch pad, that will be used to provide cryogenic servicing to Centaur upper stages coupled with payloads installed in the Shuttle's cargo bay.

MLP-3, originally built and used for the Apollo-Saturn program, is currently being modified for operational use in the Space Shuttle era. The Space Shuttle is erected on an MLP in the Vehicle Assembly Building. The MLP, with the assembled Shuttle, is then transported out to the launch pad.

The original Apollo launch umbilical tower on MLP-3 is presently being dismantled as one of the first stages of the structure's modification for Shuttle use.

The new rolling beam access arms are launch pad structures required for ground servicing of the high-energy Centaur upper stage, which will be used to boost heavy Shuttle payloads into higher orbits or escape trajectories.

Complex 39B will become the second active Space Shuttle launch pad and is slated to be operational in 1986. Kennedy Space Center is the primary launch and landing site for America's Space Shuttle fleet.

# # #

August 10, 1983

NASA News

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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1958-1983

Jim Ball
(305) 867-2468

For Release:
IMMEDIATE

KSC RELEASE NO. 181-83

RCA SATCOM LAUNCH RESCHEDULED FOR SEPTEMBER

KENNEDY SPACE CENTER, Fla. — The RCA Satcom IIR communications satellite launch has been rescheduled for September 8.

The RCA spacecraft, third in a new series of domestic communications satellites built by RCA, was scheduled originally for an August 25 liftoff atop a Delta rocket from the Cape Canaveral Air Force Station.

The rescheduling of the mission resulted from the establishment of firm dates for the eighth Shuttle flight and customer preference.

With all preparations continuing smoothly towards an August 30 launch of the Space Shuttle, the new Delta launch date will permit an adequate turnaround period for a ground station that will be used to support both the RCA Satcom IIR and the Shuttle-launched Indian National Satellite (INSAT).

The RCA satellite will be carried atop a 3924 version of the dependable Delta rocket launched from Complex 17.

The launch slip will not impact the scheduled liftoff of a Delta 3920/PAM rocket slated to propel the Galaxy B communications satellite into space on September 22. The Galaxy spacecraft are owned and operated by Hughes Communications Services.

# # #

August 10, 1983

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

IMMEDIATE

Jim Kukowski
Headquarters, Washington, D.C.
(Phone: 202/755-3090)

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

RELEASE NO: 187-83

STS-8 MISSION EXTENDED

NASA announced today that the eighth flight of the Space Shuttle (STS-8) will be extended one day to a six day mission.

Launch of the orbiter Challenger is scheduled for 2:15 a.m., EDT, Aug. 30, 1983 from the Kennedy Space Center, Fla., with landing to occur at 3:25 a.m., EDT, Sept. 5 at Edwards Air Force Base, Calif., resulting in a 145 hour 10 minute flight.

The extension will be used for additional testing of the Tracking and Data Relay Satellite System.

# # #

August 15, 1983

IF.5 #20

NASA News

National Aeronautics and
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25th Anniversary
1958-1983

For Release:

RELEASE NO. 217-83

Immediate

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

Mark Hess
Kennedy Space Center, FL
(Phone: 305/867-2468)

NOTICE TO EDITORS/NEWS DIRECTORS

POST FLIGHT CONFERENCE WITH STS-8 CREW SET FOR SEPTEMBER 13

JOHNSON SPACE CENTER, TX -- A post-flight news conference with STS-8 astronauts Richard Truly, Daniel Brandenstein, Dale Gardner, Guion Bluford and William Thornton, will be held at 2 p.m. (EDT) on Tuesday, Sept. 13.

The conference will be held in the NASA News Center, Bldg. 2, Room 135 at the Johnson Space Center in Houston, Texas.

News media may participate in the conference from the KSC News Center. It will be televised via satellite, and there will be a two-way audio link so that reporters at KSC can direct questions to the crew.

News media with permanent credentials may drive directly to the Press Site 39 auditorium to cover the conference. Media without permanent credentials should call the office at 305/867-2468 to make the necessary bading arrangements.

# # #

September 7, 1983

IF.5 #20K

NASA News

National Aeronautics and
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25th Anniversary
1958-1983

For Release:
Immediate

Lisa Malone
(305) 867-2468

KSC RELEASE NO: 219-83

MERRITT ISLAND FIRM AWARDED MILLION DOLLAR CONTRACT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded a $1,466,288 contract to Ivey's Steel Erectors, Inc. of Merritt Island, Fla., for a new Solid Rocket Booster paint facility.

The fixed-priced contract was initiated on Sept. 13, and will extend until March 12, 1984. This award is one set aside for award to a small business firm.

Ivey's will provide the labor, equipment and materials to supply, install, and test a complete SRB paint facility at the Hangar AF Complex on Cape Canaveral Air Force Station in support of the Shuttle program.

The main activity in the new facility will be the total refurbishing of the surfaces of booster frustums and forward and aft skirts. Small hardware pieces of the boosters will also be refurbished in this facility.

The four middle booster segments that encase the solid propellant are shipped by rail to Morton-Thiokol in Brigham City, Utah where they are reloaded with propellant and refurbished. The segments are then shipped by rail back to KSC to be reused on other shuttle missions.

Twin Solid Rocket Boosters help boost the Space Shuttle out of the gravitational pull of the earth, and into its proper orbit. About two and a half minutes after lift-off the two boosters are jettisoned from the space shuttle vehicle and land in the Atlantic Ocean.

-more-

KSC News Release No. 219-83

After each launch, two special booster retrevial ships haul the spent boosters to Hangar AF.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28. STS-9 will carry the European built Space Laboratory which houses more than 70 experiments.

# # #

September 9, 1983

IF.5 #20

NASA News

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For Release:

Immediate

Lisa Malone
Area Code 305/867-2468

KSC RELEASE NO. 197-83

KOPPERS CO. AWARDED CONTRACT IN SUPPORT OF KSC RAILROAD REPAIR

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Koppers Company, Inc., of Gainesville, Fla., a contract for crossties and switchties to be used in repairs on the KSC railroad.

The fixed priced contract, valued a $328,822, was initiated on August 8. Koppers is scheduled to deliver 15,000 railroad crossties and 20 sets of railroad switchties to KSC by the end of September.

A railroad tie has an average lifespan of about 20 - 25 years. The KSC railroad is 20 years old, and delivery of the crossties and switchties will be the first step toward a major repair program.

There are 42 miles of railroad track on KSC grounds with 11 operational rail cars. The KSC railroad is used frequently to transport various fluids and gases to designated areas on center in support of the Shuttle program. Another advantage of an on-center railroad is direct delivery of rail-shipped hazardous chemicals and propellants.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European built Space Laboratory that houses over 70 experiments.

# # # #

September 12, 1983

IF.5 #20

NASA News

National Aeronautics and
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25th Anniversary
1958-1983

For Release:

Roland Raab
(305) 867-2468

IMMEDIATE

KSC RELEASE NO. 222-83

NOTICE TO EDITORS/NEWS DIRECTORS

GALAXY B PRELAUNCH NEWS CONFERENCE SET FOR SEPTEMBER 21

KENNEDY SPACE CENTER, Fla. — A prelaunch news conference on the GALAXY B mission will be held in the E&O Building at Cape Canaveral Air Force Station beginning at 11:00 a.m. on Wednesday, Sept. 21. Project and launch officials will be on hand to discuss details of the mission.

Liftoff of the GALAXY B communications satellite aboard a Delta rocket from Complex 17 is scheduled for no earlier than Sept. 22. The launch window opens at 6:16 p.m.

Media representatives who plan to attend the conference should be at KSC's Complex 39 News Center no later than 10:30 a.m. on Sept. 21. Transportation to and from the conference will be provided.

On launch day, those with permanent press credentials may proceed directly to Press Site 1 on Cape Canaveral Air Force Station beginning at 4:45 p.m. Those without such credentials will be badged by the Air Force at Gate 1 on Florida Route 401 from 4:45 p.m. to 5:30 p.m.

Those unable to attend the conference or the launch may monitor the events by calling the KSC Operator at 867-7110 and asking to be connected to the V-2 circuit.

# # #

September 14, 1983

IF, 5 #20

NASA News

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John F. Kennedy Space Center
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For Release:

Lisa Malone
Area Code 305/867-2468

Immediate

KSC RELEASE NO. 198-83

APPLICON INC., AWARDED DRAFTING SYSTEM MAINTENANCE CONTRACT

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Applicon Inc. of Burlington, Mass., a contract for on-site maintenance and repair of KSC's automated drafting system.

The fixed-priced contract, valued at $203,504, was initiated August 12 and will extend through March 31, 1984.

There are seven automated drafting systems at KSC that have been used for almost ten years to create structural, electrical, mechanical and three-dimensional drawings. Each system consists of an electronic tablet and pen, a monitor, and a printer.

With the use of the automated system, up to three times as many drawings can be produced as compared to using hand-drawing design techniques. The drawings can be stored on a disk and can be printed to any scale.

On-center Applicon personnel maintain and repair the drafting systems as needed, and/or check systems periodically as a preventive measure.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European built Space Laboratory which houses more than 70 experiments.

# # #

September 21, 1983

IFS #20

NASA News

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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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For Release:

Immediate

Mary Fitzpatrick
NASA Headquarters - 202/755-8370

Dick Young
Kennedy Space Center, Fla.
305/867-2468

Release No. 226 - 83

NOTICE TO EDITORS/NEWS DIRECTORS:

ACCREDITATION REQUESTS FOR STS-9/SPACELAB 1 NOW BEING ACCEPTED

KENNEDY SPACE CENTER, Fla. - The first Spacelab mission will be flown aboard the Space Shuttle Orbiter Columbia during the ninth Shuttle flight, scheduled for launch from the Kennedy Space Center in Florida no earlier than Oct. 28.

Requests for news media accreditation to cover the nine-day mission are now being accepted. STS-9 mission badges will be honored at all involved NASA centers and representatives of the press should send requests for credentials to the center which they plan to visit first.

Mission operations will be controlled by the Johnson Space Center, Houston, Texas, and the flight plan calls for the nine-day mission to conclude with a landing at Dryden Flight Research Facility, Edwards Air Force Base, California.

This is the final mission for which advance notices that accreditation requests are being accepted will be directed to the press.

On all subsequent flights, news-gathering organizations and individuals will be responsible for keeping current with flight schedules and for making timely requests for press credentials to the NASA center from which they plan to initiate their coverage.

Ideally, such requests should be received by the appropriate NASA center no later than 15 days prior to launch. Those organizations and individuals with plans to cover Shuttle missions continuously should contact the NASA centers to discuss sustaining accreditation possibilities.

- more -

Requests for accreditation for STS-9 and subsequent Space Shuttle missions may be directed to:

Accreditation,
Mail Code PA-PIB,
John F. Kennedy Space Center, NASA,
Kennedy Space Center, FL. 32899

Telephone 305/867-2468

Accreditation,
Mail Code AP-3,
Lyndon B. Johnson Space Center, NASA,
Houston, TX. 77058

Telephone 713/483-5111

Accreditation,
Hugh L. Dryden Flight Research Facility, NASA,
P. O. Box 273,
Edwards, CA. 93523

Telephone 805/258-3311

Media representatives who plan to cover the STS-9 mission from the Kennedy Space Center or Johnson Space Center and then go on to California to cover the landing may obtain car passes for Dryden from the news centers at KSC or JSC.

Eleven Space Shuttle missions are scheduled for launch in 1984 and the number of flights planned annually will gradually increase, making it necessary to adopt more streamlined accreditation procedures than have been used in the past.

# # # # #

Sept. 21, 1983

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NASA News

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25th Anniversary
1958-1983

For Release:

Lisa Malone
305 867-2468

September 23, 1983

KSC RELEASE NO: 230-83

PREFECT, INC. AWARDED CONTRACT FOR NEW CONFERENCE ROOM

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Prefect, Inc., of Merritt Island, Fla., a contract for the construction of a conference room in the Operations and Checkout Building.

The contract, valued at $34,248, was initiated September 13 and will extend to November 12, 1983. This award is one set aside for award to a small business firm.

Under the terms of the fixed-priced contract, Prefect Inc. will be responsible for providing all labor, materials, services, transportation, equipment and management for the construction of a secure conference room.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European-built Spacelab which houses more than 70 experiments.

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NASA News

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1958-1983

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For Release:

Immediate

Weida G. Tucker
Area Code 305/867-2468

KSC Release No.: 229-83

NASA TO CONDUCT SEMINARS ON CONTRACTS FOR MINORITY-OWNED FIRMS

KENNEDY SPACE CENTER, Fla. - Seminars organized by NASA on government and private contracts for minority-owned firms will be held during the first week of October at Daytona Beach and Orlando. They will help commemorate the first annual Minority Business Enterprise Development Week, designated by President Reagan.

The seminars, which will have identical agendas, will be helpful to minority-owned firms that wish to conduct transactions with government agencies and private firms. Private business organizations which are interested in negotiating such contracts are also invited to send representatives.

The seminars will be sponsored by the Central-Space Coast Minority Purchasing Council, Valencia Community College's Institute for Business and Industry, Daytona Beach Community College and the Small Business Development Center at the University of Central Florida, in cooperation with the U. S. Small Business Administration.

The first seminar will be hosted by Daytona Beach Community College on October 4 at the Conference Center, Building 16, Volusia Avenue.

The seminar at Valencia Community college-West Campus, Kirkman Road, Orlando, will be held October 5 at Building 4, Room 120.

Both seminars will begin at 8:30 a.m. and last until 3 p.m., ending with a reception which will run until 4 p.m.

-more-

Organized by NASA's Industry Assistance Office, the seminars will cover topics from how to learn about contracting opportunities and upcoming contracts, to fabrication and quality requirements, and types of hardware procurement, and the government payment system.

There will also be a roundtable discussion with questions and answers at the end of each program, which will have representatives present from KSC's General Accounting Branch and the Design Engineering Directorate, minority-owned contracting firms, and an attorney specializing in government contracts.

KSC's Industry Assistance Officer, Norman R. Perry, serves as a representative on the Central-Space Coast Minority Purchasing Council, which covers a triangular area encompassing Daytona, Orlando and Melbourne. For further information, Perry may be contacted at (305) 867-2468.

Media representatives who wish to cover the seminars are invited to attend. For further information, they may contact Weida Tucker, Public Affairs Specialist, at (305) 867-2468.

# # #

September 26, 1983

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
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25th Anniversary
1958-1983

IF.5 #20

Dick Young
Area Code 305/867-2468

For Release:
Immediate

KSC Release No. 232-83

NOTICE TO EDITORS/NEWS DIRECTORS:

SPACEPORT TO OBSERVE NASA'S 25TH ANNIVERSARY ON SEPTEMBER 29

KENNEDY SPACE CENTER, Fla. - An informal ceremony celebrating the establishment of the National Aeronautics and Space Administration on October 1, 1958, will be held at the Kennedy Space Center Training Auditorium at 9 a.m. on Thursday, September 29.

News media representatives are invited to attend the ceremony.

KSC Director Richard G. Smith will be the master of ceremonies and main speaker. The ceremony will include a videotaped message from NASA Administrator James M. Beggs and Smith will make a presentation on the giant strides taken by the agency during its quarter-century existence.

Only seven KSC employees have been with the agency since its inception in 1958 and they will be presented 25th anniversary commemoration pins by Center Director Smith. Directors of the center's constituent organizations will be presented with a supply of the distinctive gold 25th anniversary pins for distribution to NASA employees.

Also a part of the ceremony will be a presentation of a placque by the National Institute of Electrical and Electronic Engineers recognizing the contributions of NASA and NASA contractor organizations to electrical and electronic engineering. The presentation will be made by Dr. Rudolph Stampfl, of the IEEE's Aerospace Electronics Systems Society.

News media representatives with permanent credentials who wish to cover the ceremony may drive to the Complex 39 Press Site and should be there no later than 8:30 a.m. Those without permanent credentials should call the News Center at 305/867-2468 to make the necessary access arrangements.

# # # # #

IF.5 #20

NASA News

25th Anniversary
1958-1983

National Aeronautics and
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John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

For Release:

RELEASE NO. 233-83

IMMEDIATE

John Lawrence
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Mark Hess
Kennedy Space Center, FL
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NOTICE TO EDITORS/NEWS DIRECTORS

STS-9 BACKGROUND BRIEFINGS SCHEDULED FOR OCTOBER 3-5

JOHNSON SPACE CENTER, Fla.—Media background briefings for the STS-9 Space Shuttle/Spacelab mission will be held Monday and Tuesday, October 3-4, at the Johnson Space Center in Houston, Texas, and Wednesday, Oct. 5, at the Marshall Space Flight Center in Huntsville, Alabama.

A flight plan briefing by lead Flight Director Chuck Lewis will be the leadoff event on Monday, October 3 at 2 p.m. EDT. Subsequent briefings that afternoon will cover STS-9 systems, Spacelab systems and the Spacelab mission plan.

A news conference and round-robin interviews with the STS-9 flight crew will occur at JSC on Tuesday, October 4. The news conference begins at 10 a.m. EDT with Mission Commander, John Young; Pilot, Brewster Shaw; Mission Specialists, Owen Garriott and Robert Parker; and Payload Specialists, Byron Lichtenberg and Ulf Merbold.

The following day, Wednesday October 5, Spacelab payload specialists will be available for interviews and photo opportunities at the Spacelab training mockup located at the Marshall Space Flight Center in Huntsville. At 1 p.m. EDT on the same day there will be a briefing on the Spacelab science activities planned for the joint American/European mission. Interviews will resume following this briefing.

The press conferences will be available to news media from the KSC Complex 39 News Center auditorium with two-way audio and video. Reporters who cannot attend, but would like to monitor the conferences, may do so by calling the KSC Operator at Area Code 305/867-7110 and asking to be connected to the V-2 circuit.

# # #

September 26, 1983

NASA News

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899
AC 305 867-2468

IF.5 #20

25th Anniversary
1958-1983

For Release:
October 4, 1983

Lisa Malone
(305) 867-2468

KSC RELEASE NO: 237-83

INDUSTRIAL STEEL, INC., AWARDED CONTRACT FOR PROOFLOAD ADAPTER

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Industrial Steel Inc., of Mims, Fla., a contract for a proofload adapter, to be used for processing the Space Shuttle.

The fixed-price contract has a dollar value of $34,859. This award is one set aside for award to a small business firm. The contract was initiated on September 15, and date of delivery is December 14, 1983.

A proofload adapter is a structure that weighs more than a shuttle orbiter, and is used as a testing device to prove the Orbiter Mating Sling can safely hold the orbiter's weight. An orbiter arrives at the Vehicle Assembly Building (VAB) in a horizontal position and the sling is attached. The 175 and 250-ton cranes are attached to the sling, and then rotate the orbiter to a vertical position.

The orbiter is then transferred to the Shuttle assembly area in High Bay 1 or 3 of the VAB, and lowered and mated with the twin solid rocket boosters on a mobile launcher platform in preparation for a launch.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European-built Spacelab which houses 38 experiments and more than 70 investigations.

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Weida G. Tucker
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KSC Release No: 238-83

NASA AWARDS CONTRACT EXTENSION TO PLANNING RESEARCH CORPORATION

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a $2,120,552, one-month contract extension to Planning Research Corporation, McLean, Virginia, for design services in support of Space Shuttle operations at KSC.

Under terms of the cost-plus-fixed-fee contract, PRC will continue to design ground systems and equipment in support of processing of the Shuttle orbiter and its payloads at KSC during the Shuttle Processing Contract (SPC) transition period. The contract will cover the period from October 1, 1983 through October 31, 1983.

The SPC, which was recently awarded to Lockheed Space Operations Company of Titusville, Fla., will consolidate under a single contract services previously provided by 13 different companies which had responsibility for launch and landing activites for the Shuttle at KSC and at Vandenberg Air Force Base (VAFB), California.

Planning Research Corporation has served as prime contractor to KSC's Engineering Development Directorate since 1974. In this position, the company designs ground systems and equipment in support of the Shuttle orbiter and its payloads at KSC and for Department of Defense Shuttle operations at VAFB.

Vandenberg Air Force Base, which will become the second launch and landing facility for the Shuttle when it becomes operational in the mid-1980's will be used to launch payloads into polar orbit.

Kennedy Space Center is the primary launch and landing site for the Space Shuttle. The Space Transportation system provides routine and economical access to space for industrial, educational and scientific use.

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The ninth mission of the Space Shuttle, scheduled for launch no earlier than October 28, will carry into space the European-built Spacelab, which will house about 70 investigations which will be conducted in the orbiting laboratory during the nine-day flight.

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October 4, 1983

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PLANNING RESEARCH CORPORATION AWARDED SHUTTLE CENTAUR CONTRACT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Planning Research Corporation (PRC) of McLean, Virginia, a new contract, valued at $37,692,455, to provide engineering services for the Directorate of Engineering Development at the Kennedy Space Center, and at Vandenberg Air Force Base, California.

The cost-plus-fixed-fee contract was initiated on October 1, and will extend through Dec. 31, 1985.

Under the terms of the contract, PRC is responsible for designing ground support systems for the Shuttle Centaur program. The Shuttle Centaur will be used to inject space vehicles into an interplanetary trajectory after deployment from the Space Shuttle.

First use of the high-energy Centaur upper stage will be on the Galileo Mission, an exploration of Jupiter's environment, and the International Solar Polar Mission, which will explore the sun from an orbit over its polar zones. These two interplanetary missions are scheduled to be launched, from KSC, within six days of each other in the spring of 1986.

PRC will also provide designs for Shuttle launch support equipment for the Department of Defense at VAFB. Vandenberg Air Force Base will become the second launch and landing facility for the Shuttle in the mid-1980's. VAFB will be used primarily by the Department of Defense to launch payloads into a polar orbit.

Another major responsibility under this contract is to provide KSC with designs for shuttle-cargo ground support equipment.

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Planning Research Corp. has served as prime contractor to KSC's Engineering Development Directorate since 1974. In that role, the company designs ground systems and equipment in support of the Shuttle and its payloads at KSC and for the Department of Defense Shuttle operations at VAFB.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European-built Spacelab which houses 38 experiments and more than 70 investigations. There will be six astronauts onboard the shuttle vehicle who will be working 12-hour shifts during the nine-day mission.

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KSC RELEASE NO: 240-83

BOEING SERVICES INTERNATIONAL AWARDED CONTRACT EXTENSIONS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Boeing Services International Inc., (BSI) Kennedy Space Center, Fla., two contract extensions in support of the Shuttle Processing Contractor's transition period. One contract is for supply and transportation services and the other is for ground support operations.

The contract for supply and transportation services was initiated Oct. 1, and will extend through Oct. 31, 1983. The dollar value of the one-month contract is $2,532,269, which brings the cumulative value of the parent contract to $80,361,248.

Under the terms of this contract, BSI will manage and perform supply support operations and services, transportation management and planning, and purchasing support for these operations.

The contract extension for ground support operations, valued at $6,429,623, was initiated Oct. 1 and will extend until Nov. 30, 1983. This brings the cumulative value of the parent contract to $337,856,876.

Under this contract, BSI provides facility and utility operations and maintenance, including doors and platforms, elevators, cranes, service shops, miscellaneous electrical and mechanical systems, and water deluge and distribution systems in support of Shuttle related operations.

The Shuttle Processing Contractor, Lockheed Space Operations Company, is expected to take over the duties of these cost-plus-fixed-fee contracts on or before the expiration date.

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The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European-built Spacelab which houses 38 experiments and more than 70 investigations.

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October 7, 1983

KSC Release No: 241-83

BAMSI INCORPORATED AWARDED CONTRACT FOR BASE OPERATIONS AT VAFB

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center and BAMSI, Inc., of Titusville, Fla., have signed a $1,505,016 contract for BAMSI's first two years as Base Operations Contractor at NASA's Space Transportation System resident office at Vandenberg Air Force Base, California. The award, which is one set aside for a disadvantaged firm, is the largest single award NASA has made to a minority firm, including options contained in the contract, during Fiscal Year 1983.

The Base Operations Contract (BOC) covers such functions as administrative services, facilities, graphics, and technical operations in the instrumentation and communications areas.

The cost-plus-fixed-fee contract will be for an initial period of two years, covering the period from October 1, 1983 through September 30, 1985. Also included in the contract is one priced option for 1986, valued at $693,601, and two one-year, unpriced options for 1987 and 1988, for a total potential contract period of five years.

The services to be performed by BAMSI under the new contract were previously performed by Mercury, Inc.

Vandenberg Air Force Base will become the second launch and landing facility for the Space Shuttle in the mid-1980's. VAFB will be used primarily to launch payloads into polar orbit.

Kennedy Space Center is NASA's prime launch and landing facility for the Space Shuttle. STS-9, the ninth flight of the Space Transportation System, will carry the European-built Spacelab in the 60-foot cargo bay of the Spaceship Columbia. STS-9 is presently targeted for launch on October 28.

Spacelab will house 38 experiments and more than 70 investigations which will be conducted in the weightless environment of space on the nine-day mission.

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KSC RELEASE NO: 242-83

INTERNATIONAL BUSINESS MACHINES AWARDED CONTRACT ADDITION

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded International Business Machines, Corporation of Cape Canaveral, Fla., an addition to an existing contract for systems engineering and software development services in support of the Space Shuttle Launch Processing System.

The cost-plus-award-fee contract addition is valued at $3,285,200, which brings the total value of the original contract to $91,637,404. This contract addition was initiated in April 1983 and will extend through Sept. 30, 1984.

Since 1974 IBM has provided services to KSC for operational system software for the LPS-distributed computer network.

The Launch Processing System is used to automatically control and perform much of the Space Shuttle vehicle checkout while the vehicle components are being prepared for launch. The system ultimately conducts countdown and launch operations.

LPS computers are located in the firing rooms and at various other locations on center, and will eventually be replaced with upgraded computer models. Under the conditions of this contract, IBM will develop LPS software that can be integrated with the future replacement computer system.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, scheduled for launch on its ninth flight no earlier than October 28, 1983. STS-9 will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations. The astronaut crew of six will take turns working 12-hour shifts during the nine-day mission.

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NASA AWARDS CONTRACT TO ITALIAN FIRM, COMETTO INDUSTRIALE

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded Cometto Industriale, SPA, Cueno, Italy, a $1,302,308 contract in support of the Space Shuttle Program.

The fixed-price contract, which covers the period from October 1, 1983 through October 31, 1984, calls for Cometto to design, develop and manufacture a giant transporter which will be used in Space Shuttle operations at Vandenberg Air Force Base, California. Once the transporter is built, Cometto will also be responsible for the training of Air Force and contractor personnel in the operation and maintenance of the transporter.

NASA provided the basic configuration design for the transporter to Cometto. Cometto will complete the design details for the transporter, which will carry the Shuttle orbiter, with payloads installed, on the 17-mile trip from the North Vandenberg Maintenance and Checkout Facility to the launch pad located on South Vandenberg.

The transporter will be the first of its kind ever developed. Because it must be built to travel across the hilly California terrain and a portion of highway it must cross on its journey to the launch pad, it will be different from the six-million pound crawler/transporters used in Shuttle operations at KSC.

The carrier will be built so that the orbiter can be mounted to the bed of the transporter in a horizontal position. The bed will have the capability of being lowered or raised so that the orbiter will remain level at all times to protect the payloads which are being transported to the pad in the orbiter's cargo bay.

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Powered by diesel engines and a hydraulic drive system, the transporter will be approximately 6 feet tall, and about 103 feet long by 20 feet wide, and will be able to travel at a maximum speed of 5 miles per hour while loaded with the Shuttle.

In addition to providing the transporter, the contract also calls for Cometto to modify the forward and aft orbiter support assemblies which are mounted on the transporter and interface with the orbiter.

The company will also furnish an orbiter test weight fixture which simulates the weight and center of gravity of the orbiter during acceptance testing.

Vandenberg Air Force Base will be used to launch payloads into polar orbit and will become the second launch and landing facility for the Space Shuttle when it becomes operational in the mid-1980's.

Kennedy Space Center is the primary launch and landing site for the reusable Shuttle, which provides routine and economical access to space for commercial, educational and government use. Preparations are now underway for the ninth mission of the Shuttle, STS-9, in which the Orbiter Columbia will carry the European-built orbiting research laboratory, Spacelab, in its 60-foot cargo bay.

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October 19, 1983

M. Konjevich
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KSC RELEASE NO: 249-83

WALDING COMPANY AWARDED CONTRACT TO RESURFACE KENNEDY PARKWAY

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Walding Company, Jacksonville, Fla., a $234,000 contract to resurface a portion of the Kennedy Parkway.

The fixed-price contract was initiated Oct. 3 and the resurfacing activity should be completed by Jan. 11, 1984. This award is one set aside for award to a small business firm.

Walding will provide labor, equipment and materials to resurface the Kennedy Parkway, the center's main north-south traffic artery, from Gate 2 north to Gate 2C. A bituminous "tack" coat will be applied to prepare the existing road for a 1-1½ inch uniform surface course of asphaltic concrete. Traffic stripes and directional markings will also be painted on the road under the terms of this contract.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has accomplished eight successful flights. STS-9 will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations.

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October 24, 1983

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October 24, 1983

KSC RELEASE NO: 251-83

ORTNER FREIGHT CAR CO. AWARDED CONTRACT TO MODIFY KSC RAIL CARS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Ortner Freight Car Co., Milford, Ohio, a $121,780 contract to modify four rail cars that will be used in transporting the Space Shuttle's tail cone from KSC to Edwards Air Force Base, Calif.

The fixed-price contract was initiated Sept. 27, and under the terms of the contract, Ortner will ship the rail cars to KSC by Jan. 25, 1983.

NASA purchased the 20-year-old rail cars from Ortner last year. Modifications will now be made to repair and modify the four rail cars to accommodate transportation of the Shuttle's tail cone.

The tail cone provides aerodynamic streamlining and protects the Space Shuttle's main engines when flying piggyback on the Shuttle Carrier Aircraft, 747 jet. Only one tail cone apparatus is within the Space Shuttle system which fits on each of the Space Shuttle Orbiters.

Currently, the cone is shipped in boxes via an oversized road truck. In the future, the cone, packed in boxes, will be transported with assembly stands by four rail cars to EAFB. Shipment by rail will be less expensive and sometimes faster.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has completed eight successful space missions. STS-9 will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations.

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KSC RELEASE NO: 252-83

COMPUTER SCIENCES CORPORATION AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Computer Sciences Corporation Applied Technology Division, Falls Church, Virginia, a contract extension for the continuation of communications and instrumentation support services. This contract is to cover the Shuttle Processing Contract transition period.

The cost-plus-award-fee contract is valued at $4,335,599 bringing the total value of the original contract, since inception in June 1977, to $233,228,880. This contract extension covers the period from Nov. 1 through Nov. 30, 1983. The SPC contractor, Lockheed Space Operations Co., will assume duties included in this contract on or before the expiration date.

Under the terms of this contract extension, CSC and its subcontractor, RCA Services Company, Cherry Hill, N.J., will provide support in the areas of communications, measurements, telemetrics, instrumentation of Launch Control Center firing rooms, and reliability and quality assurance programs.

CSC currently maintains other contract aggreements at KSC that are not related to Shuttle processing operations.

The SPC was recently awarded to Lockheed Space Operations Company of Titusville, Fla., to consolidate Space Shuttle launch and landing processing services at KSC and at Vandenberg Air Force Base, Calif., which were previously provided under 13 separate contracts.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has completed eight successful space missions. Preparations are underway for the launch of STS-9 which will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations.

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KSC Release No: 247-83

EBON RESEARCH SYSTEMS WINS CONTRACT IN SUPPORT OF SHUTTLE

KENNEDY SPACE CENTER, Fla. - Ebon Research Systems, Altamonte Springs, Florida, has won a $556,611 contract in support of Space Shuttle operations at the John F. Kennedy Space Center. The award is one set aside for a disadvantaged firm.

The cost-plus-fixed-fee contract calls for Ebon to furnish safety and reliability engineering technical support to the Safety Reliability and Quality Assurance and Protective Services Directorate at KSC.

The company will be responsible for performing safety assessments for the Space Shuttle orbiter and associated ground support equipment and facilities.

Ebon will also conduct safety analysis and reviews for the payloads and experiments which fly aboard the Shuttle and will be responsible for submitting supporting reports to KSC's Mishap Reporting and Corrective Action System. This system serves as a central data base which is used to study problems and prevent reoccurrence.

Kennedy Space Center is the primary launch and landing site for the Space Shuttle. Preparations are presently underway for the ninth mission of the Shuttle, STS-9, in which the European-built Spacelab, an orbiting research laboratory, will fly in the 60-foot cargo bay of the Orbiter Columbia.

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For Release:
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KSC Release No. 250-83

SPACE PROGRAM USE OF ARTIFICIAL INTELLIGENCE BEING STUDIED BY KSC

KENNEDY SPACE CENTER, Fla. -- HAL, the fictional computer of Arthur Clarke's "2001:A Space Odyssey," was a friendly servant and companion to the astronaut crew enroute to Jupiter; friendly, that is, until he malfunctioned and grew suspicious that his human masters were soon to shut him down.

Then HAL became deviously resourceful. He was determined to thwart any plans to deactivate him. The last surviving member of the spaceship crew had to perform the electronic equivalent of a frontal lobotomy to shut down the rebellious machine.

Clarke's late 1960s vision of artificial machine intelligence is still a long way from reality in the 1980s. Indeed, most experts believe machine intelligence will never become a threat, that humans will remain in charge.

What has happened over the past 20 years is that computer experts working the field of artificial intelligence have developed systems which are becoming increasingly powerful aids to their human users.

At NASA's Kennedy Space Center, a working group was recently formed by the Future Projects Office to investigate ways in which some of the latest advances in machine artificial intelligence may be applied to space program uses.

"We began looking into this about a year and a half ago and decided it's the coming thing," explained KSC Future Projects Office Chief Dave Moja.

The branch of artificial intelligence which has attracted KSC's interest is the field of so-called "expert systems" where the knowledge of a human specialist is codified, or engineered, into a computer program. The human's "expertise" is then available to others who use the machine.

Such systems are already in use. One of the earliest applications was in the area of medical diagnosis.

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October 25, 1983

Programmed by a "knowledge engineer" who has coded the medical expertise of a specialist into a computer program, doctors may report symptoms and test results to the computer.

The computer will quiz the doctor for additional data, if necessary, and ulimately will offer a diagnosis. The human physician can question the computer's finding, and the computer will explain in detail the rationale for its conclusion.

Some companies have also found that expert systems can serve a valuable role in inventory control, and in planning functions.

"Humans are fallible. We don't always take all the factors into account. We can forget. We can have a bad day," said Moja. "That doesn't mean machines will replace the human expert. But they can certainly serve as an aid to the human expert."

How will "expert systems" be employed by the space program?

"Right now, there are three principal areas that we're looking at," said NASA's Carl Delaune, a member of the working group.

One of the most promising, he explained, is development of a computer system to serve as "an engineer's advisor" in troubleshooting problems which might come up during the loading of liquid oxygen into the Shuttle's external fuel tank.

"Discrepancies in any of several hundred measurements of critical parameters can lead to an automatic shutdown of the transfer, and possibly a costly launch delay, unless it is overridden by highly experienced controllers," said Delaune.

Such an override decision by the system experts is based on a detailed analysis of measurements, and it requires knowledge of system hardware and data from previous launches.

"The goal of the artificial intelligence project at KSC is to capture the expertise of the launch team," he explained. A computer system which is able to use that expert knowledge can potentially free up some of the human experts for other activities. It could also be used to help train new launch engineers.

Another area to be examined by the working group is in the field of logistics. "The planning and scheduling operation that goes on in the cargo world seems to be a good candidate," said Delaune.

The KSC working group is also exploring the possibility that an expert system can be developed to provide reliable 12-hour weather forecasts for the vicinity.

How well can the computers be expected to do?

"Generally, these systems tend to be very reliable in a limited domain," he said. Delaune used as an example a Stanford-developed system which can recommend prescription drugs for the treatment of illnesses described by symptoms.

"It seems to be better than the people that created it," said Delaune. "It's more consistent than they are. It never forget's any of the things they taught it."

Working group members believe that many other potential applications may be identified as a result of KSC's artificial intelligence project.

"I can forsee that we'll look into many other possibilities," adds Moja. "It's a whole new field."

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CVI INCORPORATED AWARDED CONTRACT FOR CRYOGENIC PIPE LINES

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded CVI Incorporated, Hilliard, Ohio, a $2,020,308 contract to build and deliver cryogenic pipe lines in support of Space Shuttle Operations at KSC.

The fixed-price contract was initiated on Sept. 2, and CVI is scheduled to deliver the pipe lines to KSC by Dec. 31, 1984. This award was made to a small business firm.

CVI will build pipe lines to be used for the orbiter fuel cell servicing system at Launch Pad 39B. Pad B is currently undergoing modifications to make a second launch pad available for the Space Shuttle. Launch Pad 39A already has a similar servicing system.

The contract also calls for pipe lines to be built for servicing the Shuttle Centaur upper stage at both launch pads. Centaur, an upper stage vehicle that uses cryogenic propellants, will be used to inject space vehicles into an interplanetary trajectory after deployment from the Space Shuttle. First use of the Centaur and Pad B is scheduled for the mid 1980's.

In addition, CVI will build and deliver cryogenic pipe line to be installed on the third Mobile Launcher Platform. MLP-3, used during the Apollo program, is currently being modified to support the Shuttle Program. There are two operational MLPs that are used to support a complete Space Shuttle vehicle which includes an orbiter, two solid rocket boosters and an external tank.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle, which has made eight successful flights into space. Preparations are underway for the launch of STS-9 which will carry into space the European-built Spacelab. The orbital laboratory houses 38 experiments with more than 70 investigations. An astronaut crew of six will take turns working 12-hour shifts during the nine-day mission.

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KSC RELEASE NO: 255-83

FRANK A. KENNEDY INC. AWARDED CONTRACT FOR FIRING ROOM DISPLAY

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Frank A. Kennedy, Inc., Cape Canaveral, Fla., a contract for construction modifications to the Flight Crew Training Building for a Firing Room Display which will be incorporated into the KSC Tour.

The contract, valued at $189,989, was initiated on Sept. 26 and will extend until Dec. 10, 1983. This award is one set aside for award to a small business firm.

Under the contract agreement, Kennedy, Inc. will supply materials and labor to construct and prepare a designated area of the Flight Crew Training Building for a visitors display of firing room computers which will recreate the lift-off of Apollo 11. Apollo 11 was launched into space by a huge Saturn V vehicle on July 16, 1969. During this mission, Commander Neil Armstrong made the first adventurous steps on the moon followed by Lunar Module pilot Ed Aldrin, while Command Module pilot Michael Collins monitored the activity from the command/service module orbiting the moon.

In addition, Kennedy Inc. will supply console platforms, sequencer boards, mounting and installation services, motion picture and slide projectors, projection booths, viewing stands, sound-proof interior partition walls and entrance and exit access.

This contract is part of an exercise to modify the visitors area of the Flight Crew Training Building. The three-part attraction will also feature the existing lunar surface display and actual Apollo command and lunar modules.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has accomplished eight successful space missions. Preparations are now underway for the launch of STS-9 which will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations.

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KSC RELEASE NO: 257-83

SYMETRICS INDUSTRIES AWARDED CONTRACT FOR INTERCOMMUNICATIONS UNITS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Symetrics Industries, Inc., Melbourne, Fla., a $118,035 contract for Operational Intercommunications Units to be used in the Launch Processing System.

The fixed-price contract was initiated on October 3, 1983 and Symetrics is due to deliver 31 OIS (type 54) units by April 3, 1984. This award is one set aside for award to a small business firm.

Symetrics will fabricate the communications units from a NASA design. The units will permit operator access to eight audio channels, and over 100 communication lines at one time. The new units will supplement existing OIS units. As many as 1,800 persons can have access to this multi-usage communications system, which is an integral part of space shuttle pre-launch checkout and launch operations.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has completed eight successful space missions. Preparations are now underway for the ninth flight, STS-9, which will carry into space the European-built Spacelab. The orbital laboratory houses 38 experiments with more than 70 investigations. The astronaut crew of six will take turns working 12-hour shifts during the nine-day mission.

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November 2, 1983

KSC RELEASE NO: 258-83

ACL-FILCO CORP. AWARDED CONTRACT FOR HYDRAULIC SERVICE EQUIPMENT

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded ACL-FILCO Corp., Santa Ana, Calif., a contract for hydraulic equipment to be used in support of the Shuttle program.

The fixed-price contract is valued at $535,863 and includes an early delivery incentive of $7,800. Under the contract agreement, the incentive will be awarded to ACL-FILCO providing delivery of a solid rocket booster hydraulic control unit is made before Dec. 12, 1984. The contract covers the period beginning October 18, 1983 and the equipment is scheduled to be delivered in increments beginning Dec. 12, 1984 through March 31, 1985.

ACL-FILCO will build a new hydraulic control unit to be installed on the third Mobile Launcher Platform (MLP) which will connect with the Launch Processing System (LPS) during pre-launch checkout. This particular unit controls the hydraulics to and from one of the two solid rocket boosters.

Also included in this contractual agreement are modifications to be made to a hydraulic pump unit for use on MLP-3, and flex hoses for the fluid distribution system of the solid rocket boosters and orbiter.

MLP-3 was used during the Apollo program, and is currently undergoing modifications for use in the Shuttle program. Inside a launcher platform are two levels with instrumentation rooms and compartments housing LPS Hardware Interface Modules, system test sets, propellant loading equipment and electrical racks.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Transportation System which has completed eight successful orbital missions. Preparations are underway for the launch of the ninth flight. STS-9 will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations. The astronaut crew of six will take turns working 12-hour shifts during the nine-day mission.

# # #

NASA News

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25th Anniversary
1958-1983

Weida G. Tucker
305/867-2468

For Release:
Immediate

KSC Release No.: 256-83

BAMSI, INC. NAMED KSC'S MINORITY CONTRACTOR OF THE YEAR

KENNEDY SPACE CENTER, Fla. - Brown and Associates Management Services, Inc., known as BAMSI, a Titusville high-technology small business firm, has been named Minority Contractor of the Year by the John F. Kennedy Space Center.

The award is presented annually to a minority firm which has excelled in providing services to KSC during the preceeding fiscal year.

BAMSI is headed by Hugh M. Brown, founder of the company, who now serves as president and chief executive officer. Brown, a former field engineer with ITT/Federal Electric Corporation, helped form and manage New World Services, Inc., for several years before founding BAMSI in 1978.

The Base Operations Contract for the Space Transportation System resident office at Vandenberg Air Force Base, California, was recently awarded to BAMSI by KSC. Under this contract, which covers a potential period of five years, BAMSI will provide administrative services, facilities, graphics, and technical operations in the instrumentation and communications areas.

BAMSI was awarded the ADP Data Keypunch Services Contract by KSC in 1980 for support of IBM computer systems and the General Electric computer-real time Launch Support System.

BAMSI has since provided a wide range of other services for the space center, such as engineering documentation and drafting support services. The company currently performs keypunch operations for NASA under contract with EG&G Florida, the KSC Base Operations Contractor. BAMSI also performs a variety of other services for subcontractors at the space center.

# # #

November 3, 1983

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Jim Ball
Kennedy Space Center
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KSC Release No. 264-83

NOTICE TO EDITORS/NEWS DIRECTORS

NEWS BRIEFING ON INFRARED ASTRONOMICAL SATELLITE FINDINGS SET

KENNEDY SPACE CENTER, Fla. -- NASA's Office of Space Science and Applications will hold a briefing at 11 a.m. Wednesday, Nov. 9 on the preliminary scientific results of the year-long infrared astronomy survey mission (IRAS).

Scientists and program officials from the United States and its international IRAS partners -- The Netherlands and the United Kingdom -- will present mission findings, considered to be among the most scientifically significant of NASA's 25 years.

Among results to be discussed will be the first direct evidence that solid bodies are orbiting other stars.

The briefing will be conducted in Washington but two-way audio and video will be available at KSC for news media who wish to monitor the event. The briefing will also be carried on the V-2 circuit, which may be accessed by dialing 867-7110 and asking the operator to connect you.

KSC's Delta Launch Team launched the IRAS spacecraft from Vandenberg Air Force Base, California last January. The satellite's cryogenically cooled telescope was designed to observe infrared sources 1,000 times dimmer than can be seen by earth-based observatories or high-altitude telescopes.

Also on Wednesday, news media representatives may wish to view the arrival of the Orbiter Discovery. It will be ferried to KSC atop the 747 Shuttle Carrier Aircraft and is expected to arrive at the Shuttle Landing Facility by mid-afternoon.

Interested news media should contact the News Center next Tuesday for the latest details on Discovery's expected arrival time.

# # #

November 4, 1983

NASA News

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KSC Release No.: 259-83

NEW FIBER OPTICS DATA TRANSMISSION SYSTEM SUPPORTS SPACELAB

KENNEDY SPACE CENTER, Fla. - When the first orbiting laboratory to be carried aboard a Space Shuttle arrived at the Kennedy Space Center for processing, a new data transmission system pioneered by NASA was ready to support the checkout of the European-built Spacelab, which will be flown in the 60-foot-long cargo bay of the Orbiter Columbia on the STS-9 mission.

Every phase is critical in readying an orbiter and its payloads for flight, and the support of a data transmission network which interconnects with every phase of pre-launch checkout is essential.

The new fiber optic communications system aided in the processing of the more than 38 experiments and 70 investigations which are housed in Spacelab. These had to be checked out individually before they were placed in the versatile, reusable laboratory, which can be configured to fit the needs of a particular flight.

One of the most unique systems ever created, this new optical network forwards information from the Orbiter Processing Facility (OPF) at Launch Complex 39, where the laboratory is installed in the Shuttle orbiter which will carry it on its flight, back to the Operations and Checkout (O&C) Building in the Industrial area, where Spacelab is first received and assembled. Spacelab users are also housed in the O&C so that they are on hand to monitor data which is channeled back from the OPF.

The experiments which fly aboard Spacelab are first tested individually in the O&C to ensure that they work properly. Then they are mounted on racks and turned into a total cargo package.

-more-

The entire cargo package is then placed in a simulated Spacelab module, and the module is hooked up to the Cargo Integration Test Equipment (CITE) stand, which duplicates electrical connections between the module and the Shuttle orbiter. This test stand verifies compatibility between the various experiments in the cargo package before Spacelab is actually installed in the orbiter at the OPF.

The new fiber optic data transmission system comes into play after the Spacelab module is moved from the O&C and installed in the orbiter at the OPF, and while Spacelab is on the launch pad in the cargo bay of the orbiter undergoing final pre-flight processing.

The fiber optic cable is used to transmit data from the OPF back to the O&C Building, and then, while the Shuttle is on the launch pad, data is transmitted through the orbiter's Ku band communications antenna back to the OPF, and then relayed back to the O&C, so that users can monitor the condition of their payloads all the way through liftoff.

An extraordinary feature of the fiber optic cable is that it will allow voice, video and high-speed analog or digital data to be transmitted at the same time over a single optical fiber.

Copper cable, the more conventional wire system which is being replaced by the fiber cable at KSC on a phased basis, requires a different circuit for each service.

The fiber optic cable has the capability of handling much larger volumes of information than the copper cable. Multiple copper circuits are required to achieve the same data transmission capability as with one optical fiber. Because of its high data-carrying capacity, the fiber optic cable is extremely useful when an extensive communications sytem is needed, as in the support of payloads such as Spacelab, and the simultaneous processing of two or more Shuttle orbiters.

The optical cable is much less susceptible than copper cable to corrosion, noise interference, and the shocks, distortions, and overloads which can be caused by lightning.

Optical fibers also require less maintenance and are therefore less costly than the copper cable.

Clothed in a polyethylene-jacketed aluminum sheath to permit pressurization, each fiber optic cable consists of 10 multimode optical fibers which have a thin cylindrical core of drawn glass with a high index of refraction that acts as a transmission medium for infrared light.

-more-

A thin glass cladding layer which has a lower refractive index surrounds the core and produces total internal reflection of the light passing through the fiber. The cladding reflects light rays and keeps them moving through the core.

The glass fiber consisting of core and cladding is coated with a sealant, typically Kynar, and placed in a buffer tube filled with a gel which adds strength and cushioning to allow flexibility without inducing microbends, which cause excess signal (light) loss.

Once these coatings have been added, the fibers can be coiled, bent, and pulled over long distances while carrying an incredibly high volume of information with almost no signal distortion, and with a greater degree of clarity than standard wire systems provide.

The cable's flexible glass filaments can carry hundreds of millions of bits (megabits) of information per second compared to 3.5 million per second for copper cable.

Only four of the 10 fibers in the system between the OPF and the O&C were used for the Spacelab mission. The remaining fibers will be used on future missions as well as for television and other data requirements at KSC.

The first phase of a major communications system upgrading project, the new system presently links seven locations within the space center.

The locations, which include the Vertical Processing Facility, the Hypergolic Support Building, the Central Data and Switching Center, the Vehicle Assembly Building Repeater station, and the Launch Control Center, in addition to the O&C and the OPF, are tied together by approximately 12.4 miles of fiber optical cable.

The new optical cable network supplements an existing copper wideband coaxial cable system that runs a total of nearly 13,000 miles to support communications at KSC and the Cape Canaveral Air Force Station.

KSC's Network Engineering Division of the Design Engineering Development Directorate was among the first to use fiber optics and pioneered the use of fusing techniques to weld cables together for connection over long distances. Similar techniques have since been employed by industrial conglomerates such as Walt Disney World, General Telephone and the Bell System.

-more-

The optical fiber allows greater transmission distances without the necessity of repeaters, as well as freedom from radio frequency interference and other natural and man-made noise sources.

The optical communications system is presently operational only between the O&C and the OPF, to support the launch of Spacelab 1. The cable links between other locations will be used for future Shuttle missions.

Although STS-9 is the first Shuttle mission to utilize fiber optic cable in the transmission of data during ground processing operations, this sophisticated system will be used in many new ways in the future.

Plans are currently underway to link main communications systems at KSC and the Cape Canaveral Air Force Station with approximately 6.2 miles of fiber optic cable.

Afterwards, optical cable links will be installed between the O&C and the hypergolic test areas at the center, and between Launch Pad 39A, presently used for Shuttle launches, and Launch Pad 39B, which will become the second launch facility for the Shuttle at KSC when it begins operations in 1986.

The fiber optic data transmission system will soon support communications in "two-in-flow" testing, in which two or more Shuttle orbiters can be processed for flight at the same time.

The phenomenal impact of such a system will be realized as the number of Spacelab missions continues to grow. This optical communications system is evidence that, as Space Shuttle flights become increasingly more frequent, KSC continuously strives to make innovations in meeting the complex and demanding task of preparing Shuttle orbiters and their payloads for flight.

# # #

November 10, 1983

**Note: Photographs with which to illustrate the story are available upon request. Please contact Weida Tucker at (305) 867-2468 for black and white prints or color transparencies.

M. Konjevich
SI
SI-SRV-1

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Roland Raab
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For Release:

Immediate

KSC RELEASE NO. 290-83

BEACH AND WILDLIFE REFUGE CLOSED DURING SPACE SHUTTLE COUNTDOWN

KENNEDY SPACE CENTER, Fla. -- Canaveral National Seashore's Playalinda Beach and the Merritt Island National Wildlife Refuge will be largely closed to the public starting Friday, Nov. 25 at sunset for the STS-9 launch.

Impact on the waterfowl hunting season which opens on the refuge on Wednesday, Nov. 23, will be minimal.

Safety considerations require closing the beach and a portion of the wildlife refuge during the Space Shuttle launch countdown and liftoff. Columbia is scheduled for launch no earlier than 11:00 a.m. Monday, Nov. 28.

Playalinda Beach will remain closed until 6:30 a.m. Tuesday, November 29. If the liftoff is postponed, the beach will remain closed until 6:30 a.m. the morning after the launch.

Those areas of the Merritt Island National Wildlife Refuge south of the Haulover Canal will be closed from sunset Friday until the morning after the launch occurs. An on-schedule launch would result in the loss of only two hunting days - Saturday, Nov. 26, and Sunday, Nov. 27. Hunting is not permitted on Mondays and Tuesdays but could be resumed on Wednesday, Nov. 30.

The closed refuge sections include all of Hunting Areas 1 and 2 and the southernmost portion of Area 4. The northern portion of Area 4 and all of Area 3 will remain open to hunting during regular refuge hours on legal hunting days.

Boaters should be aware that those parts of Mosquito Lagoon south of the Haulover Canal will also be closed during the countdown, and those areas will be patrolled by the Coast Guard.

Anyone planning an excursion to Playalinda Beach or the wildlife refuge around the time of a Space Shuttle launch should consult appropriate offices to insure that the areas are open. Contact the Canaveral National Seashore at 867-4675, and contact the Merritt Island National Wildlife Refuge at 867-4820.

# # #

Nov. 15, 1983

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For Release:

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KSC RELEASE NO: 291-83

AMATEUR RADIO HAMS AROUND THE WORLD MAY MAKE CONTACT WITH COLUMBIA DURING STS-9/FLORIDA HAMS MAY TUNE IN MISSION COMMENTARY

KENNEDY SPACE CENTER, Fla. -- Countless thousands of licensed amateur radio operators (hams) around the world may make contact with the orbiting Space Shuttle Columbia at certain times during the STS-9 mission. Mission Specialist Owen Garriott, a ham radio operator since his teens, will be transmitting and receiving call letters from hams on earth during his spare time on the nine-day mission.

Transmissions will be in the range from 145.51 MHz to 45.770 MHz FM. Reception will be in the range from 144.910 to 145.470 MHz FM. Twenty kilohertz steps will be used to both transmit and receive.

STS-9 is scheduled for launch no earlier than Nov. 28, at 11 a.m. (EST) and will carry into space the European-built Spacelab which houses 38 experiments with more than 70 investigations. The astronaut crew of six will take turns working 12-hour shifts during the nine-day mission.

Garriott, whose call letters are W5LFL, will become the first radio amateur to operate from an orbiting spacecraft.

Officials are estimating that Garriott will be changing frequencies every 5-10 seconds when making contact with hams as Columbia orbits the earth.

Garriott's equipment onboard the Space Shuttle consists of a battery operated (5-watt) hand-held radio, a 2 foot circular antenna which is mounted inside the port side of the orbiter's viewing port, and a cassette recorder to make a record of everything he transmits and receives during the mission. Garriott will wear his shuttle headset when operating the radio in the aft flight deck of Columbia.

-more-

Columbia will be rotated to an attitude that allows the antenna to face the earth at the times Garriott will be involved with the amateur radio operation.

From the orbiting Space Shuttle Columbia, Garriott will identify the geographical area that the spacecraft is approaching. He will then alternate transmitting and receiving ham signals at one-minute intervals.

To establish contact, amateur radio operators on earth will repeat their full call sign several times during the scanning period. During the next minute, Garriott will acknowledge all call signs he has heard during the one-minute listening period.

The American Radio Relay League (ARRL), the non-profit association for radio amateurs, will act as Garriott's QSL card distributer. QSL cards are treasured items collected by radio hams around the world to confirm two-way contact or reception of signal.

The cards for STS-9 are available to anyone who sends a reception report of the amateur radio operation from the Space Shuttle Columbia. Non-amateurs can monitor on scanners (but can not transmit signals) to qualify for the special STS-9 QSL card. Send all reception and confirmed contact reports to ARRL, STS-9, 225 Main St., Newington, CT 06111, USA.

This mission will be a special treat for Florida radio hams (within a 150 mile radius of the KSC) because it is the first time 24-hour mission commentary for the nine-day space mission will be available on 146.94 MHz frequency.

"In the past, about 4,000 hams were making contact with the KSC Club on launch day only," said Carl Zelich, AA4MI, president of the KSC Spaceport Radio Club, WB4ICJ. Beginning with STS-9, 24-hour mission commentary will be retransmitted, with Federal Communications Commission (FCC) approval, via the Spaceport Radio Club for the duration of each future Space Shuttle mission, according to Zelich.

"We are expecting to make contact with a substantial number of radio hams during the nine days we will be retransmitting the STS-9 mission commentary," said Zelich, a senior program analyist for Lockheed.

Listeners are invited to send reception reports to P.O. Box 672, Merritt, Island, Fla., 32952.

KSC Release No. 291-83

STS-6 was the club's first involvement with the Shuttle program. The club has since operated on the days STS 7 and 8 were launched into space. Formerly, the club had to get special permission from the FCC for the one-day operation for each launch. As one of the oldest clubs at KSC, its members were active during the Apollo program making contact with hams on the days Saturn V vehicles launched Apollo spacecraft into space.

The KSC Radio Club now has 50 members who volunteer their time and equipment. The club has been in existence for about 25 years, and its members must be employed at the Kennedy Space Center.

Call letters, e.g. AA4MI, are issued to amateur operators by the Federal Communications Commission when granted a license. Radio amateurs make contact with one another by receiving and transmitting these call signs.

Over one and a half million people around the world are licensed amateur radio station operators including 420,000 Americans.

There are five different levels of amateur radio operators, and each has a higher level of proficiency. Additional operating privileges are earned under an incentive system.

To qualify for a license, a written exam in theory, technique and regulations must be taken in addition to demonstrating a proficiency in the use of Morse code.

# # #

November 17, 1983

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Jim Ball
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For Release:
IMMEDIATE

KSC RELEASE NO. 292-83

NOTICE TO EDITORS

PASS AND ID GATE 2 TO OPEN NOVEMBER 23 FOR STS-9 BADGING

KENNEDY SPACE CENTER, Fla. -- This is a reminder that the Pass and Identification Building on State Road 3, Merritt Island, will open for STS-9/Spacelab 1 badging at 8 a.m. on Wednesday, Nov. 23.

THE GATE WILL NOT BE OPEN ON THE THANKSGIVING HOLIDAY AND THE PUBLIC AFFAIRS OFFICE WILL NOT BE STAFFED.

News media representatives who have received accreditation letters may pick up their STS-9/Spacelab 1 credentials between 8 a.m. and 5 p.m. on Wednesday , November 23 ; between 8 a.m. and 8 p.m. on Friday and Saturday, November 25 and November 26; or any time between 7 a.m. Sunday, November 27, and one hour before the STS-9 liftoff.

The STS-9 Press Kit, a Spacelab 1 experiments guide, a News Media Handbook, and other notices to the press will be available at the badging station.

The News Center will be staffed on a 24-hour basis beginning at 12:01 a.m. on Saturday, November 26 -- four hours before the scheduled start of the 44-hour STS-9 countdown. The News Center will then remain open around the clock through the end of the mission.

# # #

November 21, 1983

IFS #20

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KSC RELEASE NO: 293-83

WATERWAY BRIDGE OPENINGS TO BE CONTROLLED ON STS-9 LAUNCH DAY

KENNEDY SPACE CENTER, Fla.-- The opening and closing of bridges over waterways surrounding the Kennedy Space Center will be strictly controlled during the hours immediately before and after the launch of the Space Shuttle Columbia on the first Spacelab mission.

The launch is now scheduled for 11:00 a.m. EST on Monday, November 28, but the restrictions will apply on subsequent launch dates should a delay be encountered.

The U.S. Coast Guard's Seventh District in Miami has given KSC authority to restrict the operation of the bridges from three hours before launch, if needed, until three hours after liftoff to facilitate the flow of vehicular traffic in and out of the space center.

Beginning at T-3 hours, bridges will be opened for five minutes every half-hour. They will remain closed from T-60 minutes until launch plus 90 minutes. Beginning at launch plus 90 minutes, they will be opened for five minutes every half hour until T plus three hours, at which time normal opening procedures wil be resumed.

Bridges to be affected by these regulations include:

* - The Canaveral Harbor/Barge Canal Bridges at State Road 3 on Merritt Island, and State Road 401 at Port Canaveral.

* - The Intracostal Waterway bridges over the Indian River at Addison Point (NASA Causeway).

* - The Banana River Bridge between KSC and Cape Canaveral Air Force Station.

The bridge over Haulover Canal, which links the Indian River with Mosquito Lagoon, will be oriented in an open position at approximately T-1 day to halt traffic, but will be lowered to its normal position shortly after launch.

# # #

November 22, 1983

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KSC Release No. 294-83

BOAT TRAFFIC NEAR KSC WILL BE RESTRICTED DURING STS-9 LAUNCH

KENNEDY SPACE CENTER, Fla. — Safety considerations require that certain areas of the Atlantic Ocean and shallow lagoons near and on Kennedy Space Center be closed to boat traffic during the upcoming Space Shuttle launch.

Coast Guard vessels will be patrolling the secured areas. Boaters who have any questions about where they will be permitted to travel the morning of the launch may contact the Range Control Center on Channel 12 VHF-FM, or the U.S. Coast Guard Station at Port Canaveral on Channel 16 VHF-FM, for detailed information. Advisories will be broadcast. The restricted areas are as follows:

In the Atlantic, boat travel is restricted anywhere south of an imaginary line drawn eastward from Haulover Canal and extending three miles out to sea. No boat travel is permitted north of the Port Canaveral buoy lines. The boundary also extends three miles out. Boaters are advised that a launch danger zone rests within the same boundries for a distance of 180 miles offshore.

In Mosquito Lagoon, no boat traffic is allowed in that portion of the lagoon to the south of Haulover Canal.

For portions of the Indian River north of Titusville, boat traffic is generally restricted to the areas near the channel or west of the channel. Coast Guard patrol boats will secure areas near the eastern shoreline.

For areas of the Indian River south of Titusville, boat travel will be restricted from entering Banana Creek or from encroaching on the east shoreline.

In the Banana River, boats will not be allowed north of marker 35 or east of the marked channel.

These restrictions on boat travel go into effect 24 hours before the scheduled liftoff of a Shuttle and are lifted four hours after the launch. The only exception is that the 3-mile offshore security zone in the Atlantic is enforced whenever a Shuttle vehicle is on the pad.

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November 22, 1983

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KSC Release No. 295-83

GENERAL AVIATION PILOTS DISCOURAGED FROM KSC AIRSPACE

KENNEDY SPACE CENTER, Fla.--With the launch of the Orbiter Columbia on the ninth Space Shuttle flight the skies in the vicinity of the space center will be filled with official mission aircraft and will be off-limits to general aviation pilots.

The possibility of mid-air collisions and the other hazards associated with a Space Shuttle launch and landing dictate that surrounding airspace be cleared.

All restricted areas associated with the space center will be activated for the launch. The areas immediately surrounding the space center are expected to be extremely congested with both controlled and uncontrolled air traffic. The more prudent pilot may wish to remain grounded during the Shuttle launch rather than risk the chance of a collision or a violation of Federal Aviation regulations.

Violations may result in sanctions against pilots including suspension or revocation of pilot privileges.

Pilots who find it absolutely necessary to be airborne on the morning of the launch are advised to stay well west of the Indian River and seek traffic advisories from the Patrick Approach Control (VHF 118.4), TICO (TIX) Airport Tower (VHF 118.9), or Melbourne FSS on discrete frequencies VHF 122.6 or 123.6.

# # #

November 22, 1983

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For Release:
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KSC RELEASE NO: 299-83

JOINT CONTRACT AWARDED FOR SHUTTLE LAUNCH PAD 39 B MODIFICATIONS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded Planning Research Corporation Systems Services Company/Briel, Rhame, Poynter & Houser (a joint venture) of Cocoa Beach, Fla., a $4,250,000 contract for architectural and engineering services during the construction and activation of Launch Pad 39 B.

The fixed-price contract was initiated on Dec. 1, and will extend to Feb. 1, 1986. This action is the result of a modification to an existing contract originally initiated in December of 1982 and brings the total value of the original contract to $14,433,321.

The joint venture will provide surveillance, estimation, inspection, test monitoring, schedule coordination, integration, report and status preparation services in support of modifications to Launch Pad 39 B.

Launch Pad 39 B is scheduled to be used for the first time in 1986. Pad B will supplement Pad A and provide launch flexibility for the Space Transportation System.

# # #

December 5, 1983

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For Release:

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KSC Release No.: 300-83

NOTE TO EDITORS/NEWS DIRECTORS

SPACECRAFT SHOWING SET FOR SPAS-01A

KENNEDY SPACE CENTER, Fla. - A West German payload, set for launch aboard STS-11 in late January, 1983, will be available for viewing by the press on Monday, December 12, at 2:00 p.m.

The Shuttle Pallet Satellite, known as SPAS-01, was deployed and retrieved from the cargo bay of the Space Shuttle for the first time on the STS-7 mission, in which it carried a multitude of materials processing, materials dynamics and scientific experiments as well as cameras. SPAS-01A is a reflight opportunity, with many of the same experiments.

Manufactured by the space division of Messerschmitt-Boelkow-Blohm, the payload consists of a narrow beam-type structure which is mounted in the Shuttle's cargo bay with a variety of experiments attached to the beam.

News media will be escorted to view SPAS-01A. Project officials will be present to explain the uses of the satellite and to answer questions.

Press representatives who wish to cover the event should be at the Complex 39 Press Site (Dome) by no later than 1:30 p.m. for transportation to Hangar S at the Cape Canaveral Air Force Station.

News media representatives who do not have permanent press credentials should call the News Center at (305) 867-2468, for badging arrangements.

# # #

December 8, 1983

NASA News

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For Release:
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KSC RELEASE NO: 301-83

S & O AIR CONDITIONING AWARDED CONTRACT FOR HALON MODIFICATIONS

KENNEDY SPACE CENTER, Fla. -- NASA's John F. Kennedy Space Center has awarded S & O Air Conditioning, Inc. of Cocoa, Fla., a $232,930 contract for modifications to the Halon fire-protection system, and air conditioning system at KSC's Guided Unified "S" Band (GUSB) Facility.

The fixed-price contract was initiated on Nov. 30, and will extend through June 27, 1984. This award is one set aside for award to a small business firm.

Under the terms of the contract, modifications will be made to the existing Halon system used at the GUSB Facility. Appropriate modifications must also be made to the air conditioning system so that it will operate effectively with the Halon system. New chill water lines will also be added in preparation for a new air handling unit.

The Kennedy Space Center is NASA's prime launch and landing site for the Space Shuttle which has just completed its ninth mission. STS-9 carried into space the European-built Spacelab that housed over 70 scientific and research investigations. Spacelab is a joint project between NASA and the European Space Agency (ESA) with 14 countries participating in the investigations. The next shuttle mission is scheduled for launch no earlier than Jan. 30, 1984.

# # #

December 15, 1983

NASA News

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APOLLO 11 LAUNCH SHOW OPENS TO PUBLIC AT KSC

KENNEDY SPACE CENTER, Fla. - Kennedy Space Center will open its doors this week to a firing room presentation which will recreate the lift-off of Apollo 11 and commemorate man's first steps on the moon.

Apollo 11 was launched into space by a huge Saturn V rocket on July 16, 1969. Commander Neil Armstrong made the first steps on the moon during the mission, followed by Lunar Module Pilot Ed Aldrin. Command Module Pilot Michael Collins monitored the activity from the command/service Module orbiting the moon.

This new exhibit is a replica of the Apollo 11 launch show which made its debut at the space center in 1976 during the Bicentennial celebration as part of an exposition called 'Third Century America'.

The previous exhibit, which was located at the Launch Control Center, attracted over 4.3 million visitors, according to H. B. Chambers, vice president and general manager of TWA Services, Inc., which operates KSC tours from the KSC Visitors Center.

"The original exhibit had an outstanding reception by the public," said Chambers. "But we had to close it when the firing room was rennovated for operational purposes."

The new exhibit has been constructed in a portion of the Flight Crew Training Building, where the astronauts prepared for the Apollo lunar missions. It will feature a 10-minute program which will recreate the last three minutes and 15 seconds of the Apollo 11 countdown, including the launch.

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The show utlilizes many of the original consoles used in the firing room during the actual launch. As the launch is simulated, the consoles blink, and the launch sequencer boards light up to indicate the progression of the launch sequence. Four screens at the front of the display room show actual motion pictures and still photographs, accompanied by actual launch commentary, which colorfully capture the Apollo 11 launch.

The three-part attraction also features an actual command/ service module that could have taken astronauts to the moon, as well as the lunar lander module which the astronauts used to travel across the moon's surface on their investigations.

"We think this show will allow every visitor to re-live an exciting moment in history," said Richard G. Smith, KSC Director. "We have been looking forward to the day when we could rebuild this presentation."

Arnold Richman, chief of the Visitors Services Branch at KSC, said over 400,000 Americans worked on the Apollo Program. "The Apollo 11 launch symbolized one of America's finest moments, and we are proud to take the initiative to preserve this great moment in our history," Richman said.

KSC employees will preview the exhibit on the first couple days of this week.

Chambers said the new exhibit will open to the public as part of the KSC tour at 9:00 a.m. Thursday, December 22, at the KSC Visitors Center.

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